

NOTE ON POTENTIAL ATTAINED BY PHOTO-ELECTRIC
CELLS IN DARKNESS.

BY J. W. WOODROW.

A FEW months ago, the present writer published in the *PHYSICAL REVIEW*¹ an account of experiments which seemed to show that strongly photo-electric metals liberated positive particles when kept in total darkness. These experiments were continued with the object of determining more definitely the exact nature of the charge obtained from the photo-electric metal in the preceding investigations. It was shown conclusively by the following methods that this charge was due to a "leak" across the surface of the glass insulation, from the potassium which will be at a positive potential with respect to the platinum electrode. First, a magnetic field, sufficiently strong to deflect positive ions away from the platinum electrode, had no effect whatsoever on the observed current. Then it was found that the current could be stopped by using an amber insulation in which was inserted a platinum guard-ring which protruded both inside and outside the walls of the photo-electric cell. In the previous experiments the guard-ring employed consisted merely of strips of earthed tinfoil wrapped about the glass walls, which was thus shown to be insufficient.

The increased current at the higher temperatures is probably due to two causes, the increased conductivity of the glass and the condensation of the vapor of the metal on the walls of the cell. S. H. Anderson² has also shown that with alternating fields applied to a photo-electric cell in darkness, there is no indication of the current one would expect if the metal liberated any kind of positive particles.

June, 1913.

¹ Vol. XXXV., p. 203, September, 1912.² *PHYS. REV.*, S. 2, Vol. I., p. 222, March, 1913.