DIELECTRIC CONSTANT OF AQUEOUS SOLUTIONS OF SODIUM CHLORIDE.

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Communication No. 24.

ACCORDING to the theory of aqueous solutions of strong electrolytes formulated by Debye and Hückel, the dielectric constant D of a solution of concentration y mols. per liter should be expressible in the form

$$D = Do(1 - \alpha y),$$

where Do is the dielectric constant of the solvent,

$$= 81.0 \text{ for pure water,}$$

and α is a constant depending on the types of ions present in the solution,

$$= 6.6 \text{ for NaCl.}$$

Measurements of α have been made by various investigators using a high frequency bridge method, of which those by Sach (*Phys. Zeit.*, 5, 28) are among the best. He finds the value

$$\alpha = 7.1 \pm 1.2,$$

which is in good agrement with the theory, considering the difficulties involved in measuring the capacity of a cell whose conductivity is appreciable. In order to avoid the ambiguity arising from this cause, the writer used, to determine the dielectric constant, an interferometer method, which depends upon the measurement of electrostriction produced in the solution by the applied electric field.

From a study of the dielectric constant of the solution for concentrations up to 4×10^{-2} mol./l., it was found that the