

# Somov, Osip Ivanovich | Encyclopedia.com

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(b. Otrada, Moscow gubernia [now Moscow oblast], Russia, 1 June 1815; d. [St. Petersburg](#), Russia [now Leningrad, U. S. S. R.], 26 April 1876)

*mathematics, mechanics.*

Somov graduated from the Gymnasium in Moscow and enrolled at the Faculty of Physics and Mathematics of Moscow University. After graduating in 1835, he published a work on the theory of determinate algebraic equations of higher degree (1838), in which he manifested not only deep knowledge but also extraordinary skill in presenting the newest achievements of algebraic analysis.

Somov's pedagogic career began in 1839 at the Moscow Commercial College. After defending his master's dissertation in Moscow, he was invited to [St. Petersburg](#) University in 1841 and taught various courses in mathematics and mechanics there for the next twenty-five years. Somov defended his doctoral dissertation at St. Petersburg and was awarded the title of professor of applied mathematics.

In 1857 Somov was elected an associate member of the St. Petersburg Academy of Sciences, and in 1862 he succeeded Ostrogradsky as academician.

Turning his attention to problems of the mechanics, Somov applied results obtained in analytical mechanics to specifically geometrical problems. He is rightfully considered the originator of the geometrical trend in theoretical mechanics in Russia during the second half of the nineteenth century. In the theory of elliptical function and their application to mechanics, he completed the solution of the problem concerning the rotation of a solid body around an immobile point in the Euler-Poinsot and Lagrange-Poisson examples.

The first in Russia to deal with the solution of kinematic problems, Somov included a chapter on this topic in his textbook on theoretical mechanics. His other kinematic works include studies of a point in curvilinear coordinates. Somov's theory of higher-order accelerations of a point, and an unchanging system of points, was a significant contribution. His works were the first special studies in Russia of  $n$ th-order accelerations of both absolute and relative motions of points. His studies of small oscillations of a system around the position of equilibrium are also important.

## BIBLIOGRAPHY

I. Original Works In addition to more than fifty papers on mechanics and mathematics, Somov published *Teoriya opredelennykh algebraicheskikh uravneny vysshikh stepeny* ("Theory of Determinate Algebraic Equations of Higher Degree" Moscow, 1838); *Analiticheskaya teoriya volnoobraznogo dvizheniya efira* ("Analytic Theory of the Undulatory Motion of the Ether" St. Petersburg, 1847); *Osnovaniya teorii ellipticheskikh funktsiy* ("Foundations of the Theory of Elliptical Functions" St. Petersburg, 1850); *Kurs differentsialnogo ischisleniya* ("Course in Differential Calculus": St. Petersburg, 1852); *Analiticheskaya geometriya* ("Geometry" St. Petersburg 1857); *Nachal'naya algebra* ("Elementary Algebra": St. Petersburg, 1860); *Nachertatel'naya geometriya* ("Descriptive Geometry" St. Petersburg, 1862); and *Ratsional'naya mekhanika* ("Rational Mechanics"), 2 pts. (St. Petersburg 1872–1874) translated into German by A. Ziwet as *Theoretische Mechanik* (Leipzig, 1878).

II. Secondary Literature. Bibliographies of Somov's works are included in Y. L. Geronimus, *Ocherki rabotakh korifeev russkoy mekhaniki* ("Essay on the Works of Leading Russian Mechanists" Moscow, 1952), 58–96; T. R. Nikitorova, *Osip Ivanovich Somov* (Moscow-Leningrad, 1964); and E. I. Zolotarev, "Ob uchenykh trudakh akademika O. I. Somova," in *Zapiski Imperatorskoi akademii nauk*, **31** (1878), 248–266.

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