of the substance was obtained from SEIDELL's Solubilities of Inorganic and Organic substances. The solubilities were calculated as grams of anhydrous substances per 1 gram of water. The substances appear in the list in the order of their water of crystallisation, and of their solubility. The substances crystallised in all cases in 1 to 5 hours after the sealing of the tubes.

Besides these, some 30 tubes were sealed with solutions of less supersaturation. They were watched for 3 months, in which time very few crystallised.

From the above tables it will be seen that no perfectly general deduction is obtainable; but the following facts are observable:

a. Hydrates easily form supersaturated solution.

b. Supersaturation is common in easily soluble substances.

c. Also the phenomenon is common in those substances, which easily form big well-defined crystals.

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Chemistry. — *"Temperature-coefficient of conductivity in alcoholic solutions, and extension of* KOHLRAUSCH's *hypothesis to alcoholic solutions."* By DEVENDRA NATH BHATTACHARYYA and NILRATAN DHAR. (Communicated by Prof. ERNST COHEN).

In a former paper[1]), the results of conductivity measurements of ten sodium salts in alcoholic solutions were published. The measurements were carried out at three temperatures, and in this paper the values of the temperature coefficient of conductivity are calculated and some deductions made from the results.

If we suppose that the conductivity increases proportionally with the temperature, i. e. the conductivity is a linear function of the temperature, we find the following values for the temperature coefficient of conductivity of the ten sodium salts in alcoholic solutions investigated: (see table p. 374).

It is evident from the above table that in all cases the value of the temperature coefficient is about 0.024. Now, from the researches of BOUTY[2]) it is seen that the temperature coefficient of fluidity of alcohol is about 0.024 per degree centigrade. Thus for almost all the salts studied, the temperature coefficient of conductivity in alcoholic solutions is equal to the temperature coefficient of fluidity of the solutions; because the solutions being very dilute, their viscosities are practically identical to that of the pure solvent, namely alcohol.

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[1]) Zeitschr. für anorg. Chemie **82**, 357 (1913).

[2]) Jour de Physique (2). **3**, 351 (1884).

25

Salt	Temperature-coefficient between 0° and 5° C	Temperature-coefficient between 0° and 30° C.	Dilution
I. NaClO₃	0.018	0.027	1774.332
II. NaCl	0.016	0 026	1623.888
III. NaNO₃	0.019	0.026	1180.694
IV. NaNO₂	0.024	0.027	1916.937
V. NaCNS	0.022	0.028	2208.451
VI. Na₂PtCl₆	0.015	0.020	4236.345
VII Sodium propionate	0.023	0.024	993.517
VIII. Sodium butyrate	0.027	0.025	1320.672
IX. Sodium benzoate	0.015	0.024	685.179
X. Sodium Salicylate	0.013	0.023	1306.449

From a consideration of equal effect of temperature on the conductivity and fluidity of aqueous electrolytic solutions of pure water, KOHLRAUSCH[1]) presents the hypothesis that, round every ion, and moving along with it, there is an atmosphere of the solvent whose dimension is determined by the individual characteristics of the ion; and the electrolytic resistance of an ion is a frictional resistance which increases with the extension of the atmosphere, the direct action between the ion and the outer portion of the solvent diminishing as the atmosphere becomes of greater thickness. This hypothesis is in agreement with the fact that the most sluggish ions have the temperature coefficient of resistance very like the temperature coefficient of viscosity of the solvent. The hypothesis is in further agreement with the circumstance that the temperature formula for the mobility of the ions shows in all cases a convergence towards the zero value between — 35° C. and — 41° C., the zero value of the fluidity of water being reached at — 34° C.

From our work it is evident that the same hypothesis may be applied equally in alcoholic solutions. The electrolyte binds with it a few molecules of the solvent, the alcohol, which forms an atmosphere round it, and it moves through the solution with this alcoholic atmosphere surrounding it. The frictional resistance it meets, is not the frictional resistance between the ions and the solvent alcohol, but it is the frictional resistance of the alcoholic atmosphere round the ions against the solvent molecules.

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¹) Proc. Roy. Soc. 1903, 71, 388.