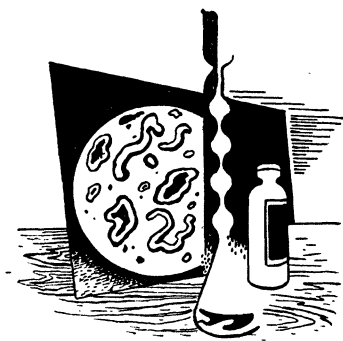


graphic procedure. A selected list of journals, advanced texts and treatises, and books on special aspects of the invertebrates is followed by a reprint of three scientific articles in their original form: "The Characters of *Pelmatohydra oligactis*" (Pallas) by Libbie H. Hyman; "Notes on Locomotion in *Pelomyxa carolinensis*" by Charles G. Wilber; and a short piece by W. L. Doyle and E. K. Patterson, "Origin of Dipeptidase in a Protozoan." These are presented in such a way as to encourage the student to make further acquaintance with biological literature.

Significant additions have been made to the photographic presentation of protozoans, sponges, and protochordates. New pictures of *Peripatus* and *Liguus* are especially striking. Photographs of living material have replaced pictures of museum models in several instances, and better cuts have been prepared from previous illustrations. Often the rearrangement of earlier illustrations has been surprisingly helpful, as for example in the case of the photographs of trapdoor spiders and nests. Only one cut, showing a pair of fruit flies, struck the reviewers as below the high standards set elsewhere. Better placement of the gravure pages, to correspond more closely with the text material, is another important improvement. All gravure pages now are numbered for easy reference; the new index draws attention to each illustration in its proper place.

LORUS J. and MARGERY J. MILNE  
University of New Hampshire



**Bacterial and mycotic infections of man.** René J. Dubos. (Ed.) Philadelphia-Montreal: J. B. Lippincott, 1948. Pp. xiii + 785. (Illustrated.) \$5.00.

**Viral and rickettsial infections of man.** Thomas M. Rivers. (Ed.) Philadelphia-London: J. B. Lippincott, 1948. Pp. xvi + 587. (Illustrated.) \$5.00.

The first book, like its companion volume on viral and rickettsial infections of man, represents the combined efforts of several specialists in the field of infectious diseases to present a source of information primarily for medical students—in this case on bacterial and mycotic infections. As such, it may be considered a textbook of medical bacteriology.

Using the approach so ably elaborated by Theobald Smith, the stated emphasis is on host-parasite relation-

ships; the biological characteristics of the invaders, the total response of the invaded, and the forces, natural and artificial, which may alter the balance in favor of the host are integrated to complete the picture. The first nine chapters, devoted to a consideration of general background such as history, the nature and properties of bacteria, the problems of infection, and the fundamentals of immunology, serve to elucidate the general philosophy of the book. The major part of the book, 25 chapters, dealing with a consideration of groups of bacteria and fungi with their special characteristics and disease-provoking potentialities, and therapeutic considerations of their clinical effects, presents a well-rounded picture of standard infectious diseases. Four concluding chapters consider sterilization, chemotherapy, epidemiology, and diagnostic procedures in general.

The book is printed with large type on hard finish paper which is well suited for the illustrations. Unfortunately, the size of the book is somewhat awkward; a single-column format with smaller pages, even though necessitating a thicker volume, would be easier to use.

On the whole, the book meets some of the needs of medical students. Representing as it does the work of many individuals, it might be expected to be more unevenly presented; that there is so little unevenness is to the credit of the editor. A few chapters suffer from too great a tendency toward a monographic style, and whereas they are excellent reviews for the specialist, they seem to be more involved than necessary for the beginning student. There is some minor duplication of material, but the different approaches of the authors prove stimulating. The chapter on the streptococci may be singled out as an excellent, up-to-date, and comprehensive review of an involved subject, presented in an exceedingly stimulating manner.

The bibliographies are adequate, but not as complete as might be desired.

This book should be of value to students, and could serve as a textbook; but its greatest worth, in the reviewer's opinion, will be as a reference volume for the initiated rather than as a primary source of information.

The field of human viral and rickettsial infections differs from the strictly bacteriological field in that it is not so well stabilized and also there has not been a plethora of textbooks on the subject. For these reasons the second book reviewed stands somewhat apart from its companion.

The subject is introduced in five chapters covering the nature of viruses and the techniques available for their study. A chapter on epidemiology stresses the special features of viral diseases but also covers the general problems of infectious disease transmission. A chapter on bacterial viruses, while not contributing directly to an understanding of human disease, is definitely in order as an aid to understanding virus behavior in general. The remainder of the 37 chapters cover in detail the specific human diseases caused by well-established viral and rickettsial agents, together with a few, such as exanthem subitum and infectious mononucleosis, for which the etiologic factors are still somewhat vague. In each case, a well-rounded picture of the clinical condition, the known

facts about the causative agent, and diagnostic procedures are brought together.

Although the book was written by a number of specialists, there is excellent uniformity of approach and evenness of presentation. The material is up to date and the coverage adequate. Since this book has but a single rival in its field as a recent source of the material, it might receive strong recommendation on the basis of relative cost; however, on its own merits it can be enthusiastically suggested as a solid foundation for anyone desiring a well-balanced presentation of the subject. It most definitely fulfills the need of a book on this subject for the medical profession, mature and neophyte, and it will be extremely valuable for the developing specialist in viral and rickettsial science.

WILLIAM S. PRESTON

University of Michigan

**Dictionary of genetics: including terms used in cytology, animal breeding and evolution.** R. L. Knight. Waltham, Mass.: Chronica Botanica; New York: Stechert-Hafner, 1948. Pp. x + 183. \$4.50.

As an extreme example of the difficulties met with by readers of the literature of genetics and cytology, Franz Schrader, in his book *Mitosis* (1944) lists 27 terms that have been used by writers in English for a single minute specialized region (*spindle-attachment*, *centromere*, *kinetochore*, etc.) of the chromosome. As he states, his list is not complete. All will agree with him that there is no point in keeping alive the many names that have been applied to this small object since its first description 50-odd years ago.

Knight refers to this structure in his preface, where he lists nine of the 27 terms, plus a new one. He apparently had not seen the book *Mitosis*, since Schrader's name does not appear in the bibliography. We must also agree with Knight when he says that genetic literature would be more readily understood if writers had, where possible, used an existing term instead of coining a new one, and when he expresses the hope that writers will not continue to coin new words where suitable terms already exist. Now we may ask, how does Knight as a lexicographer meet the problem of synonymy; in particular how does he handle the chromosome region just mentioned? Wilson, in his classical work *The cell in development and heredity* (1925) called it the *spindle-attachment* and got along with this one term: neither in his index nor in his glossary does he give any of its 27 synonyms.

Turning to the body of Knight's *Dictionary* for an answer, one finds *spindle-attachment* listed and defined. Checking the other nine terms listed in his preface we find four—*attachment constriction*, *centromere*, *insertion region*, and *kinetic constriction*—alphabetically listed and defined. The definitions are in almost the same words as for *spindle-attachment*. Cross references indicate that the author considers these five terms as synonyms. The remaining five of the nine terms are listed alphabetically, and after each the reader is referred for a definition to one of the four terms just mentioned.

Although such duplication of definitions is not a general feature of the book, conservation of space might justify printing the definition once and listing all known synonyms, followed in each case by a cross reference only.

One cannot avoid speculating as to what brought about the profuse growth of synonyms in this glaring instance, as well as in the literature of biology in general. The origin of new terms for old objects may be in part adaptive change: the new terms may express more truly than the old the real nature of the entities. The term *spindle-attachment*, as used by Wilson, was accurate and descriptive so far as it went. But during the past 25 years some progress has been made toward understanding the object, both structurally and physiologically. Cytologists now agree that it is more the region of spindle fiber attachment. Rather, it is regarded as a differentiated chromosomal structure which plays a dynamic role in the movement of the chromosomes during mitosis; hence *kinetochore*, a term suggested by Moore and recommended and used by Sharp in his *Introduction to cytology* (1934) and his *Fundamentals of cytology* (1943) is more descriptive.

Perhaps another cause for the multiplicity of synonyms among English-speaking biologists is isolation. Geographical or psychological isolation may account for the preference of British cytologists for the term *centromere*, introduced by Darlington in 1936, although it is admitted that this term is in many cases not an accurate one so far as indicating the linear position of the structure in the chromosome is concerned. The centromere may reside at any point along a chromosome except the extreme end.

The minting of unnecessary terms probably results also from the relative indifference of some authors to the interests of their readers—not to mention the possibility of their own occasional conceit or vanity.

Knight's *Dictionary* is not limited to modern terms, because, as the author states, students still read and need to understand the older books. Including older terms will, he hopes, help to deter authors from putting new meanings on established words.

For some of the entries, definitions are taken directly or with slight changes from the works of others. In these cases the original authors' names are added. It is not apparent to the reviewer why the names of some authorities are followed by dates and others are not. References to the 125 authors cited are given in the bibliography. The *Dictionary* contains about 3,000 entries. Derivations of terms are not given; nor are pronunciations.

Recalling the aphorism of Dr. Johnson that "Every other author may aspire to praise: the lexicographer can only hope to escape reproach," it is inevitable that critics will take exception to some of the definitions as well as to certain omissions and inclusions. This is anticipated by the author in his request for additions and corrections for subsequent editions. In general the definitions strike the reviewer as clear and concise. Very few outright errors have been noted in a sampling of numerous pages. The reviewer intends to take the author seriously and send suggestions to him. Since the best