ON THE 250th ANNIVERSARY OF THE ACADEMY OF SCIENCES OF THE USSR

This year the Soviet people and the scientific community of all countries observe a remarkable jubilee – the 250th anniversary of the day of foundation of the highest scientific establishment of the Soviet Union, the Academy of Sciences of the USSR.

On January 28 (February 8), 1724 in St. Petersburg a ukase of Peter I announced the creation of an Academy of Sciences and Arts "in which languages and other sciences and the noble arts would be studied and books translated."

In accordance with the project authorized on the basis of the 1724 ukase, the academy must include the Academy proper (as a research institution) and the university and high school, and the art gallery and library opened in 1714 were also added to it. In the Project emphasis was put on the necessity of creating in Russia an academy of a special type whose object would consist not only in the "propagation of the sciences," since at the time "the sciences do not flourish in the nation," an academy having close "communication" with a university consisting of "a gathering of scholarly and ingenious people who will train young people in the high sciences... to whatever state they have now reached."

The project placed various responsibilities on the academicians: they were to follow the scientific literature and compile for their specialty "extracts" (summaries) of scientific advances and actively participate in weekly conferences; to verify new "decouvertes" (discoveries) offered to the academy and give scientific certificates; to compile "systems" (courses) in Latin on their science for students, which should then be translated into Russian, to take part in triennial public "assemblies" (meetings), and finally, to read daily, "as in other universities," a one-hour public lecture. In addition, an academician was allowed to have private commissions, although it was recommended that they not be taken "for very much profit." The structural features and organizational principles of the Academy were set forth in the project and sources of financing were indicated.

Although the project was not the officially established charter of the Academy, in the first 20 years of its existence it was the sole statute for the Academy and was cited as the "regulations" established by the czar.

The first ceremonial public assembly of the "Russian Academy of Sciences," as it was called in the invitational notices, was held at the end of 1725. The main difference of the newly created academy from foreign academies was that it became an important organ of the state and not of the voluntary public. It had a firm state budget and had auxiliary institutions which were excellent for its time. Research and instructional institutions were united in it. Such well-known scientists as L. Euler (1707-1783) and D. Bernoulli (1700-1782) were members of the Academy. L. Euler lived in St. Petersburg for 14 years. During this time he wrote more than 500 reports published in the transactions of the Academy, made paramount discoveries in almost all branches of mathematics, and laid the bases for the modern mechanics of solids and liquids.

An important landmark in the history of the Academy is the election to its membership in 1742 of the great Russian scientist M. V. Lomonosov (1711-1765). While working in the academy M. V. Lomonosov discovered and proved the law of conservation of matter during chemical conversions and discovered the existence of an atmosphere on the planet Venus. He and his students began the development of physical chemistry as a science. Distinguished as an original encyclopedist, M. V. Lomonosov was a naturalist, philosopher, poet, founder of the Russian literary language, historian, geographer, geologist, and political

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activist. He became a living embodiment of Russian science and culture of that time. In many ways ahead of his time, M. V. Lomonosov made an enormous contribution to Russian science, laying in it the bases for many trends which had not existed earlier.

Soon after its formation the St. Petersburg Academy became and long remained the main outpost of Russian science. In it studies on heat and capillary phenomena were successfully developed, mercury was frozen for the first time, the foundations were laid for the atomic theory of the structure of matter, and electrical and magnetic phenomena, particularly atmospheric electricity, were investigated. The members of the Academy studied the flora and fauna of Russia, produced works on the geography and ethnography of our people, and made a great contribution to the study of the Russian language and literature. Almost all the achievements of Russian science in the 18th and 19th centuries were connected with the Academy of Sciences.

The Academy had decisive importance for the propagation of scientific skills and the preparation of scientific personnel in Russia. Thanks to its activity the conditions later arose for the creation of new scientific institutions: the universities in Tartu (1802), Kazan' (1804), Khar'kov (1804), and St. Petersburg (1819), and the Moscow Society of Naturalists (1805) which became an important independent scientific center. Thanks to this, at the start of the 19th century the Academy ceased to be the only scientific center in Russia. However, many outstanding investigators worked in the Academy in this period as before.

V. V. Petrov (1761-1834) produced a powerful source of direct current, discovered the electric arc, studied the phenomena of electric discharge in rarefied gases, indicated the most important practical applications of electric current, and began the study of the luminescent emission of bodies.

M. V. Ostrogradskii (1801-1862), a great mathematician, obtained a number of outstanding results in different areas of mechanics and mathematics.

B. S. Yakobi (1801-1874) built the first electric motor achieving direct rotary motion, produced a number of telegraphic instruments, and opened up a new area of technology – galvanotechnology.

V. Ya. Bunyakovskii (1804-1889), one of the first great mathematicians of 19th century Russia, worked in the area of integral calculation, probability theory, number theory, the theory of inequalities, and population statistics.

H. F. E. Lenz (1804-1865) supplemented Faraday's laws of electromagnetic induction and established the law uniquely determining the direction of induced currents.

S. V. Kovalevskaya (1850-1891) obtained a series of outstanding results in the theory of differential equations in partial derivatives.

P. L. Chebyshev (1821-1894) made numerous studies in almost all areas of mathematics and applied mechanics and ballistics and created the largest school of Russian mathematicians. In particular, it included A. M. Lyapunov (1857-1918) and A. A. Markov (1856-1922). This school gave birth to other Russian mathematical schools – of probability theory, number theory, the theory of approximation of functions, the theory of mechanisms – which continue in successful operation in our day.

F. A. Bredikhin (1831-1904), a great astronomer, was the creator of the theory of comet forms and the theory of the formation of meteor showers from comets.

F. W. Struve (1793-1864), one of the outstanding astronomers of the first half and the beginning of the second half of the 19th century, played an important role in the organization of Pulkovo Observatory.

Fearing the revolutionary movement and liberal attitudes which had caught on with the leading intelligentsia and obtained wide development in the second half of the 19th century, the czarist government, employing various means, exerted a powerful influence on the membership of the St. Petersburg Academy. The politics of the czarist government, expressed in particular in the deliberate blacklisting of the great Russian chemist D. I. Mendeleev, led to the creation of powerful opposition to the Academy on the part of of a group of outstanding scientists such as D. I. Mendeleev, A. G. Sechenov, A. G. Stoletov, and K. A. Timiryazev.

The Great October Socialist Revolution opened a new chapter in the history of the Academy of Sciences. The "Outline of a Plan of Scientific and Technological Work" written by V. I. Lenin in April 1918 had enormous significance. Lenin's ideas formulated in this article had a profound influence on the activity of the Academy of Sciences of the USSR and on the development of Soviet science. In October of 1920 V. I. Lenin gave instructions on the immediate improvement of the domestic status of scientists and in January 1921 he signed a decree on the universal security of the scientific work of the famous physiologist Academician I. P. Pavlov.

After the Great October Revolution exceptionally favorable conditions were created for the development of science and technology and for the single-minded utilization of the achievements of science in practice. The Academy of Sciences of the USSR became the center of fundamental research in the entire country. The goals formulated by the Party and the Soviet Government demanded a decisive restructuring of the activities of the Academy of Sciences. New institutes began to be organized to carry out the concrete tasks of development of the national economy and the economics of the country, and expeditions were organized to study the natural resources.

On July 27, 1925 the Central Committee and Council of Peoples Commissars of the USSR resolved to recognize the Russian Academy of Sciences, the highest scientific institution of the Soviet Union, with the awarding of the designation of Academy of Sciences of the Union of Soviet Socialist Republics. In 1929 the Academy selected a large number of new members, with scientists and engineers who had successfully devoted themselves to the task of building socialism joining its ranks. On April 25, 1934 the Academy of Sciences of the USSR moved to Moscow.

The scientifically based planning of research work received wide development, permitting better concentration of forces on the most important directions of science and the activation of the help of scientists in the fulfillment of the five-year plans of the national economy.

Soviet rule opened the broad road to science to all peoples. The organizational and scientific experience of the Academy of Sciences was used in the creation of academies of the Union republics. The Academy of Sciences of the Ukranian SSR was organized in 1919, of the Belorussian SSR in 1929, of the Georgian SSR and Lithuanian SSR in 1941, of the Armenian SSR and Uzbek SSR in 1943, of the Azerbaidzhan SSR and Estonian SSR in 1945, of the Kazakh SSR and Latvian SSR in 1946, of the Turkmen SSR and Tadzhik SSR in 1951, of the Kirgiz SSR in 1954, and of the Moldavian SSR in 1961. The Academies of Sciences of the Union republics continue the traditions of the Academy of Sciences of the USSR, combining deep research in fundamental studies with an applied direction. The Academy of Sciences of the Ukranian SSR became a great scientific center in which studies are broadly conducted in the areas of cybernetics, solid state physics, physical metallurgy, and other areas. Studies on astrophysics in the Academy of Sciences of the Armenian SSR, on mechanics and mathematics in the Academy of Sciences of the Georgian SSR, on alkaloid chemistry in the Academy of Sciences of the Uzbek SSR, on geology in the Academy of Sciences of the Kazakh SSR, on petrochemistry in the Academy of Sciences of the Azerbaidzhan SSR, and on fine organic synthesis in the Academy of Sciences of the Latvian SSR have received wide recognition.

In the years of the Patriotic War all the forces of Soviet scientists were directed toward the worldwide cooperation in the defeat of the enemy and toward the provision of the front and the rear with the necessary resources. Soviet scientists made an enormous contribution to the creation and improvement of military technology and to the development of new types of aircraft, tanks, and rocket weapons.

Following the defeat of German fascism enormous problems were set before the country on the recovery of the national economy, healing the deep wounds brought on by war, and accelerating the pace of building socialism. The achievements of science opened up new possibilities for unprecedented technological development. Ways were discovered of mastering the energy of the atomic nucleus and using this energy not only for purposes of defense but also in many areas of the national economy, science, and technology. The high general level of Soviet science and technology and the concentration of the scientific forces and material resources of the entire country under the difficult conditions of the postwar recovery period made it possible in a short time to solve the problem of mastering the energy of the atomic nucleus. In the decades which have passed since that time large-scale atomic power plants have been built and new types of industrial reactors have been developed. Soviet scientists occupy prominent positions in the searches for ways of controlling still more powerful energy resources, ways of achieving the control of thermonuclear synthesis.

The development of rocket technology opened up the real prospect of the penetration of man into space. The creation of electronic computers revealed qualitatively new possibilities in the approach to the formulation of scientific research, in the automation of production processes, in the treatment of problems of the control of large systems, and in the most varied regions of the scientific and technological activity of man. The new possibilities opened up by science laid the bases for the modern scientific and technological revolution.

The Soviet people take pride in the fact that the ideas and theoretical bases of interplanetary flights laid by our compatriots, as well as the solving of the principal technical problems of rocket technology during

the creation of rocket weapons during the years of the Great Patriotic War made it possible for our country to first lay the path of mankind into space. The space age was opened by the launching of a Soviet artificial earth satellite. The solution of the problem of the investigation and conquest of space required the development of many new directions of science and technology and the creation of new branches of industry. The first person to visit space was a citizen of the Soviet Union – Yurii Gagarin. Soviet science has made great achievements in explorations of the moon, Mars, and Venus. Space research plays a decisive role in the development of important scientific and practical "ground" problems, particularly problems of long-range and television radio communication, weather service, and the study of natural resources.

The Siberian Branch of the Academy of Sciences of the USSR was organized in 1957. One of the largest scientific centers of the Soviet Union was created and is successfully operated by the efforts of the scientists of the Siberian Branch. The institutes of the Siberian Branch have achieved great successes in research on theoretical and applied mathematics, hydrodynamics, nuclear physics, chemistry, and geology. Other large scientific centers (the Ural and Far Eastern Centers and others) and unique experimental installations have also been founded in the country: atomic reactors, charged particle accelerators, and telescopes.

In 1961 and 1963 important measures were taken to increase the role of the Academy of Sciences of the USSR in the organization of fundamental research in the country. The measures taken furthered the drawing together of the science of the republics of the Soviet Union and the attainment of a single scientific and technological policy in the country.

The 24th Session of the Communist Party emphasized that successes in the development of the economy and culture and strengthening of the defensive capacity of the country in the epoch of the scientific and technological revolution are primarily determined by the achievements of science and the ability to utilize its results for rapid technological progress. Great tasks stand before Soviet science and its vanguard – the Academy of Sciences of the USSR. Of decisive importance is the work on long-range planning and forecasting of the fundamental scientific studies and the employment of their results in the practice of the national economy, on the preparation of highly qualified scientific personnel for the new urgent directions of science, on the equipping of scientific research with the newest apparatus, and on further mathematization and automation of scientific research on the basis of computer technology.

Soviet scientists are doing everything for the attainment of new frontiers in science, for the acceleration of technological progress, and for the solution of the economic and social-political tasks set by the 24th Session of the Communist Party of the Soviet Union.