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Biology and Taxonomy of the Protozoa

Protozoology (Thomas, Springfield, Ill., 1966. 1,188 pp., illus. $15.95) by Richard R. Kudo is now in its fifth edition. This fact alone attests to the book's lasting value as a text and reference. As in previous editions, the bulk of the reference value lies in the second of its two parts, Taxonomy and Special Biology. This section has now been expanded to include newer genera and species, and the nomenclature has been revised to include the new system of uniform endings for names of higher taxa. For the biologist who is not a protozoon taxonomist, Part 2 is possibly the best and cheapest source (in English) for brief descriptions and relationships of Protozoa.

For the more serious student, however, the book will be a starting place rather than a definitive work. (In the preface, Kudo describes it as a university text.) Certain errors of omission occur which will seem inexcusable to specialists in the groups involved. For example, the lower Trypanosomatidae are inadequately handled (p. 420), neither the well-justified separation of *Blastocrithidia* from *Crithidia* being recognized nor the status of the literatureinfesting name Strigomonas being mentioned. In addition, the peculiar and indiscriminate use of the words *Trypanosoma*, Trypanosoma, and Leishmania (capitalized, italicized, and not italicized) for generic names and Trypanosoma, Leptomonas, Leishmania, leptomonas, and leishmania (capitalized and not capitalized) to designate body forms will do little to help students understand this family. (The widespread use of non-italicized generic names, even for hosts of parasitic protozoa, is a regretful legacy from previous editions and is distracting to the reader.) Likewise, many malariologists will deplore references to such things as a "motile ookinete." The handling of such confusing organisms as *Sarcocytis* and *Toxoplasma*, however, is to be commended. Perhaps the author should have justified his placing of these genera in the Haplosporida, but his reluctance to assign them to lower taxa is a true reflection of their present status. The expanded information on *Toxoplasma*, emphasizing its role as a human pathogen, is an important addition.

Perhaps careful scrutiny of every taxonomic group would reveal inadequacies, and even beginning protozoologists may wonder at the arrangement which seems to include the Opalinida in the subclass Peritricha. Any failings, however, should be interpreted in light of the fact that this book is the only current text to present descriptions and a taxonomic scheme of all groups of protozoa, down to genera and representative species.

Part 1, General Biology, is perhaps subject to sterner criticism. This section is characterized by a heavy infusion of pre-1940 literature, which is both a virtue and a disappointment. Protozoology is a huge, growing, and complex field, and Part 1 provides the beginning student with a much-needed background. Many classic papers are cited in the chapter bibliographies (that is also true of Part 2). On the other hand, these feats are accomplished at the expense of newer knowledge (a drawback if the present work is to stand for another 12 years). A case in point is the discussion of mitochondria (p. 93). Certainly the present knowledge of miltochondrial function and the characteristic structure of protozoon mitochondria is not so new that it could not have been included. Likewise, the section on nutrition (p. 115) seems to ignore the advances of the 1950's in the growth of protozoa in defined media. As in previous editions, the value of some illustrations is limited by insufficient labeling (Figures 1, 25b, 25c, 26, 32), and one may find references to authors' names but not to specific papers.

Many of the shortcomings of both parts are offset by the expanded chapter bibliographies and improved English usage (the book reads much better than previous editions). The production of a satisfactory text on either the general biology or the taxonomy of the Protozoa is very difficult. In general the author has again succeeded admirably in combining the two aspects in a single relatively inexpensive volume. It is indeed hard to imagine anyone who must deal continually with protozoa, either in the field or in the literature, without his worn copy of "Kudo." I see no reason why the fifth edition should not continue the tradition.

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