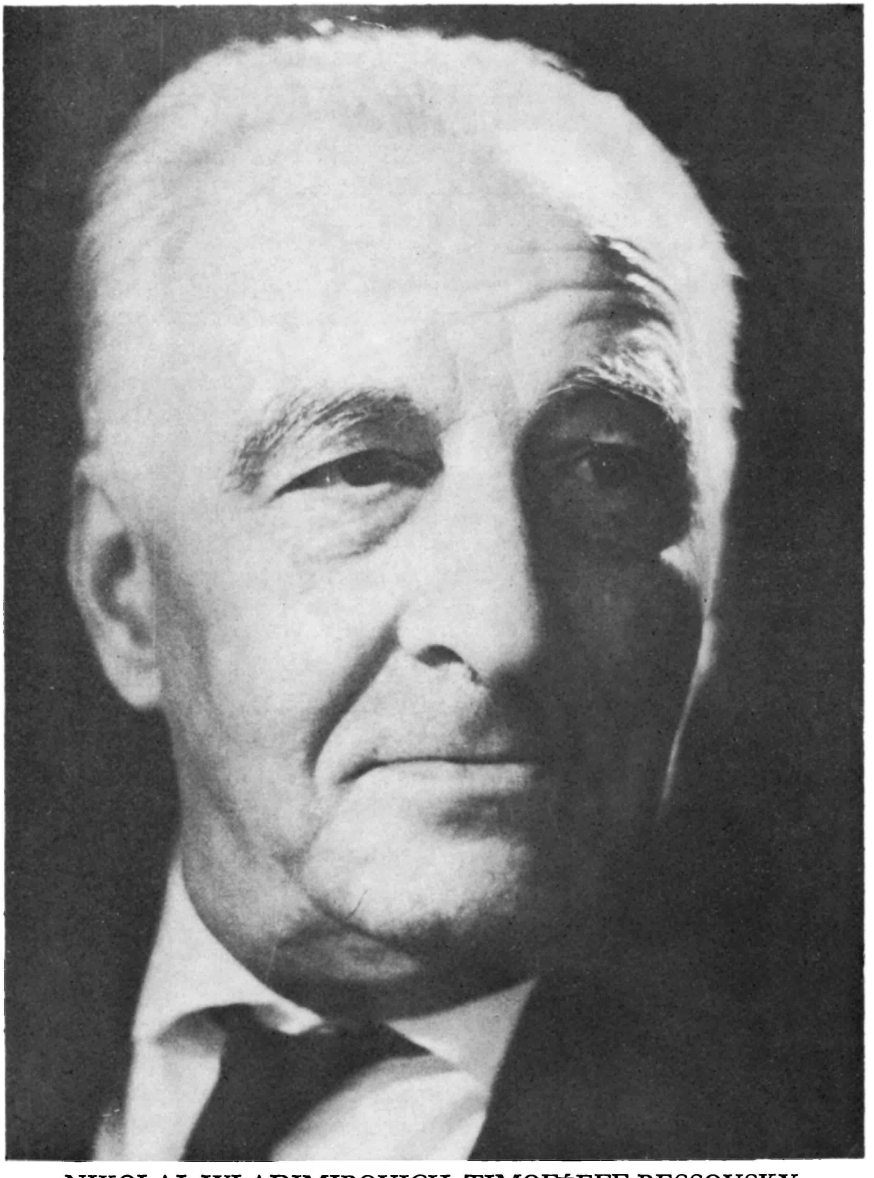
GENETICS

A periodical record of investigations bearing on heredity and variation

VOLUME 100 JANUARY 1982 NUMBER ONE

CONTENTS

PUBLISHED MONTHLY AT AUSTIN, TEXAS
BY THE GENETICS SOCIETY OF AMERICA



NIKOLAI WLADIMIROVICH TIMOFÉEFF-RESSOVSKY

(1900–1981)

NIKOLAI WLADIMIROVICH TIMOFÉEFF-RESSOVSKY, eminent and world-renowned geneticist and evolutionist, was born on September 7, 1900, at the family estate in Kaluga province, Russia. He died on March 28, 1981, in Obninsk, Kaluga region, only a few miles from his father's estate. His father belonged to the Russian nobility, but in 1900 was poor and lived on his estate, which bordered the river Ressa. According to local tradition, his older son was able to add to his sur-

name Timoféeff an additional one, Ressovsky, which in the Russian language indicates the place where he was born. Many such double names existed among Russian nobility, but most dropped the second name after 1917; Nikolai Wladimirovich never did.

Between September 1900 and March 1981 lies the remarkable life of a unique and talented personality. When the October Revolution of 1917 changed the old Russia, Timoféeff was already a student at Moscow University. At first, he did not know which side of the conflict to join. Politically, at that time, he was the follower of anarchists; Kropotkin was his hero. In 1918, Timoféeff volunteered to serve in a small anarchist cavalry unit—part of the "Green" anarchist army. They declared themselves "Green" to show that they belonged to neither the "Red" nor the "White" armies. However, as the Civil War developed into a life-and-death conflict, it became impossible to avoid taking sides. In 1919, the anarchists joined the Red Army; as a private of the Red Army, Timoféeff took part in the last battles of the Civil War in the Crimea and on the Polish front.

In 1922, Timoféeff resumed his studies at the Moscow University and started his genetic experiments in the department that was headed by S. S. Chetverikov, the founder of population genetics. Here, he took an active part in the very stimulating regular seminar, which is now considered to be the founding school of genetics in the USSR and the source of many ideas that were developed later. At the same time, Timoféeff started experimental research with Drosophila at the Research Institute of Experimental Biology, which was founded in Moscow by the cytologist and biologist, N. K. Kol'tsov. During this period he married Elena Fidler, who was also studying genetics at the University. Elena Alexandrovna Timoféeff-Ressovsky became the close colleague and collaborator of her husband. They worked and published together all through the later years. (Elena Alexandrovna died in Obninsk on 29 April 1973.)

In Kol'tsov's Institute, Timoféeff quickly established himself as an excellent experimenter and theoretician. In 1924, the Soviet Government made a special exchange agreement with Germany. The famous Kaiser Wilhelm Institute for Brain Research in Berlin-Buch was invited to help organize in Moscow a laboratory for brain research, specially designed to study the brain of Lenin, who had died in January 1924. (At the time of his death, Lenin was considered to be the greatest of geniuses, and his brain was expected to be unique. No subsequent publications in this special field of brain research were made by Soviet scientists.) In exchange, the Soviet Academy of Sciences promised to help set up in Berlin a laboratory of experimental genetics. Among the young scientists who were recommended to start work in the Berlin laboratory was Timoféeff. He left for Germany in 1926.

Timoféeff was an energetic researcher and prolific author. His first publications, beginning in 1924, were in the field of phenogenetics. In a study of the mutant vena transversa incompletus in *D. funebris* he formulated the main principles of phenogenetics. Shortly thereafter, at Berlin-Buch, he became involved in mutation studies, especially mutations induced by X rays. During this period he started work in population genetics, specifically on the polymorphism of the

beetle *Adalia bipunctata*. Timoféeff's Berlin-Buch period of research was his most productive. During the period from 1926 to 1946, he authored or co-authored more than 100 papers written in German, English, Russian and French. Like Chetverikov, Timoféeff organized a permanent seminar (a kind of workshop on experimental genetics) that attracted many young scientists. The Timoféeff group soon developed into a famous research center that attracted young post-doctoral students who ultimately became prominent scientists, including Buzzati-Traverso, Delbrück, Zimmer, Hans Bauer and Zarapkin.

In the field of radiation genetics, Timoféeff closely collaborated with K. G. Zimmer. During this period, Timoféeff became famous, mainly because of his research on the physico-chemical nature of radiation damage and the "target theory," which much later pointed to DNA as the main target of radiation damage. His position in German science grew; his section of the Kaiser Wilhelm Institute attained the status of an institute. In 1932, Timoféeff took part in the 6th International Congress of Genetics at Ithaca, N. Y., where he established friendly relations with N. I. Vavilov, president of the Soviet Academy of Agricultural Sciences and a famous plant geneticist. He also attended the 7th International Congress of Genetics convened at Edinburgh, Scotland in 1939.

Timoféeff was not an emigré in the strict sense, and several times he considered the possibility of returning to the Soviet Union. His friends in Moscow, however, strongly advised him to not do so; they were concerned for his safety. In 1929, Professor Chetverikov was arrested and exiled, and the field of genetics experienced its first period of repression (1929–31). In the period from 1936 to 1940, many prominent Soviet geneticists, including Vavilov, Karpetchenko and Levit, were arrested and later died in prison. Others, like Kol'tsov and Astaurov, were dismissed from their positions. Timoféeff's younger brothers were also arrested; one in Leningrad was executed, the other in Irkutsk survived. Many relatives of Elena Alexandrovna Timoféeff-Ressovsky were also arrested and perished.

Neither life nor work in Germany after 1933 was easy. During the Nazi period, Timoféeff's older son joined an anti-fascist underground group, but was arrested and executed by the Gestapo in 1943. Officially, Timoféeff was still a Soviet citizen; he traveled with a so-called "Consular" Soviet passport, a Soviet passport issued abroad. In 1939, when the war broke out, it became difficult to leave Germany. Thus, Timoféeff and his family spent the war years in Berlin. In the face of difficulties imposed by the war-time conditions, Timoféeff maintained an active, functioning research laboratory and published numerous scientific papers. Under his guidance, the seminar he had earlier established met regularly. In his customary candid and forthright manner, he fearlessly expressed his view on the eventual outcome of the war: Nazi Germany was doomed to defeat.

When the Soviet army occupied East Germany and Berlin in 1945, Timoféeff was arrested and sent to a Soviet prison camp in North Kazakhstan. For two years, he was a common prisoner and nobody heard from him. Some presumed that he was dead. The irrepressible Timoféeff, even when imprisoned, somehow managed to organize a scientific seminar. Such was the spirit of the man.

However, in 1947, when the Soviet Union became deeply engaged in military nuclear research, a special secret prison research facility was set up in the Ural mountains near Sverdlovsk, where scientists from Germany (prisoners of war and deportees) were able to begin research on the biological effects of radiation. Radiobiology again became an important field of research. In 1947, Elena Alexandrovna was permitted (if she so wished) to join her husband in the prison research institute. She left Berlin with their younger son, Andrei, in 1948 and went to the Urals. At the prison research facility, Timoféeff started a study on some problems of radiation ecology—the character of distribution of radioactive isotopes in natural bio-ecological systems. In 1955, at the beginning of Khruschchev's de-Stalinization drive, he and his wife were released from prison.

After his release, Timoféeff decided to remain in Sverdlovsk. At the Ural Division of the Academy of Sciences of the USSR, he organized the Laboratory of Biophysics and a special experimental station near Lake Miass for radio-ecological research experiments on radiation and population genetics. (This is now an Institute of Ecology of the Academy of Science, USSR.) Once again he initiated his scientific seminars, which quickly developed into annual unofficial workshops on genetics where dozens of young and old scientists from all over the USSR received their first experience in genetics, which was officially (until 1965) a forbidden field of research.

In 1964, Timoféeff was invited to Obninsk to organize the Department of Genetics and Radiobiology at the new Institute of Medical Radiology. He personally supervised the organization and headed two laboratories, the Laboratory of Radiation Genetics and the Laboratory of Radiation Ecology. Two other laboratories, Cellular Radiobiology (Head, V. I. Korogodin) and Molecular Radiobiology (Head, Zh. A. Medvedev) were also included in the department. For me, the work under Timoféeff was a great and unforgettable experience. His competence in many fields of genetics and biology, his great dynamism and personal magnetism were enormously stimulating factors in the work of the entire department. At Obninsk, Timoféeff established the first group in the USSR to study the genetics of Arabidopsis.

Several well-known figures in contemporary Soviet genetics started their research and received their degrees in Obninsk working with Timoféeff. These include Nikolai Bochkov, Director of the Institute of Medical Genetics in Moscow, and Vladimir Ivanov, Chief of the Laboratory of Experimental Genetics in the same institute.

During his Obninsk period, Timoféeff continued his indefatigable research and writing, publishing two books and more than 60 papers in population genetics, radiation biology and evolution in spite of his poor vision, which was the direct result of the near-starvation conditions he survived during the Gulag period of 1945–47. Throughout his research career, his wife was his closest collaborator; subsequent to 1947, she provided the eyes, reading the literature to him, taking dictation, consulting and editing his manuscripts.

In 1970, Timoféeff retired from his administrative position in Obninsk, but continued to write and work as a consultant. He was a consultant on some of the

research projects at the Institute of Medical Biological Problems, Moscow, which was engaged in space genetics and biological research. He also served as a consultant on projects at the Institute of Developmental Biology, Moscow, and at Moscow University. Even in retirement, he continued his writing. His last book (co-authored with A. V. Savich and M. I. Shal'nov), entitled *Introduction to Molecular Radiobiology*, was published in 1981.

Although, after his return to the Soviet Union, Timoféeff was not allowed to travel abroad, he nonetheless maintained contact with his foreign friends. Some he met at the second meeting of the Vavilov Society of Genetics and Selection convened in Moscow in 1972; others he met at the 14th International Congress of Genetics in Moscow in 1978.

Although he was an eminent geneticist and evolutionist with an international reputation, Timoféeff did not receive any academic degrees during his residence in Germany. In fact, he had little interest in academic degrees. Later, when he returned to the Soviet Union, it was impossible during the Lysenko period to obtain an academic degree for research in the field of "classical" genetics. When Timoféeff received the invitation to head the Department of Genetics in Obninsk, the position could hardly be conferred by the Presidium of the Academy of Medical Sciences on someone lacking appropriate academic credentials. Consequently, Timoféeff wrote a doctoral dissertation on radiation ecology, which he defended before a special academic council of the Ural Division of the Soviet Academy. However, he was formally awarded the degree "Doctor of Biological Sciences" after the fall of Lysenko at the end of 1964; and only in 1966 was he invested with the title of "Professor" for his contributions to graduate student research in genetics.

Among his honors, Timoféeff was elected a member of the German Academia Leopoldina and in 1959 was awarded the Darwin Medal by the Academia. He received the Mendel Medal of the Czechoslovak Academy of Sciences in 1965 and, in 1966, the Kimber Genetics Award of the U. S. National Academy of Sciences for his distinguished contributions to genetics. He was a founding member of the German Biophysical Society and the Soviet Vavilov Society of Genetics and Selection.

With the death of Nikolai Wladimirovich Timoféeff-Ressovsky, the era of "classical" genetics in the Soviet Union comes to an end. This era produced scholars of enormous breadth and erudition—Chetverikov, Vavilov, Dobzhansky and Timoféeff—who left their imprint in the realm of genetics and evolution, often in the face of repression and persecution.

Zhores A. Medvedev
(with editorial assistance from
M. M. Green and G. Lefevre)
National Institute of Medical Research
The Ridgeway
Mill Hill
London, England