silver chloride cells in deuterium oxide, we have tested the reliability of silver–silver chloride electrodes made by a thermal method analogous to that recommended by Owen[1] and by Keston,[2] respectively, for the corresponding iodide and bromide electrodes. An electrode formed from a coil of platinum wire sealed into a tube of Jena normal glass was covered with a paste composed of seven parts of silver oxide and one part of silver chlorate and heated to decomposition in an electric furnace. No appreciable differences were observed when the percentage of silver chlorate was varied between 8 and 15.

Twelve electrodes immersed in 0.01 *M* hydrochloric acid solution exhibited ±0.02 mv. as the average deviation from the mean. After standing for six weeks this value increased to not more than ±0.04 mv. Freshly made electrodes agreed with the old within this limit.

A comparison of the "thermal" type electrodes with those made by decomposing a paste of silver oxide by heat and then electrolyzing for five hours in 0.2 *M* hydrochloric acid solution at 1.8 milliamperes per electrode showed that the electrolytic type tended to drift and were on the average about 0.04 mv. more positive.

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[1] Owen, THIS JOURNAL, **57**, 1526 (1935).

[2] Keston, *ibid.*, **57**, 1671 (1935).

The Heat of Fusion of Stannic Iodide

BY SAMUEL S. TODD AND GEORGE S. PARKS

The changes in heat content of stannic iodide were measured by us in 1928 for the temperature intervals between 27 and 80, 120, 155 and 171°, respectively. A method of mixtures was used with a water calorimeter, the details of the apparatus and experimental procedure being given in a previous paper by Parks and Todd.[1] The sample of stannic iodide studied had been kindly prepared for us by Professor J. H. Hildebrand.

Although the error in the calorimetric measurements themselves was within 1%, considerable uncertainty as to the premelting effect in the crystalline material precluded at that time a reliable calculation of the heat of fusion of stannic iodide from our heat content data. Recently, however, Negishi[2] has obtained accurate information concerning the heat capacities of solid and liquid stannic iodide over a range of temperatures. Using his data and taking the melting point as 144°, we have now calculated the following fusion values from our four determinations pertaining to the 27–155° range: 7.23, 7.19, 7.24 and 7.25 cal. per gram. The mean heat of fusion is 7.23 (±0.14) cal. per gram or 4530 cal. per mole.

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[1] G. S. Parks and S. S. Todd, *Ind. Eng. Chem.*, **21**, 1235 (1929).

[2] G. R. Negishi, THIS JOURNAL, **58**, 2293(1936). Prof. J. H. Hildebrand kindly sent us these essential data prior to publication.

NEW BOOKS

Physical Aspects of Organic Chemistry. By WILLIAM A. WATERS, M.A., Ph.D. (Cantab.), University of Durham. Introduction by Professor T. Martin Lowry, George Routledge and Sons, Ltd., Broadway House. 68–74 Carter Lane, London E.C., England, 1935. xv + 501 pp. 14 × 22 cm. Price, 25s.

The title of this book does not indicate very clearly the nature of its contents. Actually it is largely concerned with current electronic ideas of valence and their application to organic chemistry, especially to details of reaction mechanism. The chapter headings are: Chemical Affinity, Physical Theories of Molecular Structure, Valency, Electrical Dipoles, Chemical Reactivity, Unsaturation, Free Radicals and Their Non-ionic Reactions, Ionization and Ionic Reactions, Acidity, The Reactivity of Halogen Compounds, General Polarity, Hydrolysis and Esterification, Ionotropic Change, Molecular Rearrangement, Conjugation, Aromatic Compounds—I, Aromatic Compounds —II.

But this list does not furnish an adequate indication of the range of topics dealt with. Many of these subjects are exceedingly broad, have a lengthy and complicated history and even today have not reached any state of agreed opinion. One is therefore especially impressed with the skill of presentation. The author states in his preface: "The historical aspect of a rapidly developing subject has been kept continually in view, with the intention of giving a general outline of theoretical organic chemistry rather than