OBITUARY

GEORGY VLADIMIROVICH AKIMOV

On January 23, 1953, after a serious illness, there passed away the outstanding physical chemist of our country, the greatest representative of Soviet science in the field of corrosion and metallurgy, Georgy Vladimirovich Akimov.

In the development of the science of corrosion of metals our country has always occupied one of the leading places. The outstanding successes in the science of metal corrosion in the past twenty years are indissolubly connected with the name of the talented Soviet scientist-Communist Honored Worker in Science and Technology, Georgy Vladimirovich Akimov.

G.V Akimov was born in 1901 in the family of a teacher at a trade institute. On finishing his secondary education in 1915, G.V. Akimov entered the Physical-Mathematical Faculty of Moscow State University. However circumstances at that time did not allow G.V. Akimov to continue his education. As a 17-year old youth he entered the ranks of the Red Army as a volunteer and took an active part in the Civil War. While he was still in the Red Army, in March 1920, Georgy Vladimirovich entered the ranks of the Communist Party and tirelessly served the cause of the Party until the last days of his life. At the end of the Civil War Georgy Vladimirovich was demobilized in order that he might continue his education at the Moscow Higher Technical Institute in the Chemical faculty, and he began to specialize in metallurgy and treatment of metals. In 1926, G.V. Akimov graduated from the Chemical Faculty of the MYTU, receiving the degree of Engineer-Technologist, and began his scientific and engineering work in the aviation industry, which at that time was not only founded. Our country was faced with the problem of mastering and creating new corrosion resistant light alloys, stainless and heat-resistant steels required for aeroplanes and other engines. Georgy Vladimirovich ardently undertook the solution of these problems.

G.V. Akimov founded the first laboratory specializing in corrosion and carried out deep theoretical and practical investigations on metal corrosion. Even the early work of G.V. Akimov was noted for its scientific depth, its originality and for its great practical importance. The following are the most important investigations which he carried out in 1927-1932: A study of the corrosion behavior of duralumin in contact with other metals; a method for the protection of aluminum alloys with the aid of protectors; the study of the corrosion behavior of riveted seams and the establishing of suitable composition of rivets; the protection of aluminum alloys with the aid of metallization, etc.

In 1927 G.V. Akimov discovered and explained the protective action of zinc on aluminum and its alloys, although in the literature of the time it was held that such a protection was not possible. In the same year, discussing results obtained on metallic contacts, G.V. Akimov arrived at the concept of multielectrode systems. In 1928, G.V. Akimov wrote the monograph "Metals and Alloys in Chemical Plant Construction", which for a long time was the only guide on the corrosion behavior of metallic materials.

In 1929-1931 G.V. Akimov carried out a series of researches on stainless steels and developed new steels. The range of his scientific researches was constantly widening.

In 1931, G.V. Akimov, for the first time, organized a Department of Metal Corrosion in the Moscow Institute of Non-Ferrous Metals and he gave the first lectures in the course.

In 1933-38 Georgy Vladimirovich undertook the wide development of the theory of multielectrode systems, the elucidation of the loss in corrosion processes with oxygen and hydrogen depolarization, the study of non-equilibrium electrode potentials of pure metals insolid solution. The results of these researches were given to a series of conferences and published, both as articles and as individual monographs.

As a result of the scientific and pedagogic activity of G.V. Akimov, a school of Soviet corrosion specialists, the largest in the world, has been founded.

In 1939, G.V. Akimov was elected a corresponding member of the Academy of Sciences, USSR. From that time, as well as carrying out his work in the aviation industry, G.V. Akimov guided the work on metal corrosion in the Institute of Physical Chemistry, Acad. Sci. USSR. An outstanding feature of the laboratories founded by G.V. Akimov was their close and indissoluble connection with industry, which permitted them to put the latest scientific advances into practice. In 1947, G.V. Akimov organized a commission on the prevention of metal corrosion under the Division of Chemical Sciences Acad. Sci. USSR and this carried out fruitful work under his

leadership and direction—the work on the prevention of metal corrosion in our country. Under his guidance a network of corrosion stations was organized in the USSR and a number of important problems was solved.

From 1949 until his death, G. V. Akimov was Director of the Institute of Physical Chemistry Acad. Sci. USSR and at the same time he continued to direct the Division of Corrosion of the same Institute as well as the VIAM Laboratories. From that time G.V. Akimov was a member of the Editorial Committee of the Journal of Physical Chemistry. The scientific activity of G.V. Akimov was many-sided. His fundamental investigations in the field of metal corrosion are well known; among them the following may be specially mentioned :

1) Work on the irreversible electrode potentials of metals of importance in the theory of corrosion. In this work the importance of non-equilibrium potentials in corrosion processes was first shown and an extremely large amount of experimental material was obtained and the theory of irreversible potential developed.

2) Work on the theory of multielectrode galvanic systems and their application to corrosion problems. The concept of corroding metals as multielectrode systems was first put forward by G.V.Amikov in 1927.

In recent years, G.V. Akimov and his students completed the development of the theory of multielectrode systems and this permitted the solution of very important theoretical and practical problems in the corrosion of complex metallic systems.

3) Work on the study of the electrochemical properties of protective films in which the connection between protective films and electrochemical factors (the existence of anode, cathode and inert areas) was first shown. In this work, it was also unambiguously shown that there was a connection between the passsivity of stainless steels and protective films.

4) Work on the mechanism of the corrosion process. G.V. Akimov and his school made an especially large contribution in the field of corrosion processes with oxygen depolarization. As is known, these processes include the most important technical cases of aluminum and iron corrosion. Here new relationships were discovered and explained; for example, the nature of the connection between the corrosion current and the cathode area: the dependence of the corrosion current over a wide range on changes in the ohmic resistance, the initial electrode potential and anode area.

5) Work on the study of microgalvanic elements in which, with the aid of refined methods of investigation on actual structure components of alloys, the quantitative confirmation of the microelement hypothesis was obtained.

6) Work on the electrochemical and corrosion behavior of metals and alloys in oxidation.

G.V. Akimov was also widely known for his work in the field of the physical chemistry of metals. He published a number of papers on the internal transformations and the technological properties of stainless steels, which played an important part in the development of stainless steel production in the USSR. He directed work in the field of physical methods for the study of metals, including the field of electron microscopy and ultrasonic defectoscopy of heat-stable alloys, steels and aluminum alloys.

The Theoretical work of G. V. Akimov enabled him to solve a number of practical problems, of which the following are the most important:

(1) the development of new methods for the protection of aluminum alloys;

(2) the development of methods for the protection of construction work;

(3) the development of methods for the prevention of gas corrosion;

(4) the development of new methods for the physical chemical study of metals.

G.V. Akimov published about 200 scientific papers. In addition to these scientific papers, he wrote 5 monographs and one textbook. Of these, his book "Theory and Methods of Investigation of Metal Corrosion" was awarded a Stalin prize. For his outstanding work in the study of the electrochemical protection of films Georgy Vladimirovich was awarded the D.I. Mendeleev prize in 1952.

For his fruitful scientific work G.V. Akimov was twice decorated by the Government with the Order of Lenin, with the Order of the Red Banner of Labor and was three times awarded the Stalin prize. He was also made an Honored Worker in Science and Technology.

The progressive Soviet Scientist-Communist, G.V.Akimov, succeeded in skillfully combining deep theoretical studies with the solution of practical problems. G.V. Akimov selflessly gave of his strength and his knowledge for the benefit of our great motherland. The memory of Georgy Vladimirovich, an outstanding patriot of our country, will always be preserved in the history of our national science.