

such a current of sufficient intensity to mark the paper, since in some of his experiments on induction, he has developed one which gave a spark between a point and a surface of nearly a fourth of an inch in length.

The terminal points of the wires from the two screens may be placed very near each other in the same horizontal plane: if then the cylinder revolving horizontally has at the same time a slow ascending motion, the relative position of the dots on the paper will give the number of whole turns and parts of a turn, made by the cylinder while the ball is passing between the two screens. In the same way the terminal points of wires from a number of different pairs of screens may be made to impress their marks on the surface of the same cylinder, and the velocity of the ball at the different points of its path may in this way be determined by a single experiment.

ON THE APPLICATION OF THE THERMO-GALVANOMETER TO
METEOROLOGY, ETC.

(Proceedings of the American Philosophical Society, vol. 17, pp. 22, 23.)*
November 3, 1843.

Professor Henry made an oral communication in regard to the application of Melloni's thermo-electric apparatus to meteorological purposes, and explained a modification of the parts connected with the pile, to which he had been led in the course of his researches. He had found the vapors near the horizon powerful reflectors of heat; but in the case of a distant thunderstorm he had found that the cloud was colder than the adjacent blue space.

* [The title-page of vol. 17, (comprising the proceedings from June, 1843, to December, 1847,) bears date 1847.]

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Theory of the discharge of the Leyden jar.

Referring to the theory of the discharge of the Leyden jar, which he had submitted to the Society some time since,* Professor Henry examined some apparent objections to it, resulting from the researches of Matteucci. The effect produced on the galvanometer by the discharge of a battery is due to the retardation of the lesser waves of electricity, a fact which indicates the cause of Matteucci's results, when a card was pierced by the currents induced in a neighboring wire conductor forming an open circuit.

The speaker described several experiments on the direct and return stroke, showing that equilibrium was restored by the same succession of oscillations; large and small needles placed in spirals forming part of an electrical circuit, being magnetized in different directions. The disturbance of the electrical *plenum* by a discharge of electricity was referred to as explanatory of the induction which takes place, and the subject was applied to the explanation of various phenomena; among others, the light appearing in well authenticated cases about persons and objects in the neighborhood of a discharge of lightning in its direct passage, and suggestions were made as to the most effectual mode of protecting powder houses, etc., from the effects of lightning.

Professor Henry examined in the same connection whether currents or ordinary electricity pass actually at the surface, or like galvanic electricity, through the mass of the conductor, and he concluded that the law of conduction developed by Ohm cannot apply to the case of surface passages, as these are indicative of ordinary electricity.

* Contributions No. V, June 17, 1842.