lated to many of the most pressing biomedical problems we are currently faced with, from the utilization of spare parts and aging to overpopulation. It is therefore not surprising that two books have recently been devoted to this subject.

One of these (*Immunogenetics*) is intended as a general introductory text on all aspects of the field (including the inheritance of immune response capacities, serum allotypes, and various genetic aspects of tissue transplantation) for advanced undergraduate, graduate, and medical students; the other (*Immunogenetics of Tissue Transplantation*) is a more specialized account of one of the major areas of immunogenetic investigations. Both books are based on graduate courses which the authors have given.

Writing a general text about a subject as specialized as immunogenetics is a much more formidable challenge than writing one on a subspeciality of this field, and because of this it is not surprising that Lengerová's book fulfills its mission better than Hildemann's. Indeed, in many ways Lengerová's text, because it is able to deal with its subject at length, serves as a better introduction to the field. Thus, in spite of the facts that a few erroneous and contradictory statements are made in the course of the book and that the edition contains numerous misspelled words and some sentences that as a consequence of word omissions are incomprehensible, it covers the subject of the genetics of tissue transplantation remarkably well. If any criticism can be levelled at this effort it is that inasmuch as Lengerová has written such a masterly account of her subject—namely, the genetics of tissue transplantation as related almost exclusively to mice—it is too bad no attention is given to the immunogenetics of tissue transplantation in man. Such an inclusion would have increased the appeal of her efforts enormously, especially since there is now abundant evidence to suggest that mammals, in general, have very similar histocompatibility systems.

While one cannot help being impressed with the scope and depth of Hildemann's knowledge of and contributions to the field he is writing about, his treatment will probably be found too advanced for the beginner and not satisfying to the expert because it is not documented with references. Indeed, the book leans more toward being a comprehensive review of immunogenetics (sans references) than an introductory textbook. This is especially the case since superficial attention is devoted to many investigations some of the findings of which have yet to be confirmed and which therefore may be more confusing than illuminating to the uninitiated. One attractive feature of the book is that at the end of every chapter there is a bibliography, the contents of each entry of which are briefly described. Moreover, it does supplement the Lengerová text remarkably well in that it presents a very good account of the genetics of tissue transplantation in man. This book, in sharp contrast with the Lengerová text, is also adequately indexed.

WILLYS K. SILVERS
Department of Medical Genetics, University of Pennsylvania, Philadelphia

Multiple Sclerosis

Pathogenesis and Etiology of Demyelinating Diseases. A symposium, Locarno, Switzerland, May–June 1967. KRYSTINA BURDZY and P. KALLOS, Eds. Karger, Basel, 1969 (U.S. distributor, Phiebig, White Plains, N.Y.). xii + 704 pp., illus. $34.80. Supplement to International Archives of Allergy and Applied Immunology, vol. 36.

The etiology of multiple sclerosis is one of the most fascinating and important enigmas in medicine. This symposium concentrated almost exclusively on the virological and immunological theories. Despite this restriction, the 52 contributions include a bewildering variety of studies. This is not detrimental, however. On a subject as difficult and frustrating as the demyelinating diseases, it would be unreasonable to expect uniformity, logical sequence, or any other tidy quality. Indeed, I could not escape a feeling of excitement over the plethora of viral techniques, studies, and proposals which are exposed in these reports and discussions. Admittedly, much space is devoted to diseases that are unrelated to multiple sclerosis and are not in themselves demyelinating, but this also must be expected. Because of the breadth of subject matter and the forays into remote territories, this volume is not likely to become a widely quoted "milestone" book like the 1957 Bethesda conference on allergic encephalomyelitis or the 1964 New York Academy of Science symposium on demyelinating diseases. But these same features should make it interesting to a fairly wide variety of scientists. There is an abundance of useful speculation, both in the reports and in the discussions. The discussions are lively and easily comprehended, and the reader cannot fail to be stimulated by them.

In addition to direct viral invasion of the brain and immunologic reactions directed against viral or associated viral-host antigens, considerable space is devoted to encephalitogenic components of the nervous system and their role in elicitation of allergic inflammation. Classical morphology, electron microscopy, tissue culture, epidemiology, and other disciplines are represented.

A few faults must be mentioned. A number of immunological and morphological papers are divorced from others of their type and included in a potpourri group under a heading referring to virology. A few papers are so completely remote from the subject as to be out of place. Papers have been discussed in groups, with discussions printed at the end of the group. Therefore contribution and comments are often separated, and one must hunt for the location of pertinent discussion. In view of the special value of the discussions, this feature is particularly unfortunate. There seems to have been little effort to eliminate duplication or achieve cross-referencing and correlation, which in a book of this size would have been helpful.

SEYMOUR LEVINE
Pathology Department, New York Medical College Center for Chronic Disease, Bird S. Coler Hospital, Welfare Island, New York City

Endocrinology

Recent Progress in Hormone Research. Vol. 25. Proceedings of the Laurentian Hormone Conference, Mont Tremblant, Quebec, Aug. 1968. E. B. ASTWOOD, Ed. Academic Press, New York, 1969. viii + 696 pp., illus. $32.50.

This volume lives up to the high standards set by its predecessors in this series by providing thorough, up-to-date reviews of a potpourri of topics of interest to endocrinologists. The 14 diversified chapters can be grouped into several broad categories: familiar themes viewed in a new light (systems

analysis applied to ovulation, ultrastructure of endocrine glands, mechanism of hormone action with a molecular biology approach); enigmas (do uterine luteolysin, ectopic neoplastic tissues, and the pineal gland have endocrine activity?); hormone precursors (proinsulin and vasopressin); metabolism of steroid and protein hormones (thyroxine, corticoids, placental lactogen); hormone methodology (assays of protein binding, steroid dynamics). As is to be expected, the quality of the writing varies from scientific gobbledegook to simple, lucid prose; the chapter by Murphy on protein binding and the assay of nonantigenic hormones is a good example of the latter.

One of the delightful features of this series is the discussions following the formal papers. They always provide fascinating glimpses of the sociology of science. One encounters new territory being staked out; irate speakers who feel slighted because *their* research was not cited; completely irrelevant research introduced (the "I have a slide" syndrome). Sometimes the comments are actually pertinent to the papers. The book is highly recommended to anyone interested in recent developments in endocrinology.

GILBERT S. GREENWALD
Departments of Obstetrics and Gynecology and Anatomy, University of Kansas Medical Center, Kansas City

Immunocytes

Cellular Recognition. Fourth Developmental Immunology Workshop, Sanibel Island, Fla., Feb. 1968. RICHARD T. SMITH and ROBERT A. GOOD, Eds. Appleton-Century-Crofts, New York, 1969. xviii + 334 pp., illus. $18.

"Cellular recognition." Most of us, I suppose, know a cell when we see one, but this symposium shows many of us new aspects of the recognition functions of cell membranes. The book should be useful to students and research workers in several areas of cell biology, each of which has some fragment of the nature of the cell surface under its special protection. Though only a beginning in a necessary direction, the volume places many experiments of cellular immunology in the wider realm of all surface-mediated reactions of cells and elucidates some of the wider implications of these experiments. Even more usefully, it will enable students of morphogenesis and differentiation to review some of the literature on the special surface reactions of lymphocytes, reactions which, if they cannot charm their way, will soon force their way into the general literature on cell contacts and interactions.

The book is divided into five sections, each containing both formal papers and informal discussion edited from tapes and transcripts of the meeting. The first section deals primarily with examples of nonimmunologic aspects of the cell surface membrane, ranging from membrane structure and isolation, through membrane chemistry and turnover, to consideration of pinocytosis by magophages and to theoretical and experimental studies on contact inhibition and on the specificity of cell adhesion. Some of these exemplary papers are summaries of extensive and definitive work in the subjects discussed, whereas others, such as that on cell membrane structure, are expositions of one particular point of view on the topic, to be examined rather critically and in the context of others' experiments. All in all, the section serves to remind immunologists that others are and have been puzzling over recognition of the cell surface.

The remainder of the volume is given over in greater or lesser degree to the immunologists. In parts both papers and discussions deal narrowly with their subject. However, in the sections on lymphocyte "homing" in vivo, dealing with these cells' selection of the place and time to leave the circulation and with some of the chemical factors determining this selection, and especially in those sections on the phenomenon termed "allogeneic inhibition," membranologists in general will find much to consider that may direct their thinking about surface specificities in new ways. In the section on homing, Fichtelius and Trentin report observations on the traffic and homing of lymphocytes and bone marrow cells, and Gesner offers strong suggestions that it is carbohydrate molecules on these cells that are responsible for their selective passage from bloodstream to lymph nodes. In the papers on allogeneic inhibition, two family teams, the Möllers and the Hellströms, argue out with Holm and Perlman the mechanism of a particular sort of target cell killing in culture that occurs when allogeneic lymphocytes are mixed with other lymphocytes or with tissue or tumor cells as targets. The experiments presented and their interpretation should be of greatest interest to the membranologists, though the evidence that intimate contact between structurally unlike surface membranes may cause cell death is not yet as strong as it might be. It is to be hoped that the discussion in this area, together with the useful summary of "Direct effects of stimulaton of lymphoid cell populations" supplied on page 271 by the editors, will set many to reading the literature of immunology with new interest.

The collection is recommended as a useful summary to immunologists, though they may be acquainted with the versions of the papers presented which have since been published in immunology journals, and though it barely touches on very recent developments in the study of lymphocyte membrane receptors for antigens and the place of receptor cells in the immune response. The book is highly recommended to nonimmunologists, who may find more to interest them in the literature on immunocytes than they might have expected.

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

The Nonneutral Atmosphere

Introduction to Ionospheric Physics. HENRY RISHBETH and OWEN K. GARRIOTT. Academic Press, New York, 1969. x + 334 pp., illus. $16. International Geophysics Series, vol. 14.

Ionospheric research is now about four decades old. During the first three decades, the ionosphere was investigated primarily by radio methods from the ground; in fact, the existence of the ionosphere was established as the result of interpreting the early radio transmissions of Marconi at the turn of the century. For many years, ionospheric investigations were largely the domain of workers concerned with radio propagation. Fundamental theoretical work in this field was performed in the early 1930's primarily by S. Chapman and later on by many others. During the past ten years ionospheric physics has