possible by ionization, by incandescence, of *carbon,* the incandescence being secured by Joule heat.

Distribution of Gas Pressure in a Closed Tube Rotating on a Transverse Axis: FRANCIS E. NIPHER, Washington University. (To be published in the *Transactions of the Academy of Science of St. Louis.*)

The paper is a mathematical discussion deducing the pressure at the axis, and showing that it is independent of the length l, and angular velocity ω of the tube, if the velocity $v = \omega l$ is constant. The pressure at any other point is also determined, in terms of its distance r from the axis of rotation.

The pressure at the free end of the tube due to rotation is greater than the external pressure against the tube due to its motion through the external air. If the outer end terminates in an L with open mouth exposed to the air through which it is advancing the air within the tube is forced out in the teeth of the wind. If the tube be also opened at the axis, the air will pass out in a current through the open end of the L at the free end of the tube.

A New Type of Frequency Meter: A. S. LANGSDORF, Washington University. (To be published in *The Electrical World.*) Section D.

Report of Progress in Experiments on Ether Drift: EDWARD W. MORLEY and DAYTON C. MILLER, Cleveland.

At the Philadelphia meeting an account was given of experiments to detect ether drift. The observations indicated that there is no drift of the ether. It has been suggested that the negative result was due to the influence of the heavy stone walls of the building within which the apparatus was mounted. The interferometer has since been mounted on high ground near Cleveland and covered in such a manner that there is nothing but glass in the direction of the expected drift. Observations, though difficult, have been made; but cold weather interrupted them before a definite conclusion had been reached. The observations are to be completed at the first opportunity in the spring of 1906.

A Critical Analysis of Methods of Supplying Power to Branch Telephone Exchanges on the Common Battery: KARL KINSLEY, University of Chicago. Section D.

A New Form of Mercury Still: CHARLES T. KNIPP, University of Illinois.

This still makes use of the mercury vapor lamp. In it are found, roughly, conditions necessary for the purification of mercury, such as heat by the passage of the electric current, and a more or less perfect vacuum. By fusing to the mercury vapor lamp a properly shaped condensing chamber, mercury of a high degree of purity may be obtained. The electrodes of the apparatus are mercury and are in communication with two vessels containing the supply mercury through narrow tubes about 80 cm. long. The condensed mercury flows from the still through a long capillary delivery tube bent in the form of an S at its lower end. The action of the mercury dropping into this tube is that of a continuous mercury pump. The apparatus is initially exhausted by means of a power Geryk pump (or other equally effective pump). The arc is started by employing a side connection as described by Weintraub.[2]

In this form of still the rate of distillation is about one pound per hour, and the cost is approximately one cent per pound.

To test the action of the still zinc amalgams were used. The test for zinc was

[2] *Phil. Mag.,* Vol. VII., February, 1904.