

## ON THE INITIAL CONDITIONS OF THE CORONA DISCHARGE

## ABSTRACT

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There was first given a description of the numerous phenomena which are connected with direct current corona. The difference between positive and negative electricity appears in electrical, optical, mechanical and chemical effects. A new attempt at an explanation of some of the relations disclosed by experiments has been made. Relations between the critical electric force at the surface of the wire, the pressure of the air and the radius of the wire have been obtained. The constants in these relations are different for the positive and the negative wire. These constants have been assumed the same for both polarities in the previous theories by Townsend and Davis. Townsend's theory of collision moreover is based on experiments at low pressure, while the formula, relating to pressure, radius and critical force in the corona holds only for high pressures. The principle of conservation of energy has been applied to the ionization pressure and it is predicted that over a certain range the current should be directly proportional to the pressure increase.

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