not correct that ". . . negative numbers are invariably stored in complement form" (p. 44). One chapter on coding attempts to justify the use of interpolation techniques in the evaluation of basic functions, although this method is not adequately compared with others that are more widely used. A statement that will provoke considerable argument is made on page 169, where the authors declare that floating-point subroutines ". . . should be regarded as a last resort rather than as an easy alternative to careful planning."

In short, although this book probably covers the field better than any existing volume, it can be recommended as a textbook only if it is to be supplemented and corrected by someone who is well acquainted with the art of automatic computing.

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Microwave Spectroscopy. M. W. P. Strandberg. Wiley, New York; Methuen, London, 1954. vi + 140 pp. Illus. + plates. $2.50.

Microwave spectroscopy had its origin about 20 years ago, but its major progress has been made in the last 8 or 9 years. Along with its rapid growth, an extensive literature has appeared in periodicals. However, this volume, so far as I know, is one of two books (my review of the other appears in the next column) written on the subject

Microwave Spectroscopy by Strandberg deals, in the words of the author,

> . . . with a calculation of the quantum energy levels of a rotating molecule, and considers the various perturbations which may or must be recognized to interpret precise experimental data. The final sections deal with the instrumentation necessary to measure the frequencies in the microwave region which are characteristic of differences between these energy levels.

The book is tersely written; to read it with understanding requires an extensive background in the matrix formulation of quantum mechanics and a considerable capability in mathematics—that is, the use of tensors in the chapter on nuclear quadrupole energy. The chapters on experimental considerations are likewise compact and assume familiarity with microwave techniques. A brief bibliography and three appendixes conclude the book. Appendixes I and II are tables of reduced energy and line strengths, respectively. Appendix III gives rotational magnetic moment matrix elements on the space-fixed Z(M) axis.

It seems to me that there might be many readers surveying this important field who would be discouraged from completing a study of this book because of the condensed manner in which it is presented. But Strandberg makes no particular claim that this is the group to whom he is appealing. There is no doubt that anyone who desires to do research in the field of microwave spectroscopy must master the theory outlined in this scholarly work.

Microwave Spectroscopy. Walter Gordy, William V. Smith, and Ralph F. Trambarulo. Wiley, New York; Chapman & Hall, London, 1953. xii + 446 pp. Illus. $8.

The preface of this book states that the understanding of microwave spectroscopy requires knowledge of several branches of theoretical physics, chemistry, electronic circuitry, and microwave components. The aim of the book is to provide a convenient source of information on the significant spectroscopic components and a survey of the theory fundamental to understanding this important field. This aim, in my estimation, is successfully accomplished. The contents include information on instruments and experimental methods, microwave spectra of gases, solids, and liquids, the Stark and Zeeman effects, molecular structures, and a variety of other topics. Numerous photographs, charts, graphs, and circuit diagrams enhance the value of the book.

This book was not written primarily as a textbook, but because of the clarity and detail with which much of the material is presented, it might be useful as such.

There is a long list of pertinent references at the end of each chapter, and the book closes with a chronologically arranged bibliography of important published papers on the applications of microwave spectroscopy to gases, paramagnetic resonance of solids and liquids, and ferromagnetic resonance. This should be of great value to anyone who has to search the literature for specific information. The appendix contains an extensive tabulation of data useful to the worker in this field. This volume should be of considerable value to students and research workers in this field.

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The Metabolism of Algae. G. E. Fogg. Methuen, London; Wiley, New York, 1953. ix + 149 pp. Illus. $2.

This brief book attempts to cover the biochemistry of a very large group of diverse plants, ranging from unicellular forms closely related to bacteria to the seaweeds of commercial importance. It is evident that the available knowledge varies widely from one organism to another. Certain unicellular species that for technical reasons are suitable for studies of photosynthesis are well known from the point of view of intermediary metabolism. In contrast, the seaweeds have been of interest primarily from the point of view of the end-products of metabolism, such as the polysaccharides.

Chapters are devoted to the photosynthetic and