

On motion duly seconded, it was voted: That this executive committee have power to fill vacancies and to add to its membership by unanimous vote.

On motion, the meeting adjourned, subject to the call of the executive committee.

C. R. MANN,
Secretary

SCIENTIFIC BOOKS

Animal Micrology: Practical Exercises in Microscopical Methods. By MICHAEL F. GUYER, Ph.D., Professor of Zoology in the University of Cincinnati. Chicago, The University of Chicago Press. 1906.

This little book of 240 pages is devoted to a concise, eminently practical and well-classified treatment of the methods and 'tricks' of convenience fundamental to modern microscopic study. While it is intended primarily for the beginner, its consultation will be found profitable to all of us who have to suffer the trials and time-consuming details of microscopical technique. The author's years of experience in giving instruction in general zoology and microscopic anatomy, combined with his marked ingenuity in mechanical and chemical manipulation, has resulted, not only in a well-grounded knowledge of the fundamental principles upon which depend the successful application of the various methods, but also in the devising and proving of numerous little simplifications and time-saving 'short-cuts' of procedure which will be appreciated by the advanced student and investigator as well. On the other hand, the treatment is expressly detailed enough for the piloting of the beginner safely through the various methods, and, methods for given purposes being chosen for him, he is saved from the bewildering maze of the superfluity of present-day methods. The student is told definitely what to do with his material, what method to apply for a given result, how to proceed step by step, and is given either the positive or the most probable reasons for the various steps.

Unlike other books of a similar nature, Professor Guyer's book is not confined to a

single branch of the subject, such as histological or embryological methods exclusively, nor does it attempt to include material to the extent of making it bulky and unwieldy. However, it embraces the methods necessary in practically the whole field of the more usual biological courses and is thus purposely adapted for those combination courses given in high schools and colleges, which begin, preliminarily, with the simpler forms of life and pass to the consideration of the tissues and organization of the higher forms, giving some attention to embryology, and neurology as such.

The book is divided into seventeen chapters and five appendices. Beginning with a useful list of the apparatus and supplies usually required, the former well illustrated, the arrangement thence consists of a general statement concerning methods and the needs for them, followed by the procedures for 'killing' and 'fixing,' a description of the simple methods of sectioning, the methods of imbedding and sectioning in paraffin and celloidin, the processes of staining and 'mounting,' the method of frozen sections, the methods involving the precipitation of metallic substances for special differentiations, methods for the isolation of elements by 'tricks of teasing' and use of dissociating fluids, continuing with methods for the treatment of bone and other hard substances and methods for the injection of the blood- and lymph-vascular systems. Then is interpolated a chapter entitled, Objects of General Interest, in which are discussed subjects such as 'cell making' and the preparation of fluid mounts, and in which are given some ingenious devices for making 'in toto' preparations of the smaller organisms, such as water mites, transparent larvæ, small crustacea, worms, small insects and parts of insects, and for making 'opaque mounts' of such as beetles, wings of butterflies, etc. This chapter is followed by methods for the preparation and study of blood and a chapter dealing with the general procedures for the staining and mounting of bacteria. Chapter XVI. describes some of the methods necessary in the study of embryology, including technique for whole mounts and for the measuring and serial sectioning of embryos, special applica-

tions for the chick, teleosts, amphibia and mammalia, and directions for the artificial fecundation and study of the early cleavage of forms permitting it. Chapter XVII. gives the two most generally used methods for the reconstruction of specimens from sections, namely, reconstruction with wax plates and geometrical reconstruction.

Memoranda are given at the end of each chapter and these are often more interesting to one familiar with the general working of the methods than the procedure for the methods to which the chapter is devoted, for it is in these memoranda that various adaptive modifications of the methods are given, valuable suggestions as to technique in dissection, the choice of tissues for the purpose in mind, the construction and manipulation of the necessary apparatus, the selection and making up of the reagents required, and, equally important, suggestions as to the most probable causes of failure and the steps in procedure at which special care should be exercised. The substance of the memoranda might, less wisely, have been included in the body of the chapters, but, as the author states, they are, instead, appended to each chapter in order to supply additional information more or less pertinent without obscuring the main features of the methods under consideration.

Of the appendices, the first is devoted to the construction and discussion of the microscope and the optical principles involved in its use, with directions for its manipulation and an alphabetically arranged list of the more commonly used microscopical terms and appliances. In the second appendix is given a series of formulæ well chosen as representing some of the more efficient and frequently used reagents, including fixing and hardening fluids, stains, indifferent fluids, dissociating and decalcifying fluids. After each fluid is noted its peculiar advantages and some of the tissues and purposes to which it is best adapted. The third appendix is a tabulation of a large number of tissues and organs arranged alphabetically in systems with concise directions in appropriate columns for the obtaining, fixing and after-treatment of each; while the fourth appendix is especially devoted to

directions for the collection and preparation of the various materials necessary for a general course in zoology. The last appendix consists merely of four conveniently constructed reference tables of equivalent weights and measures.

The book is amply illustrated as to the different apparatus required and, while one might criticize the prominence with which the names of firms making the apparatus frequently stand out in the cuts, a little advertising is allowable in exchange for the excellence of the cuts used.

On the whole, the extended scope of the book, together with its conciseness of construction and reasonable price, renders it highly commendable, and, in my opinion, it will be found useful to a larger number of people than any other book of its kind at present in existence in English. Since each experienced worker in microscopical technique has his own devices of manipulation which work best for him, there are, of course, some instances in which the author's 'steps' and 'tricks' may be disputed as being the most efficient. Professor Guyer modestly recognizes this. However, with such workers, the book will be found full of helpful suggestions, new to many. The general student will find that all the methods recommended will yield good results when the directions are intelligently followed, and the fact that the author has striven to make the book thoroughly practical: 'to omit everything that is not essential, and, above all, to give definite statements about things,' has resulted in a much-desired brevity of treatment and obviation of bulk.

IRVING HARDESTY

THE UNIVERSITY OF CALIFORNIA

Recent Progress in the Study of Variation, Heredity and Evolution. By ROBERT HEATH LOCK. Pp. 299. London, John Murray. 1906.

At this time when the systematic botanists and zoologists differ greatly in regard to their large number of tissues and organs arranged reader will find the book under review a most useful help in arriving at sensible conclusions. Mr. Lock is well fitted to discuss the subjects