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

The highest scientific institution in the Soviet Union, the Academy of Sciences of the USSR, is 250 years old. This, the oldest scientific organization in the Soviet Union, has played an outstanding role in the development of Russian and world science and today it is the mainstay of Soviet science. This anniversary of the Academy of Sciences of the USSR is being observed at a time when science is playing an increasing role in all spheres of life and in the activity of the developed socialist society, and it is the subject of a special decree by the Central Committee of the CPSU. These 250 years have seen many changes: social, economic, scientific, and technical. The Academy of Sciences has become a powerful organization directing the science of a progressive country constructing a communist society; an organization striving for peace and for the good of mankind.

The Academy was created in accordance with the plan of Peter the Great as a State institution charged with the tasks of developing science, of satisfying the scientific and technical requirements of the country, of spreading scientific knowledge, and of educating scientists. It is interesting to note that the first President of the Academy was the physician Laventii Lavren'evich Blumentrost (born in Moscow in 1692, died in St. Petersburg in 1755), and that one of the first buildings erected for the Academy was the Anatomy Theater.

Because of a lack of native scientists in Russia at that time suitable persons had to be invited from abroad; some of them were young and their destiny was closely linked with the Academy; they prospered in Russia and left a deep imprint in world science. For example, Daniel Bernoulli became a member of the Academy in the year of its foundation (1724) at the age of 25 years, while in 1727 Leonard Euler (1707-1783), who became a great mathematician, was appointed a member at the age of 20 years. That versatile Russian genius – scientist, encyclopedist, naturalist, poet, and social worker, Mikhail Vasil'evich Lomonosov (1711-1765) – began his work at the Academy in 1742. Lomonosov's discoveries in the fields of physics, chemistry, astronomy, and linguistics are well known, and many books and historical papers have been written about his work. It is relevant here to mention Lomonosov's important role in the history of the Academy; he directed its work along a progressive, materialistic course and protested against reactionaries in science; he was one of the founders of Moscow University and the whole of his enormous scientific activity was directed toward the public good. Lomonosov campaigned for the development of medical aid for the population and for the provision of a scientific basis for medicine on physics and chemistry. He indicated the future importance of Siberia, then almost unknown. In fact, the study of Eastern Siberia, Kamchatka, and other remote areas was one of the constant preoccupations of the Academy and as a result data of importance to geography, geology, botany, zoology, and ethnography were obtained. Since that time the Academy has played a leading part in the study of the natural resources of Russia.

The Academy of Sciences was always concerned with problems in biology and medicine. It is curious to note that at the solemn meeting held on the 50th Anniversary of the Academy the only prize was awarded for a communication which "explained the formation of the blood." On the whole, the Academy of Sciences in the 18th Century was the principal source of the new Russian science.

The general situation changed in the 19th Century. Universities were established in several cities and the medico-surgical academy and other higher educational establishments were created. The Academy of Sciences was no longer the only scientific center of the country and its applied activities were transferred to special institutions. A gulf appeared between theoretical research and practical problems. The Academy

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diminished in size. For instance, in the first hundred years of its existence the number of Academicians rose only from 15 to 22 (the number concerned with biological sciences rose from four to five). There was no scientific institute in the Academy, the financial and material provision was limited, and the initiative of the scientists was often cramped by high-ranking officials of the Czarist government. In the first half of the 19th Century the zoological, botanical, anatomical, mineralogical, and Asiatic museums and the Pulkovskaya and Magnetic Observatories were founded. In the whole of the second half of the 19th Century only three small laboratories were opened (physiology, zoology, and plant physiology). Nevertheless, fundamental research developed successfully within the walls of the Academy in the various fields of science (mathematics, physics, astronomy, chemistry, biology). The names of Academicians K. M. Baer, and A. O. Kovalevskii, the founders of comparative embryology, and of other biologist academicians (for example, the physiologist F. V. Ovsyannikov, who discovered the vasomotor center in the medulla) have a permanent place in the history of science. However, Russian science no longer flourished within the walls of the Academy and as a result of the intrigues of reactionary forces and interference from the ruling circles not even such outstanding scientists as I. M. Sechenov, D. I. Mendeleev, I. I. Mechnikov, and K. A. Timiryazev became active members of the Academy.

In 1907 the great Russian physiologist Ivan Petrovich Pavlov, who had already been awarded a Nobel Prize for his classical work on the physiology of digestion, became an Academician.

With the great October Socialist Revolution, opening a new era in the history of mankind, a new era in the history of the Academy of Sciences also began. At the beginning of 1918, in the period of postwar destruction, V. I. Lenin summoned the best scientific forces of the country and, in particular, the Academy of Sciences to undertake urgent and extremely important tasks on behalf of the State. Not all scientists at that time still understood the historical significance of the October Revolution and the prospects for the development of science and culture which it revealed. Nevertheless, by February, 1918, the General Assembly of the Academy of Sciences declared: "The Academy is always ready at the request of life and the State to undertake the scientific and theoretical examinations of particular problems arising from the needs of State construction to the limit of its ability, acting as an organizing center concentrating the scientific forces of the country."* The active and fruitful participation of the Academy in the drawing up of the plan for the reorganization of industry, for the study of natural resources, and for the development of Lenin's State Electrification Plan began at once. Important theoretical investigations developed and the Physiological Institute, directed by I. P. Pavlov, the Physicotechnical Institute, directed by Academician A. F. Ioffe, the Atomic Commission, and the Commission for the Investigation of Molecular Structure were created; in 1919 the Academy of Sciences of the Ukrainian SSR was organized. By 1925 the Academy of Sciences already contained 7 institutes and 11 independent laboratories (in 1916 there had been no institute and only 5 laboratories). The great scientific achievements of the Academy in the first years of Soviet rule and its contribution to the reconstruction and development of the national economy were highly esteemed by the Soviet government. In July, 1925, the Central Executive Committee and the Council of Peoples' Commissars passed a resolution "on recognition of the Russian Academy of Sciences as the highest scientific institution of the USSR." It received its present name of "Academy of Sciences of the Union of Soviet Socialist Republics." Jubilee celebrations were organized on the 200th Anniversary of the Academy of Sciences, attended in Leningrad by 1000 Soviet and 100 foreign scientists.

In the subsequent 50 years the Academy has made enormous contributions to science, has opened new fields of knowledge to mankind, and has played an important role in the construction of the developing socialist society and to the defensive might of the fatherland; even to list its principal achievements briefly would be impossible within the scope of this paper. As a result of the planned development of science, what Academician S. I. Vavilov calls the "continuity of the scientific-technical front," was achieved.

In the fields of biology and medicine the work of Academician I. P. Pavlov and his school on the study of the physiology of the higher levels of the brain and the theory of higher nervous activity obtained worldwide recognition. The regulation of activity of the internal organs by the higher levels of the brain, evolutionary physiology and biochemistry, and the problem of trophic nervous control under normal and pathological conditions were studied actively. Research in biochemistry begun at the beginning of the present century by Academicians V. I. Palladin and V. S. Gulevich were extended widely. At the Institutes of the Academy (A. N. Bakh Institute of Biochemistry, Institute of Molecular Biology, etc.) fundamentally new ideas on enzymes were put forward and the enzymic properties of muscle proteins, notably myosin, were

*V. I. Lenin and the Academy of Sciences, collection of documents, Moscow (1969), p. 28.

discovered. This discovery laid the foundations of a new science – muscle mechanochemistry. The discovery of transamination processes and the description of the sequence of arrangement of all the amino-acid residues in the molecule of the enzyme aspartate-aminotransferase were important contributions of Soviet biochemistry to world science.

The outstanding investigations of Academicians N. E. Pavlovskii and K. I. Skryabin in zoology, parasitology, and helminthology have led to the formation of new fields of science and have placed the control of dangerous diseases on a scientific basis. The new science of cosmic biology and aerospace medicine has arisen and has grown on the basis of the brilliant achievement of the Soviet Union in the conquest of space. Only a few of the achievements of the Academy of Sciences in the field of biology in the last decades are given above.

The Academy of Sciences coordinates the activity of the Academies of Sciences of the Union Republics and of its own branches in Siberia and the Far East and it is the organizer of a group of biological institutes near Moscow (at Pushchino-on-Oka).

The Academy of Sciences of the USSR is closely linked with the Academy of Medical Sciences of the USSR. On the organization of the Academy of Medical Sciences in 1944 eminent biologists and medical scientists who were members of the Academy of Sciences of the USSR were appointed to it; the surgeon N. N. Burdenko, elected First President of the Academy of Medical Sciences of the USSR, the physiologists L. A. Orbeli and L. S. Shtern (the first editor-in-chief of this journal), and the eminent pathologists Academicians A. I. Abrikosov, N. N. Anichkov, A. A. Bogomolets, and A. D. Speranskii will be recalled.

In the following years and at the present time several Academicians and Corresponding Members of the Academy of Medical Sciences of the USSR have become members of the Academy of Sciences of the USSR. In this way the development of biological and medical science can be coordinated and planned on a nationwide scale and its links with other sciences can be strengthened.

The Academy of Sciences of the USSR has always maintained links with Academies, scientific societies, and individual scientists in other countries. Suffice it to recall that the list of foreign members of the Academy of Sciences (Honorary Members and Corresponding Members) has included such eminent scientists and thinkers as Voltaire, Diderot, Franklin, Linnaeus, Goethe, Lyell, Virchow, Darwin, Pasteur, Nansen, and many others. Many members of the Academy of Sciences of the USSR have been elected Honorary Members of the Academies and scientific societies of various countries.

Science is now faced with global problems which can be successfully solved only on a scale of international collaboration. These include the problems of protecting nature and the control of pollution of man's environment, the rational use of the resources of the Pacific Ocean, the conquest of space, and so on. The widening of links between scientists in different countries and the closer coordination of their efforts must lead at the same time to better mutual understanding, thereby reducing international tensions and helping with the task of obtaining a stable world, vital to the whole of mankind. The Academy of Sciences of the USSR has continuously widened its links with foreign science; in 1973 alone thousands of Soviet scientists went on scientific delegations to various countries of the world and many foreign scientists were familiarized with the work of the Institutes of the Academy of Sciences, took part in conferences and symposia organized by it, and were honored guests of the Academy. Many members of the Academy of Sciences of the USSR participate in the publication of international scientific journals. Representatives of Soviet science are members of 150 international scientific organizations. Agreements have been concluded with the USA and France on the coordination of programs of combined scientific research, which are being successfully carried out, and scientific contacts are being developed by the Academy with scientific circles in West Germany, Great Britain, and other countries. Long-term programs of multilateral collaboration, in the performance of which more than 30 Soviet scientific institutions are partcipating, have been developed with the Academies of Sciences of the Socialist States and are being put into effect.

The Academy of Sciences of the USSR has many great achievements to show on its 250th Anniversary. It unites the efforts of many powerful scientific institutions, combining the study of fundamental problems with the realization of the achievements of science for the public good. The authority of the Academy is high throughout the world; it enjoys the deep respect of the Soviet people. On the occasion of its anniversary the Academy of Sciences of the USSR was awarded the Order of Lenin. There is no doubt that in the future the Academy of Sciences and Soviet science as a whole will win even greater scientific achievements and will make its worthy contribution to the completion of the grandiose tasks laid down by the 24th Congress of the CPSU for increasing the rate of scientific and technical progress, for further increasing the efficiency

of socialist production, and for raising the standard of living of the Soviet people. A guarantee of this success is the methodology of dialectical materialism, the basis of Soviet science, combined with the advantages of socialist construction and the constant regard of the Party and Government for the development of science in the Soviet Union.