CLINICAL HEMATOLOGY

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TO MY WIFE

PREFACE TO THE SECOND EDITION

SINCE the first edition of this book was written many advances have been made in hematology. Currently the discovery of the chemical structure and the synthesis of the *Lactobacillus casei* factor ("folic acid"), as well as the demonstration that this substance (pteroylglutamic acid) can produce a remission in pernicious anemia and related forms of macrocytic anemia, promises to open the way to the discovery of the nature of the antipernicious anemia liver factor and should make possible the elucidation of many of the details of the chemical steps which lead to the synthesis of hemoglobin. Knowledge has accumulated concerning the rôle of other vitamins in hematopoiesis. Studies of mineral metabolism and of the porphyrins have been aided and advanced, in particular, by the isotope technics. The discovery of the Rh factor and the elucidation of the rôle this plays in hemolytic transfusion reactions and in the pathogenesis of hemolytic disease of the newborn ("erythroblastosis fetalis") represents another signal advance. The introduction of the nitrogen mustards for the treatment of Hodgkin's disease and related disorders is important in that it has been thus shown that chemical agents are capable of producing effects like those hitherto associated with the action of irradiation. It may be reasonably expected that other similarly acting and yet less toxic agents may be found.

These, as well as numerous other advances in hematology are considered in the present edition. Almost every page has been modified in one way or another and many have been rewritten. A number of new illustrations have been added, both black and white and plates in color. Development of our knowledge of the factors concerned in erythropoiesis and greater understanding of the details of the breakdown of the red corpuscles, have led to the introduction of an entirely new chapter which deals with what might be looked upon as "the metabolism of the erythrocyte." It may be expected that in this fascinating field much more will be learned in future years and it is to be hoped that similar advances may take place in regard to our knowledge of the leukocyte; perhaps in that way an approach can be made to an understanding of leukemia and the discovery of a means for eradicating this inexorable disease.

The author is again indebted to his friends and associates for their help. The proofs have been thoroughly reviewed by my wife as well as by Doctors J. J. Dubash and Charles M. Huguley who have, in addition, given much useful advice, as have also Doctors G. R. Greenberg, G. E. Cartwright, Moisés Grinstein, Hans H. Hecht and B. V. Jager. To his secretary, Miss Alida Woolley, much thanks is due.

MAXWELL M. WINTROBE

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PREFACE TO THE FIRST EDITION

As knowledge is gained and a subject is better understood, it should become more simple rather than more difficult. Yet hematology has appeared to the average physician to grow constantly more complex, in spite of the fact that great progress has been made in this field and a clearer concept of the factors governing hematopoiesis as well as of the disorders of blood formation has been evolved.

The introduction of new methods, the description of new disease syndromes and the application of new terms have contributed to the apparent complexity of the subject. The literature, moreover, has grown voluminous and the task of the physician who must keep abreast of many fields is overwhelming.

To bring together the accumulated information in the field of hematology in a systematic and orderly form, to sift the important from the less significant, to describe the newer methods which are of practical value and to make note of those which are less essential, to outline details of differential diagnosis, to describe the indications for and methods of treatment, and to make clear as far as present knowledge permits the nature of the underlying physiological disturbances, are the objects of this book.

To fulfill these objects a book must be comprehensive, complete and authoritative. To this end thousands of publications have been consulted. This information has been so organized that it should be readily accessible. In addition, a bibliography of some 2400 references is provided in order that the interested reader may obtain still more information if he so wishes. The bibliographies are found at the end of each chapter and the text of the chapter serves as an index to the contents of each bibliography. Monographs and articles furnishing more complete bibliographies are so designated.

Emphasis is placed on the importance of accurate diagnosis as a prerequisite to efficacious treatment. The use of therapeutic measures without discrimination and the administration of "shotgun" antianemic remedies indicate the need for a clear understanding of the indications for liver, iron, vitamins and other substances. The effective employment of these and other therapeutic agents is discussed in detail.

Laboratory procedures of value in diagnosis are in the main quite simple and can be carried out in the office of the average physician. They are considered in detail. A departure from the usual custom has been made, however, in that the technical methods are not all grouped in a single section but are described in the various chapters of which they logically

form a part. This is done because the objects and principles of a laboratory test must be thoroughly understood if it is to be well performed and correctly interpreted. Only those procedures which do not come within the scope of the various specific chapters are described in the chapter on methods. The vital importance of technical precision is stressed and the limits of accuracy of various procedures are indicated.

There is in this book no departure from accepted terminology. Instead an attempt is made to give a clear interpretation of the terms now employed. Furthermore, no glossary of hematological terms has been prepared. It is believed that the meaning of a name or descriptive phrase is best expressed in the text where it is used. The index serves as the key to the definitions of the various terms.

In a book on hematology adequate illustration is essential. Nevertheless the cost must not be prohibitive to the student and physician. The excellent illustrations which have been published by a number of writers prove that much of the essential detail of cells, including even the leukocytes, can be demonstrated in engravings without the aid of color. For these reasons colored plates have been used sparingly in this book and serve to amplify rather than to displace illustrations in black and white. This saving in expense has permitted the inclusion of many illustrations of clinical features which have been neglected in most books on hematology.

Although it forms no part of clinical hematology, an Appendix giving the blood findings in 46 species of animals, including non-mammals, as well as a bibliography of literature on comparative hematology, is included in this book because I have been called upon to supply such information frequently and know that it is not readily accessible elsewhere. Many of the blood determinations have been made in our own laboratories.

Photographs, drawings and roentgenograms of patients have been used freely for illustration, through the courtesy of Dr. Warfield T. Longcope, my chief, to whom I am also indebted for the opportunity to study all of the cases with hemopoietic disorders on the medical service and to use the records which have been accumulated with great care over a period of many years. Dr. Edwards A. Park has very kindly allowed me the privilege of seeing many patients in the Department of Pediatrics.

It is with pleasure that I express my gratitude to those students of the Department of Art as Applied to Medicine of the Johns Hopkins University who have prepared many of the drawings which are reproduced here. Thanks are due particularly to Miss Laura Ornstedt, Miss Dagmar Haugen, Miss Marjorie Hoag and Miss C. M. Shackleford. I am also indebted to W. F. Prior Company, Inc., for permission to reproduce a number of the plates prepared under my direction which appear in Tice's Practice of Medicine.

I am particularly grateful to Dr. Oliver P. Jones for his helpful advice

and criticism and to my many associates at the Johns Hopkins Hospital for the same reasons, including especially Dr. J. William Pierson and his staff in the Department of Roentgenology, Dr. Alan M. Chesney, Dr. Arnold Rich, and Dr. Harry Eagle. Thanks are due also to Dr. Edward A. Gall, Dr. Jacob Furth and Dr. Samuel Richman, and to the authors and publishers of articles from which illustrations have been reproduced. These are acknowledged in the text. The hundreds of investigators who have generously furnished reprints of their papers have made my task very much easier and I have thought of their kindness many times as this book was being written.

My wife has been my chief assistant in the preparation of the manuscript and in the reading of proofs, and my debt to her for this and for her patience and encouragement is great. Mrs. Norma Strobel, my secretary, Dr. Conrad Acton and the members of my laboratory staff gave valuable assistance in the preparation of the manuscript and charts. The staff of Messrs. Lea & Febiger have been both patient and skilful in their work of publication.

M. M. WINTROBE

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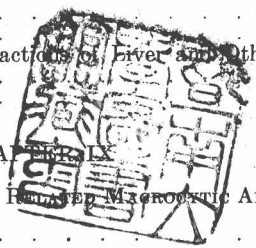

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