

On February 10, 1794 a well - known Italian scientist Alessandro Volta in his letters to abbot Antonio Mario Vessale on the animal electricity writes that a properly prepared frog is a very sensitive electrometer which responds to the presence of an electric current in a closed circuit [73]. In one of his experiments A. Volta observed the occurrence of the electric current when one end of the iron conductor forming the electric circuit was heated.

A. Volta wrote: “So, having tried many arcs and on finding one made of iron which was of no use without heating,... I immersed the end of this arc into the boiling water for only about half a minute, extracted it from there and, without letting it cool, resumed the experiment. And only then the frog in the water started contracting, and it even happened two, three, four times when repeating the experiment till the end of the iron which had been earlier immersed into hot water got cold...”. These experiments gave a convincing evidence that A. Volta observed a thermoelectric effect.

The second thermo-electric effect [61], the release or absorption of heat in addition to Joule heat at the boundary of two

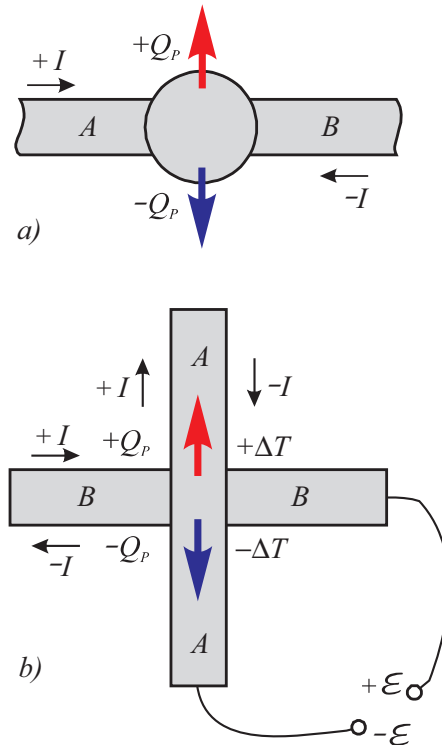


Fig. 3. The diagrams of Peltier effect discovery. a) junction of various conductors, b) thermoelectric cross. A, B - two conductors, $+Q_p, -Q_p$ - realizing and absorption of Peltier heat, $+I, -I$ - current directions, $+\Delta T, -\Delta T$ - changes of the junction temperature; $+\varepsilon, -\varepsilon$ - electrical potentials.