nights, and it would be impossible for him to draw any far-reaching conclusions from his own work. It is only by piecing together the results obtained by many observers of many novae that their common properties and the correlations of these properties with other stellar data can be ascertained. A very useful compilation of this sort was published in 1942 by G. Cecchini and L. Gratton, under the title *Le Stelle Nuove* (Ulrico Hoepli, Milan, Italy). But much new information has become available during the past 15 years, and nearly all of our knowledge of the significance of the novae in the broad picture of cosmical evolution has been collected in the past ten years. Cecilia Payne-Gaposchkin states in her introduction that "the book will be obsolete by the time it is printed," and we agree with her that "this is a measure of the timeliness of the subject." However, I believe that only her last and, incidentally, most inspiring, chapter, on "Evolutionary and Theoretical Problems," is in danger of being soon out-dated. The rest of the book will very likely remain for a very long time, if not forever, a source of information concerning the observational data for all novae up to the middle of the present century.

There are eleven chapters: "Statistics of Galactic Novae," "Distribution of Galactic Novae," "The Spectra of Novae," "Galactic Novae, First Class Data," "Galactic Novae, Second Class Data," "Galactic Novae, Fragmentary Data," "The Symbiotic Novae," "The U Geminorum and Z Camelopardalis Stars," "The Supernovae," "Comparative Study of Spectral Development," and "Evolutionary and Theoretical Problems." Each chapter lists extensive bibliographies. There is a convenient general index of all the novae discussed in the various chapters (including a number of stars which are not usually regarded as novae but which have spectroscopic or photometric properties that resemble those of novae).

The number of light curves and other line drawings is fully adequate to illustrate the photometric properties of the various groups of novae, but the number of halftone reproductions of the spectra of novae is disappointingly small. Some of these reproductions are vertically widened enlargements (accomplished by means of a cylindrical lens or a swinging pendulum) of very narrow original spectra. This process of widening often introduces spurious features in the reproductions which look like spectral lines but which are merely widened images of specks and clumps of grains on the original photograph. Considerable caution must be exercised in the use of these enlargements. The reader may wish to consult, in addition to this book, the very complete atlas of spectra of Nova DQ Herculis of 1934, which was published in 1939 by F. J. M. Stratton and W. H. Manning of the University of Cambridge, and the sets of synthetic drawings by D. B. McLaughlin of the University of Michigan, which represent the typical development of a nova spectrum from its premaximum stage (when the brightness is 1.5 magnitude less than at maximum) until the spectrum is that of a diffuse nebula (when the brightness is 6.2 magnitudes less than at maximum). These drawings may be found in *Astrophysics: A Topical Symposium* [J. A. Hynek, Ed. (McGraw-Hill Astronomical Series, New York, 1951), pp. 135, 136] and in other publications.

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United States Army in World War II. The Technical Services. *The Signal Corps: the Test* (December 1941 to July 1943). George Raynor Thompson, Dixie R. Harris, Pauline M. Oakes, and Dulany Terrett. Office of the Chief of Military History, Department of the Army, Washington, D.C., 1957 (order from Supt. of Documents, GPO, Washington 25). xv + xx + 621 pp. Illus. $4.50.

The Signal Corps: the Test is the second volume of the history of the Signal Corps in the recent war; it covers the period from December 1941 to July 1943. It was prepared by the Historical Division of the Signal Corps under the direction of its chief, George R. Thompson, as one of the volumes in the series entitled the *United States Army in World War II.*

The first volume related the struggle of the Signal Corps to maintain itself and to develop in the period between the two world wars. General Omar Bradley agreed with the men of the Signal Corps that "Although Congress can make a General, it takes communications to make him a Commander." But the Signal Corps was to create more than that. This volume deals with the development of sense receptors for the Army's physiology and the development of a nervous system for integration and mobilization of the global military organism.

The second volume begins with the attack on Pearl Harbor, and the incident is symbolic of the course of events for the next 18 months. The Japanese planes were "seen" by what radar there was in operation on Oahu, but the information center failed to realize the significance of what was on the radar screens. Later, at Manila, similar information failed to pass through the channels of Army command. Lack of trained personnel, lack of equipment, and misunderstanding of what the equipment could do were all factors contributing to these tragedies. Indeed, at the beginning of the war the Signal Corps was an organization whose manpower and budget ran behind that of the other services. Even as late as 1942 General Colton remarked that the Signal Corps was farther behind in meeting its objectives than the other services.

Yet, by 1943, the research for the major technical advances had been carried out and most of the advances were already in the production stage. The British cavity magnetron had been applied successfully to produce a much more accurate microwave radar. Armstrong's invention of frequency modulation had been successfully applied to mechanized warfare. At the end of World War I the Signal Corps catalog had included some 2500 items, but by June 1943 it included more than 70,000. Thousands of men were pouring through old and new training schools of the Signal Corps by 1943. A global network of communications had been set up for the Army command and for the Army Air Force. Radio relay gave flexibility to the networks, carrier added many more channels, and radio teletype increased the speed of flow of information.

These advances were achieved during a period of internal conflict at the highest levels of command. Was the Signal Corps to supply materiel from civilian industry, or was it to organize and maintain communications? The problem of Signal Corps growth within the Army Service Forces and the conflicting goals of development, supply, and operations were expressed in the struggle of the Chief Signal Officer to obtain control of Army communications. The book ends with his defeat and retirement, but the authors point out that others were to reap the harvest of what he had sown.

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New Books

Biochemistry and Human Metabolism. Burnham S. Walker, William C. Boyd, Isaac Asimov. Williams & Wilkins, Baltimore, ed. 3, 1957. 944 pp. $12.

A Handbook of Animal Physiology. E. M. Pantelouris. Baillière, Tindall and Cox, London, 1957 (order from Williams & Wilkins, Baltimore). 263 pp. $6.25.

The Life, Work and Times of Charles Turner Thackrah, Surgeon and Apothecary of Leeds (1795–1833). A. Meiklejohn. Livingstone, Edinburgh, Scotland, 1957 (order from Williams & Wilkins, Baltimore). 238 pp. $6.

Cerebral Lipidoses. A symposium. J. N. Cumins, Ed. Thomas, Springfield, Ill., 1957. 222 pp. $8.50.