I.—ON THE RELATION OF THE PHYSICAL PROPERTIES OF AQUEOUS SOLUTIONS TO THEIR STATE OF IONIZATION.— BY PROFESSOR J. G. MACGREGOR, Dalhousie College, Halifax, N. S.

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It has often been pointed out that, according to the dissociation or ionization conception of the constitution of a solution of an electrolyte, the difference between the physical properties of one in which ionization is complete and those of the solvent must be compounded additively of the differences produced by It would seem to be equally obvious that, in the the two ions. case of solutions in which the ionization is not complete, the differences referred to must be similarly compounded of those produced by the undissociated molecules and by the free ions; and if so, it should be possible to express the numerical values of the various properties in terms of the state of ionization. Such an expression would take its simplest form in the case of solutions so dilute that the molecules, dissociated or undissociated, might be regarded as sufficiently far apart to render mutual action between them impossible, and in these circumstances the change produced in the properties of the solvent by the undissociated and the dissociated molecules respectively might be expected to be simply proportional to their respective numbers per unit of volume. It is the object of this paper t_0