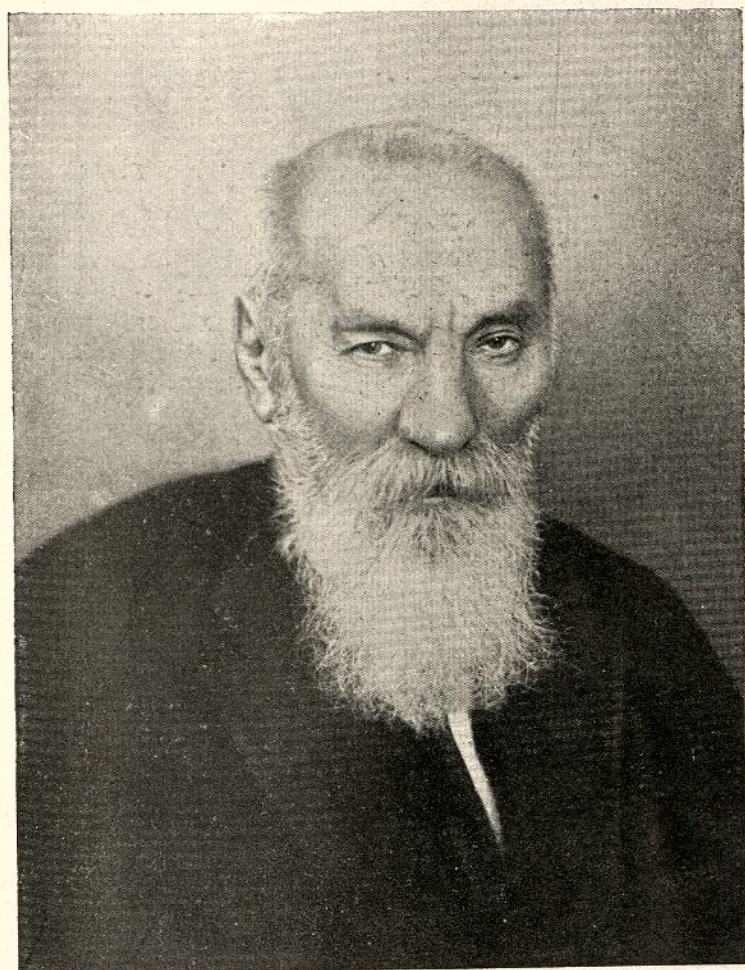




A. N. BACH

Alexei Nikolayevich Bach, dean of Russian chemists, died on May 13, 1946 at the age of eighty nine.

The life of Bach is a rare example of a harmonic synthesis of scientific and political activity. Bach was born in Zolotonosha, Poltava Province, in March 1857. In 1875 he entered the Kiev University, from which he was expelled in 1878 and exiled to the north of the country for participation in university troubles. The persecutions of the tsarist government forced him to emigrate in 1885. It was only in 1890 that he had the possibility to engage in experimental research in the laboratory of Prof. Schutzenberger at the Collège de France. Three years later, in 1893, his first paper: «Sur le mécanisme de la décomposition de l'acide carbonique sous l'influence des rayons solaires» was communicated to the Academy of Sciences in Paris. In 1894 Bach moved to Geneva, where he organized a small modest laboratory in which he pursued his experimental researches during twenty three years. Only the revolution of 1917 gave Bach the possibility of returning to Russia, where he not only continued his own scientific work, but played an outstanding role in developing and organizing chemistry. In 1918 together with L. Karpov he organized the Central Chemical Laboratory of the Supreme Council of the National Economy, which was later reorganized into the Karpov Institute of Physical Chemistry, the first chemical research institution to be founded under the Soviet government. The Karpov Institute became later the most important centre for the development of physical chemistry in the Soviet Union. In 1920, together with B. Sbarsky, he organized the Biochemical Institute of the People's Commissariat of Public Health. In 1935 he became head of the Institute of Biochemistry of the Academy of Sciences of the USSR; in the work of this institute, which bears now his name, Bach's ideas in the field of biochemistry attained their fullest realization.

There was hardly any great undertaking in the field of chemical research in which Bach did not play some part. From 1935 until his death A. N. Bach was president of the Mendeléef All-Union Chemical Society. From 1939 to 1944 he was secretary of the Chemical

Department of the Academy of Sciences. He was one of the founders of the Journal *Acta Physicochimica U.R.S.S.* The Soviet government showed its high appreciation of Bach's services as the founder of Soviet theoretical and applied biochemistry, the organizer of scientific research, and the head of a large scientific school, and also of his faithful devotion to his country, by awarding him a Stalin Prize of the First Degree, decorating him with the Order of the Red Banner of Labour and four times with the Order of Lenin, and conferring on him the title of Hero of Socialist Labor. A. N. Bach was an honorary member of several foreign scientific societies.

Bach's first investigation dealt with the assimilation of carbon dioxide. This directed his attention to the role of peroxides in biological processes and brought him to an explanation of breathing and oxidation based on the initial formation of peroxides. Bach's theory of slow oxidation, developed half a century ago, proved the key to the mechanism of the processes which occur under the action of molecular oxygen. On the basis of a large experimental material Bach came to the conclusion that the activation of the usually passive molecular oxygen is connected with the initial formation of peroxides in the process of the oxidation of easily oxidized substances. The next natural step was the investigation of the nature of oxidation ferments. Bach showed that the most important oxidation ferments of vegetable tissues are the peroxidases, which transfer peroxydic oxygen, and elucidated the nature of oxidases. As a result of these investigations the peroxide theory, originally formulated for simpler systems could be extended to biological processes of breathing. In a number of publications Bach gave a profound analysis of the mechanism of other important enzymatic processes, such as, for example, the phenomena of induced oxidation and reduction. These theoretical researches were accompanied by the creation of new experimental methods of investigating ferments and placed Bach among the foremost representatives of world biochemistry. For Bach biochemistry was always first and above all a science of processes, not of substances. This dynamical approach to biochemistry brought Bach very close to modern physical chemistry. His ideas on the mechanism of enzymatic processes formed the basis of investigations in technical biochemistry which were extensively developed at the Institute of Biochemistry and made it possible to rationalize numerous industrial processes involving biological raw materials.

As a scientist Bach was characterized by a gift for wide generalizations of scientific facts and simultaneously by a great devotion to experimental work. Despite his heavy public duties he continued to carry on experimental work with his own hands to his eighties. He had an exceptional faculty for attracting young people and communicating them his enthusiasm.

The death of A. N. Bach is a great loss for Soviet and world science.