

Proceedings of the Iowa Academy of Science

Volume 39 | Annual Issue

Article 57

1932

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Recommended Citation

Crozier, W. D. (1932) "A Demonstration of Dielectric Hysteresis in Rubber," *Proceedings of the Iowa Academy of Science*, 39(1), 218-218.

Available at: <https://scholarworks.uni.edu/pias/vol39/iss1/57>

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A DEMONSTRATION OF DIELECTRIC HYSTERESIS IN RUBBER

W. D. CROZIER

During research in connection with the development of an electrostatic loudspeaker, an effect was discovered which led to some measurements on the attractive force between plates in a flat condenser. With the dielectric between the plates consisting of a layer of rubber dam in combination with a layer of air, the curves of *attractive force* vs. *potential difference* show a striking similarity to magnetic hysteresis curves.

Another aspect of the phenomenon is disclosed by momentarily applying a high potential difference to the condenser, or by straining and releasing the rubber while under even a moderate potential difference. After this treatment the rubber is found to be electrified after the manner of the so-called "permanent electret," and if left undisturbed will remain in this state for some weeks.

These results form what appears to be a demonstration of dielectric hysteresis and retentivity, and it is believed that this is the first time that they have been demonstrated in just this manner.

OAKDALE, IOWA.

A NOTE ON ATMOSPHERIC ELECTRICITY AND THE EFFECT OF ELECTRICITY ON THE GROWTH OF PLANTS

L. W. BUTLER AND C. S. DORCHESTER

Observations on the directions of current from earth to air have shown that up to July 1 there was little or no loss of negative charge. The weather from July 1 to September 15 was generally fair and during most of this period there was a very small loss of negative charge. At no time between September 15 and March 28 has there been any indication that the earth was losing negative charge, although there have been many days which would be classed as fair weather.

Observations on the directions of lightning discharges conform in some respects to the Simpson theory while in others they agree better with the Wilson theory.

Experiment shows that the application of high voltage to the soil has no effect on plants. A preliminary experiment seems to confirm other work that passing a small current through the soil has a beneficial effect. Further experiments on this phase are now in progress.

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