BOOK REVIEWS

DIE BLUTEIWEISSKÖRPER DES MENSCHEN (THE PROTEINS OF HUMAN BLOOD), *Ferdinand Wuhrmann and Charlie Wunderly*, Basle, Switzerland, Benno Schwabe & Co., 1952, pp. 387.

This excellent German book is the second edition of the monograph first published in 1947 by the same authors. The subject is discussed in 8 chapters:

I. *Chemistry of plasma proteins*, a short and comprehensive description of the subject.

II. *Reactions of proteins*, dealing with the general qualitative tests of proteins, the common methods of quantitative analysis of total plasma protein, fibrinogen and prothrombin, and the estimation of plasma volume.

III. *Methods of investigation*, discussing the methods of determination of certain plasma protein fractions, such as fractional salt precipitation, electrophoresis, paper electrophoresis, and ultracentrifugation. The binding capacity of plasma proteins for dyes, the measurement of the ultraviolet spectrum of proteins, and the determination of their amino acid composition by paper chromatography are also described in this chapter.

IV. *Clinical chemical methods*, including blood sedimentation, and a large number of empirical methods of coagulation or turbidity produced by various agents, for the characterization of normal and pathologic sera.

V. *Clinical significance of the plasma proteins*. In this chapter the authors correlate a certain number of phenomena, observed in one and the same individual, to yield nine possible types of different "constellations" (Reaktionskonstellationen) which they attribute to nine different groups of diseases. The observations are based on a variety of important methods of clinical analysis which are critically discussed. These include electrophoresis, heat coagulation tests, determination of total plasma protein, and of the albumin-globulin ratio, the sedimentation rate, and the Takata, cephalin, thymol, and cadmium reactions. The nine types are clearly explained by means of schematic illustrations, with each case compared to the normal state.

Conversely, a number of diseases is discussed with regard to the changes which simultaneously occur in the plasma proteins.

VI. *The clinical features of dysproteinemia and paraproteinemia*. This chapter is divided into diseases with (1) abnormal fibrinogen, (2) abnormal globulins, and (3) abnormal albumin. A rich and very interesting material, particularly electrophoretic patterns, is presented.

VII. *Formation of the blood proteins*, giving a brief view on this subject.

VIII. Outlook.

This book presents in a masterly way the results obtained by a close collaboration of the field of internal medicine with several branches of the basic sciences, namely, analytic chemistry, physical chemistry, and biochemistry, and by the successful application in the medical field of some of the highly specialized modern methods developed as tools in the field of protein chemistry. The usefulness of electrophoretic analyses and of determinations of the heat coagulation threshold of serum, both extensively used in their own research work by the authors, is particularly emphasized throughout the book. A more detailed description of these technics, in particular of electrophoresis, could have increased the value of this book and made it of more general interest.

As is well known, none of the numerous methods of plasma protein analysis has been proved to manifest any disease specificity. The skillful combination, however, of the results of a certain number of these methods has enabled the authors to advance nine possible types of "constellations" which they ascribe to nine different groups of diseases. Although

original and very desirable, these nine constellations appear to be somewhat arbitrary, and it seems questionable whether their existence will be approved and recognized by other investigators.

The book gives an excellent review of the field of the proteins of human plasma; it is to be noted, however, that the erythrocyte proteins are not discussed. There is contained in this volume a wealth of information which will undoubtedly make it very useful to a large circle of clinicians and chemists.—*Peter Bernfeld*

GENERAL GENETICS. *A. M. Srb and R. D. Owen.* San Francisco, W. H. Freeman, 1952, pp. 561.

Hematologists are confronted more and more with the need for a thorough understanding of the fundamental principles of heredity. There are many hematologic disorders for which a knowledge of genetics is essential, for example, hemophilia, hereditary spherocytosis, sickle cell anemia, Mediterranean anemia and especially erythroblastosis fetalis. Therefore, there is need for an authoritative elementary but comprehensive book on general genetics which hematologists and other research workers can consult for information regarding the basic principles of genetics and their applications. The excellent book by Srb and Owen fills this need admirably.

The attractive features of Srb and Owen's book are the freshness and modernity of its approach and the repeated references to human genetics. The bibliography at the end of each chapter listing, reviews and articles on which the material presented is based demonstrate how up-to-date the volume is, because most of these references are less than five years old. The text is amplified by sections on questions and problems at the end of each chapter, where the reader is presented with additional observations on plants, lower animals and man, and required to work out the genetic mechanism. This is a valuable feature of the book, because one of the characteristics of the science of genetics is that the number of fundamental principles involved is relatively small, while the diversity of the applications of these principles is great. The reader soon learns how to recognize the principles that are involved no matter how much they may be disguised by the peculiar character of the observations.

The book is intended primarily as a text for elementary courses in genetics, and for this purpose it is eminently suited and will certainly be widely adopted by colleges throughout the country. It is also a book that physicians should acquire, to read with interest and profit. The elementary principles of genetics are clearly presented with the aid of some relatively recent interesting observations from animal and plant genetics. Moreover, applications to human genetics are pointed out, and among the first problems the reader is required to work out for himself are the heredity of thalassemia and Pelger's anomaly. Mendel's pioneering work is of course suitably recognized, and his observations are deftly presented as problems at the end of the chapters dealing with elementary principles.

In the earlier chapters, the reader is confronted with the problem of mechanism of gene action, a fundamental question with which modern genetics is largely concerned. In contrast to earlier books on genetics, this new volume attempts to bridge the mystic gap between genotype and phenotype, and points out that this problem is largely if not entirely a biochemical one. Examples from animal and plant genetics show that the gene frequently determines the production of a particular enzyme which reacting on a special substate, either derived from the environment or conditioned by other genes, gives rise to the observed phenotype. It is also pointed out early in the book how the expression of a gene is modified or even suppressed by the impact of the environment, both external and internal. Thus, as the authors point out, the controversy regarding the relative importance of heredity and environment (nature vs. nurture) is largely pointless.

Additional chapters deal with sex determination and sex linkage (including a discussion of the heredity of hemophilia), the chromosomes, life cycles, linkage and chromosome mapping, chromosomal aberrations, mutations, quantitative inheritance, inbreeding and selection, genes and cellular biochemistry and development, the nature of the gene, evolution, and practical applications in animal and plant breeding and eugenics.

The excellent quality of the volume may perhaps best be illustrated by the sections on human blood grouping and erythroblastosis fetalis. These difficult problems are so clearly explained that the reader with no prior knowledge of the subject can grasp it without difficulty. The clear text is amplified by excellent diagrams, and one of the admirable features of the book is the liberal use of original informative diagrams and line drawings to round out and further explain the text materials. Another remarkable feature of the book is that while it is written primarily for the neophyte, it is so comprehensive and up-to-date that it can be read with enjoyment also by individuals already well versed in genetics. The section on Rh-Hr genetics has been particularly well done—indeed the book is unique since t is one of the few reviews that reveals insight into the true nature of the difference between the viewpoints of Rh-Hr and C-D-E workers. This section by itself makes the book required reading for hematologists, especially those working on the Rh blood types and erythroblastosis fetalis.—*A. S. Wiener*