tary whereas others are quite sophisticated. Surely it would not serve as a textbook, but rather as a reference book for those who are looking for a comprehensive treatment of certain important phenomena of vision, from the physical rather than the psychological point of view. The book appears to be in the tradition of that distinguished American biophysicist, the late Selig Hecht, a fact which will be appreciated by the many admirers of Hecht's work in vision.

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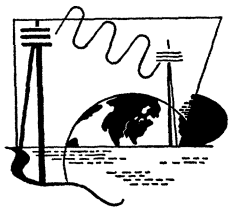

Microwave magnetrons. George B. Collins. (Ed.) (Massachusetts Institute of Technology Radiation Laboratory Series.) New York-London: McGraw-Hill, 1948. Pp. xviii + 806. (Illustrated.) $9.00.

As a result of the great program of work in radar that was set off by British success in exploiting the magnetron, a previously more or less familiar laboratory microwave generator, it is natural that a tremendous amount of information concerning it was accumulated during the war, both here and abroad, and in both university and industrial laboratories. This important volume of the M.I.T. Radiation Laboratory Series summarizes that knowledge in a very thorough manner. It will of course be of most interest and value to those who have had some experience with the device or are contemplating its use. With its great wealth and detail of material, this book will undoubtedly be the standard reference work for years to come.

For those who have little familiarity with the magnetron and want to know more, an introductory chapter summarizes some of the elementary facts about its operation. Following this introduction, the work is divided into sections: resonant systems, analysis of operation, design, tuning and stabilization, and practice. The last section includes not only details on the fabrication of magnetrons but also measurements of their properties and descriptions of some of the various types. Of necessity, the first two sections include much analysis which has a formidable look; these sections, important as they are, will consequently appeal to a smaller group of readers than the other more descriptive sections.

For all the variety of detail to be found in the book, there are nonetheless some omissions and some points too briefly discussed. For example, there is no discussion of two types of magnetron resonators that, although they are not used, practically every worker in the field invents at one time or another. There are other minor omissions —the problem of harmonic generation, the mechanical changes that may be produced in the resonator system by extreme operation, and the effects of cathode eccentricity. The cathode and magnetron life might have been more thoroughly discussed. Other widely used magnetrons, particularly those developed in England, with which the Radiation Laboratory was not so closely connected, might well have been included as typical magnetrons. A brief discussion of magnetron development in enemy countries during the war would have been illuminating and not necessarily irrelevant.

It is to be expected that such a work, done by many writers in short periods of time and in widely separated locations, should include errors. Those few that came to notice are errors in detail—references to material or sections not included or pictures mislabeled. This is all small criticism. *Microwave magnetrons* represents a very large task excellently done.

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Cosmic rays. L. Jánossy. Oxford, Engl.: Clarendon Press; New York: Oxford Univ. Press, 1948. Pp. xiii + 424. $10.00.

The investigation of cosmic rays since their discovery by Victor F. Hess in his balloon ascensions in 1911–1913 has become one of the most important branches of research in modern physics. Since 1926 the hypothesis of Hess as to their extraterrestrial origin has been accepted and proven to be correct. Numerous investigators, of all nationalities, all over the globe, are engaged in these researches, but aside from some brief monographs and symposia reports, this book by Janossy is the first compendium on cosmic rays. The author, senior professor in the School of Cosmic Physics at the Dublin Institute for Advanced Studies, has himself contributed many original investigations in the field during the last 15 years.

The book opens with an historical introduction sketching the trend of discoveries and the successive problematical changes. It discusses the penetrating power of cosmic rays, the question as to the nature of cosmic rays, the cosmic ray particles (positron and meson both discovered in the cosmic radiation by Anderson), the geomagnetic effects, and the question of the origin of cosmic rays, particularly the meson. The introduction thus serves as a summary and the various chapter headings follow this outline. Since cosmic rays are high energy particles the experimental technique for their detection and the theory of high energy interactions are discussed in some detail. Each of the experimental techniques—ionization chambers, counters, cloud chambers and the photographic plate method—is briefly described. (The photographic plate method, unfortunately, is discussed all too briefly; an appendix mentions some of the beautiful and important new experiments of Powell and his school at Bristol.)

A chapter on the theory of fast collisions serves as an over-all introduction and foundation for the theoretical discussion which follows in later chapters. This discussion is based on classical and semiclassical theories and the quantum mechanical treatment is omitted. Each