NOTE.

The Iodine Coulometer and the Value of the Faraday. A Correction.— Professor G. P. Baxter has kindly called our attention to the fact that 0.0099% should have been added to, instead of subtracted from, the apparent weight of iodine in applying the vacuum correction.[1] When this error is corrected the electrochemical equivalent of iodine becomes 1.31491 mg. per coulomb and the faraday (assuming I = 126.92) 96,524 coulombs per equivalent. This result agrees within 0.03% with the value 96.494 (Ag = 107.88) calculated from the electrochemical equivalent of silver (1.11804) obtained by Rosa, Vinal and McDaniel. If, instead of using the International Atomic Weights for 1912, as above, we employ the ratio of silver to iodine as directly determined by Baxter[2] our results then give 1.11755 milligrams as the electrochemical equivalent of silver, as against the value 1.11804 obtained by Rosa, Vinal and McDaniel. The difference is partly accounted for by the presence of moisture and other included material (0.01 to 0.02%) in their silver deposit and partly by the difficulty of reproducing exactly the experimental conditions of Smith, Mather and Lowry upon which our preliminary determination was based.

An extensive series of comparisons between the iodine coulometer and the silver coulometer of the type employed at the Bureau of Standards will be undertaken shortly and should lead to a determination of the value of the faraday with a certainty of 0.005%. S. J. BATES.

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THE FREE ENERGY OF ORGANIC COMPOUNDS. I. THE REVERSIBLE SYNTHESIS OF UREA AND OF AMMONIUM CYANATE.

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As an introduction to this series of investigations upon equilibrium in organic reactions, we may consider briefly the nature of the problems which are capable of solution by aid of free energy measurements. Since organic chemistry is characterized by the enormous number of compounds derived from a few elements, there are in a given system not merely one or two, but usually a very large number of reactions which are stoichiometrically possible and involve only known substances. Under a given set of conditions some of these will be found to occur, others will not. But this distinction furnishes no adequate basis for a rational classification. Whether a given reaction does or does not occur to an observable extent depends often upon the length of time during which observations are made.

[1] THIS JOURNAL, 34, 1366

[2] *Ibid.*, 32, 1602.