volt/cm and that of the negative ion was 0.55 cm/sec per volt/cm. In water the mobilities were 0.62 and 0.56 cm/sec per volt/cm respectively. It is seen that these results are in agreement with the anticipation. The mobility values are relative to air, assuming 1.4 for positive and 1.8 for negative ions in cm/sec. per volt/cm.

60. Ether-drift experiments at Mount Wilson in February, 1926. DAYTON C. MILLER, Case School of Applied Science.—In February 1926, the ether-drift experiments were continued at Mount Wilson under very favorable conditions of weather. This series, consisting of 101 sets of observations involving 34000 readings, is the most extensive yet made for any one epoch. This epoch was chosen because, when combined with the epochs of 1925, it gives observations well distributed throughout the year. The new observations entirely confirm the results of the 1925 observations as announced at the Kansas City meeting. There is a periodic displacement of the interference fringes which is clearly systematic and cosmical in character; it is such as would be produced by a relative motion of the earth and the ether of 10 kilometers per second, the apparent apex of the earth's motion being a point in space having the right ascension of 255° and a north declination of 68°. The definitive values of the coördinates, from all available observations, are not yet determined. Causes for the observed phenomena other than relative motion are to be considered.

61. Faraday tubes and amperes rule. R. C. COLWELL, West Virginia University.—A new theory of Faraday tubes is outlined in which each tube is supposed to be made up of a succession of double doublets. These doublets have both electric and magnetic polarity. In a Faraday electric tube the electric poles are placed end to end and the magnetic poles are then perpendicular to the tube. In a Faraday magnetic tube, the electric poles are perpendicular to the tube. A Faraday tube always extends from a positive to a negative pole and shortens by an elision of the double doublets. When these doublets are elided they go out with a right hand twist thus giving rise to a closed electric or magnetic line of force. A lengthening of a Faraday tube reverses the direction of the closed magnetic (or electric) line of force. The single rule that "a shortening Faraday tube gives a right hand twist, a lengthening Faraday tube a left hand twist" is then sufficient to cover all cases of induced currents. It is also shown that this rule is equivalent to Ampere's rule regarding the attraction between two conductors which have currents in the same direction, so that Ampere's rule alone may be substituted for the many rules that are now given to determine the direction of an induced current.

62. The electric field of a charged wire and a slotted cylindrical conductor. CHESTER SNOW, Bureau of Standards.—The potential is found which is due to a fine wire (charged) in the presence of an outer shield at potential zero. This shield consists of a thin cylindrical shell, concentric with the wire, whose trace on a plane perpendicular to the latter consists of n equal, equally spaced circular arcs of a common circle. The problem is first simplified by a complex transformation $Z^n = z$, reducing it to that of a line charge in the presence of a single (incomplete) circular arc (a part of the circular arc $r = \alpha$). This problem is solved for any position of the line charge, the solution being effected first by a transformation $z = \alpha(i - z^1)/(i + z^1)$ which transforms the interior of this circle into the entire upper half of the z'-plane. The circular boundary then corresponds to the real axis of z'. This problem (that of a line charge in the presence of a finite straight line at zero potential) is again simplified by the transformation $z' = c \cos w$ which represents the entire z'-plane upon a semi-infinite strip in the w-plane. The proper (periodic) solution due to a line charge in this strip is then built up by an infinite series of images and their effect summed. By retracing the steps of the transformation, a solution in finite form is obtained for the original problem.