Pyotr (Peter) Leonidovich Kapitza Biography

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Contents

Pyotr (Peter) Leonidovich Kapitza Biography.....1

Contents.....2

Biography.....3

Biography

Kapitza was born in Kronstadt, Russia, on July 8, 1894, the son of Russian army general. He was educated at the Petrograd Polytechnical Institute and the Petrograd Physical and Technical Institute. After graduation, he taught for two years (1919-1921) at the Leningrad Polytechnic Institute.

In 1921, Kapitza traveled to England for graduate study, and he conducted research on magnetic phenomena at the Cavendish Laboratory in Cambridge under the direction of Ernest Rutherford. In his experiments Kapitza, he was able to produce magnetic fields whose strength was not surpassed for more than 30 years. In one application of these fields, Kapitza studied the behavior of alpha rays under the influence of magnetism.

After receiving his Ph.D. in physics in 1923, Kapitza chose to stay in England for more than a decade. In 1930, he became director of the Mond Laboratory, built specifically for him by the Royal Society. A year earlier, he had been elected to membership in the Society, the first foreigner so honored in two centuries.

Throughout his stay in England, Kapitza made regular summer trips to Russia to visit his mother. In 1934, Stalin refused to allow Kapitza to return to England; instead, he had Kapitza's equipment purchased and installed him at the Institute for Physical Problems. Kapitza apparently remained voluntarily in Russia thereafter.

Kapitza was awarded a share of the 1978 Nobel Prize for physics in recognition of his research on low-temperature physics. He began that work in Cambridge and continued it after his return to Russia. He was particularly interested in the properties of helium-II, liquid helium that exists below 2.2° K. He discovered that helium-II conducts heat more than 800 times more efficiently than copper and possesses a property he called superfluidity. Superfluidity is the ability of a substance (such as helium-II) to flow even more easily than do gases, climbing up the walls of a container and through a sealed lid.

Kapitza was apparently kept under house arrest from 1945 to 1953 because of his refusal to work in the Soviet atomic weapons program. After Stalin died, however, he was restored to his former position as director of the S. I. Vavilov Institute. Throughout his career, he pursued a varied line of research that included the invention of microwave generators and the study of ball lightning, hydrodynamics, and solid state physics. He died in 1984.