data were available, the absorption spectra were similarly affected by elevation of temperature and increase of concentration.

### THE OCCASIONAL CONSTANCY IN THE DIFFERENCE BETWEEN THE MOLECULAR VALUES OF PROPERTIES OF SOLUTIONS HAVING THE SAME MOLECULAR CONCENTRATION.

The difference between the values per gramme-equivalent of any property for two simple solutions, 1 and 2, of different electrolytes but of the same concentration, will be

$$(P_1 - P_2)/n = k_1 - k_2 + (l_1 - k_1)\alpha_1 - (l_2 - k_2)\alpha_2. \quad \ldots\ldots\ (11)$$

Now $\alpha$ in all cases diminishes as $n$ increases. Provided therefore, the values of the $(l-k)$'s have the same sign, and the rates of change of the $\alpha$'s with concentration are inversely proportional, or approximately so, to the $(l-k)$'s of their respective solutions, we shall have $(P_1 - P_2)/n$ exactly or approximately constant. If we regard $(P_1 - P_2)/n$ as approximately constant when its absolute value changes with $n$ only to a small extent, then the more nearly the $(l-k$'s) and the $\alpha$'s are inversely proportional to one another the more nearly constant will $(P_1 - P_2)/n$ be. If, however, we regard this quantity as constant when its values for different values of $n$ differ from one another by only a small percentage, then the magnitude of the $(l-k)$'s becomes of importance, and we may have $(P_1 - P_2)/n$ approximately constant, even though the $(l-k)$'s may be far from being inversely proportional to the $\alpha$'s.

In the case of certain solutions of moderate strength, this approximate constancy of $(P_1 - P_2)/n$ has been observed by Valson and Bender* for the density and the refractive index, by Wagner† for viscosity constants, and by Jahn‡ for the electro-magnetic rotation of the plane of polarization; and a very close approximation to constancy in the case of the specific

* Wied. *Ann.*, xxxix, (1890), p. 89.

† Ztschr. f. phys. Chemie, v. (1890), p. 31.

‡ Wied. *Ann.*, xlii, (1891), p. 280.