## EINSTEIN—THE UNIVERSALIST

V. Joseph

The life and work of a human being who had freed himself from the scientific and social prejudices of his time.

## THE GIBBS-DUHEM EQUATION AND IDEAL MIXTURES

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In the literature it has been shown that, as a consequence of the Gibbs-Duhem equation, all components of a $c$ component mixture behave ideally if $c$-1 components behave ideally. Thus, Prigogine and Defay (1954) show that if $c$-1 solutes obey Henry's law the solvent must of necessity obey Raoult's law. Again, Guggenheim (1959) defines an ideal dilute solution in terms of the behaviour of *all* solutes. The purpose of this paper is to show that the procedure of assigning relative activities in a multi-component mixture can be given a much firmer theoretical basis. We show that, instead of having to make assumptions about $c$-1 components, it is sufficient to make an assumption about the behaviour of *one* component, viz., the solvent. The Gibbs-Duhem equation then gives us a firm theoretical basis to predict the behaviour of *all* solutes.

**References :**

1. Prigogine, I. & Defay, R. (1954). Chemical Thermodynamics. Longmans, London.
2. Guggenheim, E. A. (1959). Thermodynamics. North Holland, Amsterdam.