

Book Reviews

Molten Salts Handbook. By George J. Janz. Academic Press, New York and London (1967). xii and 588 pp. \$25.00.

Research in molten salts, as in other fields, has doubtless increased exponentially in recent years and a flood of data has resulted. Professor Janz has made a valiant attempt to compile a guide to all of the published results, and he has been remarkably successful. The *Molten Salts Handbook* will be a necessity for every worker in the field and of great value to those in related fields, both pure and applied. Most scientists and engineers concerned with nuclear technology, fuel cells, extractive metallurgy, and industrial electrolysis, to name only the most obvious applications, will find very frequent use for it.

The *Handbook* consists almost entirely of tables of data, taken without much editing from the original publications. Except on a few topics, the data are not selective and are presented without value judgments. The great volume of material presented will probably come as a surprise even to the specialist. The presentation employs six heads: Physical Properties, Thermodynamic Properties, Electrochemical Properties, Spectroscopy and Structure, Practical Features, and Experimental Techniques. Of these, the first four have been very thoroughly covered, and this reviewer could think of no topic belonging under these heads that had been omitted. The last two are less encyclopedic but still useful. Throughout, numerical data are given wherever feasible. Where tables would be excessively long, as would be required, for instance, in the reporting of work on systems of many variables, the *Handbook* takes the form of an annotated bibliography.

Within a given topic, e.g., free energy of mixing, or halogen solubility, coverage of the literature is not always a hundred percent complete. Many workers in the field will be able to confront the author with papers that he has overlooked. He has surely included the great majority, however, and the omissions should not seriously detract from the book's usefulness.

The volume is well arranged and printed, and it is easy to find the information desired. The references are conveniently placed close to the tables of data. Minor typographical errors in the letterpress are not hard to find; one hopes they do not extend to the tables. An improvement in future editions would be to provide cross references to certain tables; e.g., vapor pressure data on fluorides appear in the Practical Features section and could be overlooked by a reader seeking them under Physical Properties. Literature references should be given for the diagrams of experimental apparatus. Under Nuclear Technology, more might have been given on the processing of liquid-metal phases with molten salts.

A number of other such minor faults might be cited, but to do so would give a wrong impression. The *Handbook's* virtues are many, its defects few. It will find a place on

many desks as a quick reference and guide, a springboard into the literature, and a backup to one's own card file. In time saved alone, it will soon repay its cost, which is moderate for a book of this kind.

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About the Reviewer: Dick Wiswall is a physical chemist at Brookhaven National Laboratory where he has been engaged in corrosion studies and fluorine chemistry since 1949. During the war years and immediately following, Dr. Wiswall contributed to the separation-by-gaseous-diffusion process both at Columbia University and with Union Carbide at Oak Ridge. His undergraduate studies were at Harvard and his doctor's degree, in chemistry, is from Princeton.

Electrons, Ions, and Waves. By William Phelps Allis. Edited by Sanborn C. Brown. MIT Press, Cambridge, Mass. (May 1967). 442 pp. \$20.00.

The book, *Electrons, Ions, and Waves* by William Phelps Allis of MIT is a compilation of selected papers from his life's work. The book was edited by Sanborn C. Brown and was presented to Professor Allis as a surprise gift on the occasion of his being promoted to Professor Emeritus. Thus, although Professor Allis is responsible for the papers, the choice of the papers included in this collection, their arrangement, and the notes discussing them, are due to others.

The book is divided into seven sections, the titles of which give a good idea of the contents. These are as follows: Electrons and Their Interactions with Atoms, Diffusion and Mobility, Motions of Electrons and Ions, Microwave Discharges, Waves and Oscillations, Plasma Properties, and Special Type of Discharge. The last paper in the last section gives the casual browser a shock, as it does not carry Professor Allis' name as an author, but subsequent reading discovers justification for its inclusion.

The question for the reader now is "Why should I buy this book?" The reviewer finds three good reasons.

First, the book provides the reader with many useful papers that normally are difficult to obtain. They have been published in the twilight zone of conference proceedings, internal reports, and lecture notes. Thus, the reviewer finds the paper "Electron Plasma Oscillations," p. 269, reprinted from a symposium proceedings, to give a crisp, critical analysis of Landau damping. An unpublished set of lecture notes entitled "Plasma Theory," coauthored