sites on the polysaccharide using simple sugars as prospective inhibitors. Although much discussion is given to this topic, a really critical evaluation of the method as it is applied would have been welcome.

As if overcome by long hours of work in purifying and assaying, the members of the conference several times lapse into rather unrewarding philosophical speculation on the question of whether biological macromolecules are ever actually homogenous in the micro sense. Perhaps all that could have been said on this topic without being definitive was said here. Since almost all of the data presented in the book can be readily found elsewhere, and often in better organized form, it would seem that the most important function served by this volume will be its occasional critical discussion of techniques and interpretations of data.

IRWIN A. ROSE

PAPER ELECTROPHORESIS. G. E. W. Wolstenholme and E. C. P. Millar, Eds. Boston, Little Brown and Co., 1956. xii, 224 pp. $6.75.

This book records the proceedings of a symposium on paper electrophoresis sponsored by the Ciba Foundation and held in London, July 1955. The meeting was small and select, attended by 22 active workers in the field from all over the world. The chief object of this book is to make available to the general scientific public the results and discussions which transpired. Some 15 papers and short communications, interspersed with the full discussions which followed the presentation of the papers, make up the book.

Since about 1948, paper electrophoresis has undergone an enormous and rapid development. Its principal function has been to provide clinical medicine with a relatively inexpensive method for performing routine electrophoretic analyses of serum proteins, although its usefulness as a unique research tool is amply indicated in several articles in the book. The technique, however, is deceptively simple in appearance. In fact, both theoretically and experimentally, paper electrophoresis is more difficult than moving-boundary electrophoresis, from the point of view of obtaining absolute and reproducible quantitative results. The paradoxical situation therefore exists that the more difficult technique is by and large in the hands of less critical and research-minded scientific personnel, and this situation requires the exercise of caution.

Many of the articles in this book, by carefully analyzing various aspects of paper electrophoresis, bring this situation into clear focus. An interesting, if brief, paper by H. Svensson enters into the physical chemical aspects of the technique and their relation to the design of suitable apparatus. This paper makes clear how much more complicated electrophoresis is in paper than in free solution. Other articles by E. M. Crook, H. J. McDonald, and N. H. Martin deal critically with the analysis of paper electrophograms, including problems of staining, elution analysis, direct optical scanning, area resolution, and other important analytical aspects. The discussions following the papers are very useful in bringing up many practical questions concerning the technique, and in dispelling some misconceptions held even by some of the experts attending the symposium. In addition, there are several papers
dealing with specific applications of paper electrophoresis to problems of diagnosis of disease, to serum analyses, to the separation of the closely related kinds of human hemoglobins, and to lipoproteins.

A book like this is not meant to, and never can, take the place of a well-organized, methodical reference book on a particular technique. While the informal meeting of a small group of similarly directed scientists is an extremely valuable method for exchanging ideas, it suffers by its very nature in having too narrow a participation and point of view. For example, paper electrophoresis certainly has its theoretical foundations in two fields: moving-boundary electrophoresis, and the general physical chemistry of proteins (particularly where subjects such as protein-ion and protein-dye interactions are concerned). Yet only one participant in the symposium, Svensson, has been pre-eminent in these fields. Despite such shortcomings, however, this book should be of considerable value to practitioners of paper electrophoresis.

S. J. Singer

Recent Progress in Hormone Research. Gregory Pincus, Ed. Vol. 12. New York, Academic Press, Inc., 1956. 431 pp. $10.

This volume, the Proceedings of the 12th Laurentian Hormone Conference (September 1955), represents broad and yet detailed consideration of many of the frontiers of endocrine investigation. The participants include many of the leaders in endocrine research; their contributions entail fundamental biochemical investigations as well as clinical studies. Among the most valuable aspects of the Proceedings is the recording of the scintillating and challenging discussion periods which followed the formal papers.

Part I. Hormone Biosynthesis and Metabolism, analyses in detail recent work in this area, individual papers being devoted to thyroid, adrenal medullary, and steroid hormones.

Part II, Hormones and Metabolism, includes contributions on the influence of steroids on human cerebral metabolism, on the relationship of aldosterone to human salt and water balance, together with a fascinating paper by Krahl on the influence of hormones on peptide formation in animal cells.

Part III, Pituitary Hormones, consists of a detailed review by Albert of the technical and interpretive problems entailed in human urinary gonadotropin assay, of a review by Lerner and Takahashi of hormonal control of melanin pigmentation, a field to which they have contributed so much, together with an analysis by Escamilla of the various pituitary syndromes found in man.

Part IV, Sex Hormones, includes an analysis of the rôle of the male sex hormone in reproduction, a clinical study of testicular hormone production, and an experimental study of the effects of ovarian steroids on myometrial function.

These Proceedings constitute a veritable storehouse both of established facts and of current pathways of investigation in the endocrine area.

Paul Mandelstam