SCIENTIFIC BOOKS

BLOOD GROUPS AND TRANSFUSION

Blood Groups and Transfusion. By A. S. WIENER. Charles C Thomas. 1943.

THIS is the third edition of a book which has become the best known and most popular in its field. The author is one of the most eminent of present-day workers in blood grouping. While there are a good many persons in this country with wide experience in blood transfusion, and a number with intimate acquaintance with serological techniques as applied to blood grouping, Dr. Wiener is one of the few who is qualified to write as an authority on both fields, and the result is a book of unique usefulness. It is so written that it may be used immediately by those not previously acquainted with the subject, but it is at the same time quite complete, so that there will be few owners of it who will need to seek more complete treatises, of which in fact there are none which are at all up to date. Those sections which may be of interest only to specialists are given in small print and may be omitted by the beginner without loss of continuity. The reader who desires more detailed information will progress in nearly every case directly to the current periodical literature.

The last three years have witnessed a marked increase of interest in the fields of blood transfusion and blood grouping, owing not only to the outbreak of the war, but also to the widespread adoption of "blood banks" in civilian hospitals and to a much greater use of fresh and dried plasma and other blood substitutes. At the same time it is gradually coming to be realized in technical laboratories that blood grouping is not a casual affair to be entrusted to the untrained intern or technician, but a very important operation, upon the successful performance of which may depend the life of a patient. In addition, the increasing recognition that the subgroups, and in particular the blood factor known as Rh, may, and often do, play a role in transfusion incompatibilities, has made it essential that those who undertake to direct blood grouping be equipped with rather more specialized knowledge than is possessed by the average medical man. The role of Rh in erythroblastosis fetalis has also contributed to the change. Hundreds of new articles on these subjects have appeared since the second edition of this book, and Dr. Wiener has ably attempted to enlarge and bring the volume up to date.

The general intention of the book is to summarize the present knowledge concerning the theory and technique of blood grouping; to present the applications to clinical, legal and veterinary medicine, and in anthropology, and to assemble and integrate the essential facts concerning the transfusion of whole blood, plasma and serum. There are 22 chapters; two introductory chapters dealing with the general facts about the blood groups, one on sources of error in blood grouping, one on the history of transfusion, one on the selection of donors, three dealing with transfusion, a chapter on fundamental genetic principles and chapters on the heredity of the groups, subgroups and M, N types. The subgroups and other individual blood differences are discussed in separate chapters, as is the Rh factor. The occurrence of the group substances in organs and body fluids, the evolution of the blood groups, the relation to disease, all have their chapters, as do the forensic applications to disputed parentage and the grouping of blood stains. The applications to anthropology are also discussed in a separate chapter which contains considerable data in tabular form.

The book contains 438 pages, 132 more than the second edition. Part of the additional material is comprised in the two new chapters, one dealing with the transfusion of stored blood and blood substitutes and the other with the recently discovered Rh factor and its role in erythroblastosis fetalis. Most of the new material, however, is in the form of additions to original chapters, some of which have been almost completely rewritten. The chapters on transfusion have been improved by the inclusion of some new illustrations which are greatly superior to those of former editions. The anthropological chapter has been enlarged by the inclusion of new tabular data and illustrations showing certain salient features of the world distribution of the blood-grouping factors. Newer and more specialized techniques, such as the determination of blood groups from mummified material and from bones, are also discussed briefly.

The most useful features of the book are probably the clear expositions of the fundamental principles and the basis for division of blood into groups and subgroups and the descriptions of the technique of performing such tests, together with the very clear and detailed descriptions of transfusion technique and the indications for and results of transfusions. Particularly notable is the detailed discussion of the new Rh factor and methods of detecting it. Second only to these sections are the discussions of the heredity of the various groups and types and the application of this knowledge to forensic medicine and other fields. The discussion of individual blood differences in animals is also very good.

Possibly the least satisfactory chapter, in the opinion of the reviewer, is that on the anthropological applications. For, although the data presented in the

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.

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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, 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 Uyehara 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.

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SPECIAL ARTICLES

THE SEROLOGICAL ACTIVITY OF DENATURED 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 immunolgical 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 fulfilment of the requirements for the degree of doctor of philosophy.

[1] *Ind. Eng. Chem.*, 35: 541, 1943.

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

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