Pavel Alexeevich Cherenkov 1904 - 1990

Awarded the Nobel Prize for Physics in 1958

In modern nuclear physics, the following terms are very common: Cherenkov counters: (even called 'Cherenkators'), Cherenkov angle, Cherenkov radiation. Nowadays, not all physicists are aware that these terms come from the Russian surname Cherenkov. This is how it happened.

At the beginning of the last Century, on 28th July, 1904, a boy, Pavel, was born to a peasant family, the Cherenkovs, in the village of Novaya Chigla, Voronezh province. Two years later his mother died. He and his sister were brought up by a stepmother - not as evil as in fairytales - but not as good as every child would have wished either. Pavel grew up very curious. In winter a heavy frost covered the metal handle of the outside door with sparkling snowflakes. And one day he wanted to touch it with his tongue: it was beautiful, but was it tasty too?! His tongue immediately froze to the handle; the boy guessed how to defrost it on his own, without adult help. He loved reading. He was lucky that their village had a library, the only one in the region. He was a good student and his teachers said he would have a great future.

He grew up at a time of war and revolution. In 1928 he graduated from the Physics and Mathematics Department of Voronezh University. In 1930 he started postgraduate work at the Academy of Sciences in Leningrad (now St. Petersburg). Working with his supervisor, the great physicist and great man, Sergei Vavilov, in the field of optics, Cherenkov discovered a weak shining background light, which impeded his main research. He devoted 6 years to studying this weak blue light. His experiments resulted in the discovery of a new phenomenon in physics, now termed Cherenkov radiation.





Snowflakes... beautiful, but maybe tasty, too?

He devoted 6 years to studying this weak blue light





In 1958 he, and the theoretical physicists Frank and Tamm, were awarded the Nobel Prize for the discovery and explanation of the Cherenkov effect. Cherenkov radiation is interesting because it is caused by elementary particles, moving faster than light. But how can that be?! It's easy: the speed of light in matter is less than in a vacuum, and the particles can overtake it. This property is so useful for scientists carrying out experiments that they even use it for studying very distant galaxies.

In later years, Cherenkov's research was related to the physics of cosmic rays, the physics and technology of large installations, the so-called 'accelerators' of elementary particles.

Cherenkov had many difficulties in his life in addition to his orphan childhood. In 1938 his father Aleksei Yegorovich Cherenkov was shot as a 'kulak' (i.e. a 'rich' peasant). His father-in-law, a Professor of Russian literature, was also oppressed and spent 2 years in a labour camp. When Cherenkov was a postgraduate, his experimental work, which was to receive a Nobel Prize, was described by his colleagues as the study of 'dirt' and of no importance; later on there was an attempt to undermine the significance of his contribution to the discovery. Cherenkov was able to overcome these problems with dignity.

He married Marya Putintseva, a wonderful and kind woman. They had two children, Aleksei and Elena, and two grandchildren. He enjoyed photography, tennis and history and his pets. He was modest and very reserved; he loved accuracy and precision. He worked at the Lebedev Physical Institute in Moscow for 60 years. He lived to be 85 and died on 6th January, 1990.



Cherenkov radiation...is caused by elementary particles moving faster than light in a medium !

E. Ch.