

SPECIAL ARTICLES

A REVERSAL OF THE ROWLAND EFFECT

THE result of Rowland's Berlin experiments showed that a wire having a supercharge of negative corpuscles, moved longitudinally in a plus direction, and a wire having less than a normal charge, moved in the opposite direction, would produce the same external field.

In a paper just being issued by the Academy of Science, of St. Louis, the writer shows that when this external field is imposed upon a wire, the corpuscular column within the wire, and the wire itself, are moved in opposite directions.

A copper wire having a diameter of about 0.2 mm. and a length of 55 cm. is placed within a horizontal glass tube of three or four mm. diameter and 50 cm. in length. About 1.5 cm. of the wire at each end is bent at right angles and hangs vertically. Spark knobs on long rods connected with the terminals of an eight plate influence machine, are placed directly over the ends of the tube. A condenser of sheet glass having an area of tin-foil on each side of 1,000 or more sq. cm. is connected with the discharge rods. The spark length was about 4 cm. at each terminal. Sparks passed into the side of the wire at the ends of the tube, at intervals of one to three seconds, depending upon the length of the spark. The machine was driven by a motor. The end of the wire was observed by means of a telescope magnifying about 27 diameters.

No motion of the wire due to a single spark can be observed, but after four or five sparks have passed, one can easily see that it has moved.

The ends of the wire are slightly lifted as the potential rises, and drop when the spark passes. The entire wire is somewhat shaken by the spark, and the effect is to somewhat diminish friction. The interaction between the ends of the wire and the surrounding air is very slight, but it is directed at right angles to the direction in which the wire creeps.

In one case the effect of 3,500 sparks caused the wire to creep over a distance of 1.2 cm.

The paper contains other evidence that such a solid conductor has the properties of the positive column. In one case a $\frac{1}{4}$ ampere fuse wire in a tube filled with coal oil was fused by a single spark, and became solid again at the instant when it had buckled into a regular series of longitudinal waves. In one case the compression halves of the waves separated into minute spheres, there being about a thousand of them distributed quite uniformly over a half meter of the tube.

No creeping of the wire could be observed, when the ends were dipped into mercury cups and a separately excited dynamo having a terminal potential of 175 volts was momentarily connected with it. Such effects have been observed when high potential discharges wholly outside of the wire have passed between the terminals of the influence machine. These effects have not yet received careful attention. The action of the coherer is of this character.

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THE PREPARATION OF UNBROKEN POLLEN MOTHER-CELLS AND OTHER CELLS FOR STUDIES IN MITOSIS¹

SOME recent investigations in the study of pollen mother-cells without the use of the microtome have made it evident that there are certain advantages in preparing and studying unbroken cells for investigation in mitosis. Those in the Bureau of Plant Industry who have examined this method have suggested that a short paper be presented to this society, in order that other workers may try out this method and cooperate in improving its technic. The method seems to be capable of quite wide application in karyokinetic study.

The stamens of a large percentage of our flowers yield the unbroken pollen mother-cells with very little difficulty. Such plants as the grasses, including our grains, supply an abundance of material by simply placing the anthers in a drop of water, cutting the tips with a sharp scalpel and gently tapping them with

¹ Read before Section of Botany, American Association for the Advancement of Science, 1911 meeting, Baltimore, Md.