

RACE, R. R., and SANGER, R.: *Blood Groups in Man*. 3rd ed., Blackwell Scientific Publications, Oxford, 1958.

This book on blood grouping has become the standard reference book on recent work in the blood grouping field. As the authors point out, Wiener's *Blood Groups and Transfusion* gives an excellent survey of the subject up to 1943, when the last edition of that book was published, while the book of Race and Sanger masterfully summarizes the tremendous strides in the field which have occurred since the discovery of the Rh factor in 1940. For the newcomer in the field, this book and the extensive bibliography cited in it will help to indoctrinate him quickly in the subject.

It is generally considered that the third edition of a book is the best, and this applies also to the book of Race and Sanger. Although the advances in the field which have occurred in the four years since the publication of the second edition are incorporated into the text, the size of the volume has been reduced from 400 pages to 377 pages by the elimination of much material which has not stood the test of time. The 20 chapters of the text incorporate chapters on principles of blood grouping, human genetics, A-B-O blood groups, M-N-S blood groups, P blood group, Rh-Hr blood groups, Lutheran, Kell, Lewis, Duffy, Kidd and other blood groups, blood grouping techniques, identification of antibodies, blood grouping in problems of disputed parentage, studies of twins and linkage, and blood groups and disease.

In view of the outstanding contributions made by the authors to the knowledge of blood grouping and the great value of their book as a source of information, the reviewer hesitates but to praise it. The reviewer has worked in the field for more than 40 years and finds that despite the tremendous advances in the blood grouping field, certain problems of the subject still appear to be at the same stage as those of 30 years ago. The reviewer had hoped that Race and Sanger in their textbook would

at least to some degree resolve the polemic regarding Rh-Hr serology and nomenclature, which is comparable in many ways to the polemic regarding the nomenclature of the A-B-O groups (Moss vs. Jansky vs. International) of 30 years ago. Since the authors make use of the so-called short-hand symbols which are identical with Wiener's genotypic symbols except that in the former the qualifying symbols are subscript and in the latter superscript, half the unfortunate nomenclature problem would have been resolved merely by using the short-hand symbols with superscript qualifying symbols as genotypic names. Race and Sanger would have been justified in moving the qualifying symbols to superscript position since that is the conventional method followed by geneticists.

Much space is devoted to the recent publications on the association between blood groups and disease, in which the authors apparently place credence, since on page 321 they write, « There is now overwhelming evidence for several associations », yet this line of investigation was popular 30 years ago and was discredited. On the other hand, the reviewer is pleased to see that in this third edition (pages 159-160), the authors have attempted to present Wiener's concept of the difference between a blood factor and an agglutinin. Unfortunately, the description does not make clear the fact that each individual blood factor is not necessarily located on a different portion of the surface of the agglutinin molecule, but may overlap just like two colors. For example, red and yellow on the surface of an object, may either be located in different areas or may overlap, producing the color blend orange.

A section (pages 142-145), is devoted to so-called « triple inheritance ». Wiener has asserted that this is contrary to the facts on the grounds that the Rh-Hr blood factors are not inherited in sets of threes, but in sets of differing sizes, the number of identified blood factors characterizing an Rh-Hr agglutinin depending, to some extent, on one's industry and

ingenuity in searching for and finding « new » blood group antibodies.

It is hoped that the authors will continue working in the blood grouping field for many years to come and continue to add to our knowledge of the subject. It can safely be anticipated that future editions of the book will become even more valuable as a source of information regarding this rapidly advancing field.

LESTER J. UNGER

WIENER, A. S., and WEXLER, L. B.: *Heredity of the Blood Groups*. Grune & Stratton, New-York and London, 1958.

The past 20 years have witnessed a tremendous growth in the knowledge of blood groups, and in recent years numerous books have been published especially by British investigators summarizing these advances. Yet, this new book by Wiener and Wexler is most welcome since it is unique in many respects. First of all, the senior author is generally recognized as a leader of this field which he has made his life's work and is known especially for his book, *Blood Groups and Transfusion*, and his discovery of the Rh factor in collaboration with Dr. Karl Landsteiner. Irving B. Wexler has been associated with the senior author for 15 years in their work on treatment of erythroblastosis fetalis by exchange transfusion, and also in collaborative publications explaining the mosaic nature of red cell agglutinogens.

The monograph, *Heredity of the Blood Groups*, does justice to the original contributions and ideas of the authors. While tersely summarizing the facts known about the heredity of the blood groups it is unique in its stress on principles. In the field of serology the nature of the difference between an agglutinin and its serological attributes or blood factors is clearly expounded, and the numerous applications of this concept in blood

grouping research is explained throughout the book. Moreover, a clear explanation of the applicability of the theory of multiple allelic genes, not only for the A-B-O groups, but also for the Rh-Hr blood types, M-N-S types, and other blood group systems is clearly presented. The clarity of exposition makes the book pleasant as well as instructive reading. The important contributions of British investigators have not been neglected, and a large section is devoted to the discussion of the C-D-E notations used by these workers.

The authors cite the report of the Committee on Medicolegal Problems of the American Medical Association of which they were members and they point to the recommendation that « unless and until some other convention can be agreed upon, the original Rh-Hr notations be retained as the standard and sole nomenclature for the preparation of approved medicolegal reports on the Rh types ». To this the authors now add « In view of the facts which have been presented here, it would appear that this recommendation should now be extended to include the applications of the Rh-Hr blood types in clinical medicine and anthropology ». It is unfortunate that despite the great advances in knowledge that have occurred regarding the blood groups, that there should still be controversies similar to those of 30 years ago when there was a controversy regarding the nomenclature of the A-B-O groups and when studies on supposed association between blood groups and disease were fashionable. It is regrettable that the experience acquired with the controversy regarding A-B-O nomenclature has not served to forestall the prevailing misunderstanding regarding Rh-Hr serology and nomenclature. And, similarly, the fact that the early work on blood groups and disease was discredited has not dampened the ardor of investigators who report what they believe to be associations between A-B-O blood groups and such diseases as peptic ulcers, carcinoma of the lung, diabetes mellitus, fractured femur, etc.

The reviewer is pleased to see the publication