are many places in this compendium that appear to have suffered severely because of lack of space—subjects that should be expanded into a second or third volume. This book therefore is at the crossroads. If it is expanded, it will become a two-volume edition. If further revisions are made downward, it will lose its inclusive nature and would then revert to a traditional textbook for medical students. It is felt that the authors should amplify their statements and expand into a second volume, perhaps dividing the book in the middle, with the first volume being devoted largely to principles and the second volume to the expansion of detail on unusual or rare subjects. The book is highly recommended for use by practicing physicians, pathologists, and medical students.

JOHN A. WAGNER
Department of Pathology, School of Medicine, University of Maryland, Baltimore

Progress in Biophysics and Biophysical Chemistry, vol. III. J. A. V. Butler and J. T. Randall, Eds. Academic Press, New York, 1953. 386 pp. Illus. + plates. $9.50.

The new volume in this admirable series maintains, with few lapses, the high standards set by its predecessors. Several of the articles are of the nature of decennial reviews. Considering the chapters in order:

Doniach, Howard, and Pelc briefly, but authoritatively, summarize the physical principles, techniques, and principal accomplishments of the autoradiographic method. A set of excellent photographs clearly indicates the scope and power of the modern techniques.

Seeds provides a valuable summary of the rather limited data available upon the dichroism of the ultraviolet and visible absorption bands of oriented biological substances, with reference to the utility of such data in the determination of structure. With the development of microspectrographic methods, the potential range of application of this technique has been greatly expanded.

Fraser is concerned with the infrared spectra of biologically important molecules, particularly proteins, nucleic acids, and polysaccharides, and the assignments that have been made of the various bands. While the uncertainties of interpretation are indicated, the treatment is too brief to serve as much more than a guide to the literature.

Markham contributes a critical and authoritative review of several topics pertaining to viruses, including the use of centrifugal methods for virus purification and molecular weight determination, the study of the structure of virus crystals by electron microscopy and x-ray diffraction, and the investigation of the form of tobacco mosaic virus in solution by viscosimetric, birefringence, and light-scattering techniques. Markham's discussion clearly points out the inadequacies of some of the early work in this field and indicates some still unresolved discrepancies.

"Mechanism of biological action of ultraviolet and visible radiations" by Errera is a wide-ranging and quite complete review that is somewhat marred by an uncritical attitude and an awkward organization of material.

Booth gives a brief, but lucid, summary of the developments in the theory of the ionic double layer during the past decade and of the advances in the applications of this theory to a variety of specific problems, including among others, the stability of colloids, coacervation, and electrophoresis.

Davies and Walker provide a well-balanced and thorough review of the practices, potentialities, and difficulties (intrinsic and technical) of microspectrophotometry. The carefully reasoned discussion of the major contributions in this field is especially noteworthy.

Sadron's chapter is a critical review of the hydrodynamic and optical methods for determination of the size and shape of rigid macromolecules in solution. Particular attention is paid to the assumptions underlying the various methods, the internal consistency of the methods, and the necessity for consideration of the rigidity and degree of polydispersity of the particles. Experimental results upon TMV, serum albumin, and DNA are discussed as examples.

Teorell succinctly summarizes the theory of ionic transport across electrically charged (ionic) membranes. The applications of this theory to the development of membrane potentials, to the electric conductivity and reactance of such membranes, and to the establishment of transient and steady-state ionic distributions are discussed, with special reference to possible biological implications.

A disturbing number of typographical errors and faulty equation references must be noted.

The wide scope of topics in this volume forms an interesting contrast in conception of the nature of biophysics to that of the corresponding American series.

ROBERT L. SINSHEIMER
Physics Department, Iowa State College

Simuliidae of the Ethiopian Region. Paul Freeman and Botha de Meillon. British Museum (Natural History), London, 1953. vii + 224 pp. Illus. £2 10s.

The black flies constitute one of the most important families of bloodsucking Diptera, transmitting human onchocerciasis in Africa and Central America. A great annoyance wherever they occur, they often produce fatal toxemia by their mass attacks. The tropical African fauna has been studied in considerable detail, but this is the first revisionary work since the junior author's treatment of 23 species in 1930. This present work reduces the more than 100 described species to 69. This is the result of some complete synonymizing and some reduction of species based on pupal differences only to the status of forms. The authors discuss the species problem in some detail and suggest that these forms may actually be reproductively isolated, sibling species, a theory that seems