

Konstantin E. Tsiolkovsky

Birth: September 17, 1857, Izhevskoye, Russia

Death: September 19, 1935

Profession(s): Teacher, inventor, physicist, aviation engineer

Publications: *Investigations of Outer Space by Rocket Devices* (1911), *Aims of Astronauts* (1914)

Remembered for: One of the fathers of rocketry and cosmonautics, along with Goddard and Oberth.

Quotation: "Earth is the cradle of humanity, but one cannot remain in the cradle forever."

A Closer Look:

Konstantin Eduardovich Tsiolkovsky was born September 17, 1857, in Izhevskoye, Russia. He was the son of a Polish deportee to Siberia. At age ten he nearly became deaf from scarlet fever and had to quit school. He refused to be handicapped by his deafness and continued his education on his own at home. His family recognized his thirst for knowledge and sent him to Moscow to attend college. He was accomplished in both science and mathematics and became a teacher at Kaluga, Russia. Even as a teacher, Tsiolkovsky found time to learn. He read Jules Verne's stories of space travel and began to write science fiction stories himself. He introduced elements of science and technology into his stories, such as the problem of controlling a rocket as it moved between gravitational fields. Gradually Tsiolkovsky moved from writing science fiction to writing theoretical papers on topics such as gyroscopes, escape velocities, the principle of action and reaction, and the use of liquid propellant rockets.

In 1894 Tsiolkovsky designed a monoplane that was not flown until 1915. He built the first Russian wind tunnel in 1897. He also was an insightful visionary who thought a great deal about the uses of his beloved rockets to explore and master space. He was the author of *Investigations of Outer Space by Rocket Devices* (1911) and *Aims of Astronauts* (1914). Although rockets had been in use since their invention in twelfth-century China as weapons that evolved from fireworks, it was Tsiolkovsky who used mathematics and physics to study and model the manner in which they operated, called rocket dynamics. In 1903 he published the rocket equation in a Russian aviation magazine. Called the Tsiolkovsky formula, it established the relationships among rocket speed, the speed of the gas at exit, and the mass of the rocket and its propellant. This equation is the basis of much of the spacecraft engineering done today. In 1929 he published his theory of multistage rockets, based on his knowledge of propulsion dynamics.

Tsiolkovsky is remembered for believing in the dominance of humanity throughout space, also known as anthropocosmism. He had grand ideas about space industrialization and the exploitation of its resources. Tsiolkovsky has been honored since his death in 1935. A far side moon crater is named in his honor. In 1989 he was invested in the International Aerospace Hall of Fame. The Konstantin E. Tsiolkovsky State Museum of the History of Cosmonautics in Kaluga, Russia, keeps the importance of his theoretical work before the public. In Russia, Konstantin Tsiolkovsky is called "the father of theoretical and applied cosmonautics." Although the Romanian Oberth and the American Goddard conducted similar research and arrived at comparable conclusions, there is no evidence that each knew details of the other's work. Therefore, all three of these scientists share the title of father of rocketry.

References

<http://www.allstar.fiu.edu/aero/tsiolkovsky.htm> Photograph and biography of Tsiolkovsky from NASA's Aeronautics Learning Laboratory for Science, Technology, and Research.

<http://www.astro.virginia.edu/~eww6n/bios/Tsiolkovsky.html> Biography of Tsiolkovsky.

<http://dbserv.ihep.su/IHEP/eng/tsiolk.htm> Photo of and quotation from Tsiolkovsky.

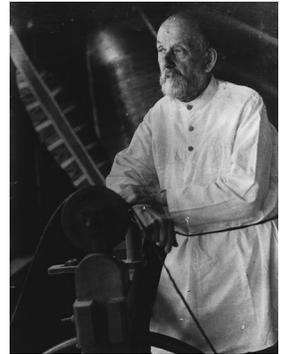


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