final chapters set the stage for the volume that follows by elucidating the mechanisms of mutational events as they affect chromosome number and structure. The appendixes to volume 1 are valuable in that they include detailed techniques of cell culture and chromosome preparation, as well as the reports of the Denver (1960), London (1963), and Chicago (1966) conferences on standardization of the nomenclature in human cytogenetics.

In volume 2, Hamerton brings his own experience, and that of Polani's group at Guy's Hospital in London, to discussions of autosomal and sex chromosomal abnormalities. This volume is most informative in its treatment of the latter group of disorders, though the author might well have spared us the at times excessive enumeration of the clinical manifestations and cytogenetic findings in too many cases of sex chromosomal and autosomal disorders. Nonetheless, this cataloging is useful from a reference point of view. Despite the occasional weight of detail, the syntheses come through clearly, and the author's discussion of the chromosomal determination of sex, in man and other mammals, is particularly valuable.

Unfortunately, the last chapters of this volume, the cytogenetics of pregnancy wastage and of neoplasia, seem somewhat artificial. The author might have done better to incorporate the discussion of abortuses into his discussions of sex chromosomal and autosomal abnormalities. The excellent studies now published on fetal wastage seem so relevant to our understanding of the trisomy and X-monosomy conditions, in particular, that it is a pity he elected to review these studies separately. The chapter on chromosomes and cancer is an adequate review of the subject, but it is more or less unintegrated into the basic structure of the volume, and seems to this reviewer to have been an unnecessary addition.

The figures of meiotic and mitotic chromosomes are generally excellent, adding a sense of the esthetics inherent in this discipline when it is properly pursued. The bibliography is extensive and valuable as a source of original and review papers.

One is tempted to regret that the newer techniques of fluorescence and heterochromatin staining (to produce specific banding patterns of human chromosomes) were not available until after publication of Hamerton's volumes. These techniques will greatly increase our knowledge of the extent and meaning of chromosomal variation in human populations. However, it will likely be several years before the biological basis of these staining techniques is understood, and perhaps even longer before their widespread use clarifies fully their value and limitations. Hamerton's two-volume work will stand, then, for quite some time as the definitive text in the field.

ARTHUR D. BLOOM
Department of Human Genetics, University of Michigan Medical School, Ann Arbor

Transplants and Hosts

The Immunobiology of Transplantation. RUPERT BILLINGHAM and WILLYS SILVERS. Prentice-Hall, Englewood Cliffs, N.J., 1971. xiv, 210 pp., illus. Cloth, $9.75; paper, $4.95. Prentice-Hall Foundations of Immunology Series.

A survey of problems in transplantation, meant for reading by biologists, is a welcome addition to existing books in the field. Billingham and Silvers have produced the best general account of transplantation that I know, and have let the account range from genetics to surgery without losing its form as a work about biology. Their experience in most of the areas covered in the book means that a reader is favored by a single view of transplantation, and this single view eases his way into the subject.

Throughout, clinical and experimental materials are woven together most skillfully. The chapters on the genetics of histocompatibility begin with the history of transplantation and move through a description of animal systems, especially the mouse, to a chapter on human histocompatibility genetics. Progress in this field is succinctly but clearly described, together with the usefulness of typing in organ transplantation. Again, in the chapter discussing immunologically privileged sites for transplantation and the special properties of some tissue and organ grafts, a happy mixture is found of animal experiments and clinical results. Succeeding chapters on tolerance and the reaction of graft versus host deal with some classic aspects of experimental transplantation, neither of which, fortunately in the latter instance, has been much applied in clinical practice. Chapters on pregnancy as a problem in homografting and on immunosuppression in man-made graft systems conclude the book. Throughout, as many problems are raised as solid strong statements of fact are made. The statement "we don't know" recurs, emphasizing the complexity that has been brought to order in this book and the continuing advances in the field.

A short but useful list of older references, stressing reviews, is given for each chapter. Read with the book, the reviews should readily allow students to get a solid grounding in transplantation. To then extend their knowledge to the very recent literature might be somewhat more difficult. Many recent experiments are cited, but only the authors' names are given rather than complete references, and tracing the articles might take a few minutes with an index or two. Still, this device allows access to the literature without encumbering the book by enormous reference lists.

The use of the book as an introduction has been experimentally tested in my own laboratory. It has been impossible to lay hands on the review copy for the past few months, as several new students, coming into immunology from biochemistry, have given themselves quick and useful introductions to the field by means of it. This book is an auspicious start to its series: monographs on basic topics in immunology for a diverse audience.

MICHAEL EDIDIN
Department of Biology, Johns Hopkins University, Baltimore, Maryland

Geological System

Cambrian of the New World. C. H. HOLLAND, Ed. Wiley-Interscience, New York, 1971. viii, 454 pp. + plates. $29. Lower Palaeozoic Rocks of the World, vol. 1.

Rocks of the Cambrian System represent a time span of perhaps as much as 100 million years. The physical limits of the system are not defined in the present volume, biostratigraphic and philosophical argument being deferred to a later book in the series. Despite the lack of precise definition, the continents of the New World display a great array of acknowledgedly Cambrian rocks at and below the surface of a vast area. Effective treatment and analysis in this single volume result from a combination of skillful authorship and the nature of the preserved Cambrian record. A. S. Palmer, in cov-