SOCIETIES AND ACADEMIES

THE ACADEMY OF SCIENCE OF ST. LOUIS

THE first meeting of the season was held at the Academy Building on Monday evening, October 21, 1912; President Engler in the chair.

Dr. G. O. James, of Washington University, addressed the academy "On the Contingence of the Physical Theory and the Problem of the Geologic Past."

After reviewing the theories of Helmholtz, Mach and Enriques on the principle of causality, Dr. James stated that as far as descriptive representation of the present is concerned, it makes no difference whether or not we admit that pushing the precision of measurement further and further we shall ultimately come to a point where there ceases to be accord between observation and theory, and beyond which it can not be again established.

The postulate of causality builds the program according to which we must envisage the geologic past and prescribes the confines within which expectation places the future. Without it neither would exist for us. In answer to whether a past or future created in accordance with the postulate of causality possesses reality, it was pointed out that the older point of view, which regarded empirical verification as a proof of reality, which nevertheless did not cease to exist even when all connection between the external world and its representation was broken, has given way to a modern conception of reality of which invariance is the criterion, but regards this invariance as relative and approximate.

Dr. James also read an appreciation of the life and work of Jules Henri Poincaré, who died July 17.

THE academy met on Monday evening, November 4, 1912; President Engler in the chair.

Professor Nipher, of Washington University, gave a verbal account of work supplemental to that published in his last paper.[1] This work has reference to the longitudinal creeping of a copper wire through which spark discharges are passed.

In his latest work the wire is laid upon a strip of plate glass having a length of 71 cm.

The wire extends several centimeters beyond the glass and the ends drop downwards about 8 or 10 centimeters. The discharges are sent into the side of the wire from above, and just outside of the glass support. Small brass cylinders are placed between the wire and glass at the ends in order to eliminate frictional contact at the edge of the glass. The main portion of the wire rests upon the glass. A condenser formed of tinfoil and sheets of glass having the dimensions 26×26 inches was used. The total area of tinfoil in the condenser was 2×15 square feet.

The recent results were obtained when one of the discharge terminals was grounded. When the positive terminal is grounded a compression wave is sent surging through the wire, and the wire is driven in the direction of the corpuscular displacement thus impressed upon the nebulous corpuscular column within the wire.

When the negative terminal is grounded, a rarefaction wave is sent through the wire in the opposite direction. The displacement is in the same direction as before. The air-gap between the positive terminal and the wire is then first converted into a drainage or conduction channel, and the discharge from the wire is drained into it. The wire now creeps in a direction opposite to that of the corpuscular displacement. In one case an aluminum wire was made to creep over a distance of 18 cm. by the passage of about 1,200 sparks.

When neither terminal is grounded the wire also creeps in the same direction as when the negative terminal is grounded. The surging effect of the compression wave is then eliminated. This is the condition discussed in Professor Nipher's paper forming No. 3 of Vol. XXI. of *The Transactions* of the academy, to which reference is made in SCIENCE, August 2, p. 153.

When a short wire 4 or 5 cm. in length is placed upon the glass plate, two or three cm. from the creeping wire, it creeps in the direction in which it is urged by the surging wave which is induced in it. The direction is the same whether the wave in the primary wire is one of compression or of rarefaction, or whether both are simultaneously imposed. The short wire is placed opposite the middle of the primary wire.

All of these creeping effects are reversed in direction, when the direction of discharge through the main wire is reversed.

Mr. M. E. Hard also gave a brief talk on "Mushrooms found in the Vicinity of St. Louis."

GEORGE T. MOORE,
Corresponding Secretary

[1] *Trans. Acad. of Sc. of St. Louis*, Vol. XXI., No. 3.