ates, and aluminum oxides, some unactivated, others containing various activators.

Two highlights of these extensive investigations may be mentioned here. The chapter on manganese as an activator offers a remarkable systematic proof that not only does divalent manganese act as an activator, as is well known, but that in some cases tetravalent manganese also plays this role. The study of the titanates and of titanium as an activator shows an interesting transition between so-called pure and activated phosphors.

The subsequent chapters deal with the temperature-dependence of the efficiency of luminescence. A very large amount of empirical material is presented, followed by a discussion of the processes responsible for partial or complete transformation of absorbed energy into heat. The theoretical approaches employed by various authors in dealing with this fundamental problem are reviewed critically and compared with the available facts.

One of the most valuable features of the book, besides its original contributions, is a comprehensive survey of known phosphors, accompanied by an extensive list of references. Kröger's excellent monograph will undoubtedly prove most useful to those trying to overcome the still formidable difficulties which confront chemists as well as physicists in this intriguing field. Franz Urbach
Kodak Research Laboratories

Microscope

THE ELECTRON MICROSCOPE. By D. Gabor. 164 pp. Chemical Publishing Company, Inc., Brooklyn, 1948. $4.75.

This is a readable little book which offers, in addition to an unusually clear and concise explanation of the fundamental principles of electron optics and the application of the electron microscope, a thorough discussion of the theoretical and practical limits on resolving power and possible methods by which the ultimate resolving power might be achieved. There is also a rather extensive but general description of various commercial electron microscopes and brief descriptions of some more specialized electron optical equipment.

This book is highly recommended to the reader, particularly the student, who is interested in determining the present status of research on the electron microscope as an instrument without making a widespread search of the literature. But in spite of statements on the jacket, the book offers no help in appraising the value of the electron microscope in a specific research problem or in learning the details of its manipulation. James Hillier
Radio Corporation of America

Wartime Physics

APPLIED PHYSICS: ELECTRONICS, OPTICS, METALLURGY. (Science in World War II. Office of Scientific Research and Development.) Edited by C. G. Suits, George R. Harrison, and Louis Jordan. 456 pp. Atlantic-Little, Brown and Company, Boston, 1948. $6.00.

Wartime physics, conducted in secrecy, has now emerged to the "now it can be told" stage, and with considerable pride the divisions of NDRC are presenting, one by one, their various accomplishments. The whole story is being woven into a grand tapestry portraying the vast and rapid effort of hundreds of men and women working on hundreds of gadgets and devices which they conceived and perfected during the four-year nightmare of the war.

This volume is a record of cleverness and success in many undertakings, of expert organization and prompt execution of programs, of close liaison between scientist and consumer, in this case the military. This volume is really three books in one, divided as its title indicates. The first part, edited by C. G. Suits, tells of radar countermeasures developed at Radio Research Laboratory, chiefly jamming and "window" or "chaff." The story of the successful operational fruits of this work in European operations and in the invasion of Normandy is particularly interesting. The communications division performed basic work on radio propagation and on direction-finding equipment, and investigated important problems of radio and atmospheric conditions, including the use of radar for storm detection and weather forecasting.

The optics divisions, whose story is edited by G. R. Harrison, became the catchall for many problems other than optics, but all essentially problems of physics. In addition to important work on optical instruments, infrared signalling and detecting devices, and camouflage, they were responsible for many developments in acoustics and land mine detection. Some eighty different programs are discussed briefly. The report on the metallurgy division, edited by Louis Jordan, treats war metals, welding materials for aircraft, armor, guns, and ammunition, and how close watch was kept on enemy materials. The book is not just a digest of the innumerable NDRC reports that dogged the footsteps of progress during the war, but is a somewhat interpretative history of each of the divisions, and in spots it is highly entertaining reading. Richard M. Sutton
Haverford College

ROCKETS, GUNS AND TARGETS. (Science in World War II. Office of Scientific Research and Development.) Edited by John E. Burchard. 482 pp. Atlantic-Little, Brown and Company, Boston, 1948. $6.00.

This book deals with the OSRD developments in solid fuel rockets, recoilless guns, terminal ballistics, and hypervelocity guns. About half is given to the story of military fuel rocket development, including the bazooka, aircraft rockets, recoilless guns, flame throwers, and robot bombs, pusher rockets, jet-assisted take-off for aircraft, Mouse trap and Minnie Mouse, fuze developments, forward-firing aircraft rockets and spinner rockets. Unlike many recent treatments of rocket development, this book gives recognition to the basic pioneer work of Robert H. Goddard, who began exploring the use of rockets for various purposes as early as 1909, and launched the modern world-wide interest in this field. This book is recommended for general readers as well as those who have technical interest in rockets, guns, and related problems. G. Edward Pendray
American Rocket Society

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