

tables are a good selection and are up to date, the discussion in the text is still too closely modeled on that of the first edition, which was written when many important facts were yet unknown and the significance of certain of the older data was still unappreciated. In particular there are several paragraphs, tables and graphs which might lead the unwary reader to suppose—falsely, I think—that Dr. Wiener holds the now abandoned theory that all American Indians, before white contact, possessed only blood group O. The data of Rahm, Golden, Matson and Schrader, and the calculations of Wyman and Boyd, which combined to render this theory untenable, are however referred to, and one may feel sure that the imperfection will be corrected in future editions.

The book is characterized by very complete references to the literature, in the form of footnotes to the text, as well as a bibliography of works of general reference. There is a very excellent subject index. Typography and format are of the same high quality as in previous editions, and the paper and binding appear to be excellent.

WM. C. BOYD

BOSTON UNIVERSITY SCHOOL OF MEDICINE

CHEMISTRY

Physical Chemistry. By FRANK H. MACDOUGALL. Revised edition. 709 pp. New York: The Macmillan Company. 1943. \$4.25.

THE good reception of the first edition (1936) of this text-book has led to the publication of its second edition (see preface). One who is familiar with the first edition will find the second almost unchanged, for "the author has not considered it necessary to make many substantial changes in the material discussed or in the manner of treatment." In particular, many will be glad to see that the large section devoted to chemical equilibrium has been retained without an alteration.

The principal revisions are the following: The table of natural isotopes has been brought up to date, the table of standard E.M.F.'s has been enlarged, three pages on liquid crystals and glasses have been added, the section on artificial radioactivity has been rewritten,

ten, one page on the glass electrode has been added, and the derivation of the Gibbs adsorption equation has been made more rigorous.

Several smaller improvements have been made. Equation II-(11) and Equation VII-(20), which contained errors in the first edition, have been corrected. Three problems have been added. The symbol E has been used instead of U for the energy of a system, so the text now follows the Lewis and Randall notation used by most American thermodynamics texts (including that of the author). The numerical values of the general physical constants have been brought more nearly up to date, though those given do not agree with Birge's latest (1941) values.

Since so few major revisions have been made in the text, several deserving topics have been given no more space in the second edition than they had in the first. For example, quantum mechanics has not been treated at any great length, while the theory of reaction rates has been omitted entirely. It is to be hoped that the author will devote additional space to some of these topics in future revisions.

It is disappointing to see that the old bombardment theory of osmotic pressure has been retained.

The decomposition of N_2O as an example of a second order reaction (p. 415 and Problem 7 on p. 446) should be abandoned, since experimental work more recent than that cited in the text has shown the reaction to be of $3/2$ order (*cf.* Pease, "Equilibrium and Kinetics of Gas Reactions," Princeton University Press, 1942, pp. 129-134). In fact, a portion of the chapter on kinetics might well be devoted to $3/2$ order reactions.

If the old equation of Bodenstein and Fink for the kinetics of oxidation of SO_2 on platinum is quoted, mention should also be made of the recent and much more satisfactory equation of Ueyhara and Watson.¹

These few omissions do not, of course, seriously impair the value of the book. The first edition was, and the revised edition remains, a well-written and useful text-book for beginning physical chemistry.

R. E. POWELL

PRINCETON UNIVERSITY

SPECIAL ARTICLES

THE SEROLOGICAL ACTIVITY OF DENATURATED ANTIBODIES^{1,2}

As a logical sequence to recent investigations on the effects of regeneration on the antigenic activity of

serum albumin,^{3,4} we have studied the influence of denaturation and regeneration on the immunological functions of antibodies.

The source of antibody was a concentrate of diva-

¹ This work was supported by the Rockefeller Foundation and by the Lederle Laboratories, Inc.

² Taken from a thesis to be presented by J. O. Erickson to the Graduate School of Arts and Sciences of Duke University, in partial fulfillment of the requirements for the degree of doctor of philosophy.

³ *Ind. Eng. Chem.*, 35: 541, 1943.

⁴ J. O. Erickson and H. Neurath, *Jour. Exp. Med.*, 78: 1, 1943.

⁵ D. S. Martin, J. O. Erickson, F. W. Putnam and H. Neurath, *Jour. Gen. Physiol.*, 26: 533, 1943.