

G.P. Thomson experiment

G.P. Thomson in the year 1928 executed experiments with electron beam to prove the wave nature of particles. The experimental arrangement consists of a discharge tube in which the electrons are produced from the cathode. The electron beam is excited with potential upto 50,0 volts. The electron rays are passed through a slit to obtain a fine beam of electrons.

Then the confined electron beam is allowed to fall upon a very thin metallic film of gold. The whole apparatus is exhausted to high vacuum so that electrons may not lose their energy in collision with the molecules of the gas. The electron beam from the gold film is recorded by the photographic plate. After developing the plate, a symmetrical pattern consisting of concentric rings is obtained. The diffraction can only be produced by waves and not by the particles. Hence, Thomson concluded that electrons behave like waves.

