Book Review


Few books achieve the eminence of maturing to a second edition, let alone a fourth. Hence, publication of a fourth edition of *Edwards and Ewing's Identification of Enterobacteriaceae* must perforce indicate that this book continues to satisfy significant needs for the microbiological community.

This 536-page fourth edition has put on a great deal of weight in the 14 years since the 362-page third edition appeared in 1972. The book still is printed in double-column format on letterhead-size paper. It still is spiral bound (presumably so it would stay open on the laboratory bench, though it seems not to be primarily a laboratory bench "cookbook" manual but rather a reference work). In any case, the cover stock and the paper quality would be marginally adequate to stand hard usage on the laboratory bench. In general, the typography, page makeup, and other aspects of the physical quality of the book—while similar to the corresponding features in the third edition, which appeared under another imprint—seem not to be of the high order generally associated with the products of its present publisher, Elsevier Science Publishing Co.

The identification of members of the large and diverse bacterial family *Enterobacteriaceae* is important to practitioners of many disciplines including medicine, clinical laboratory technology, epidemiology, agriculture, microbiological industry, food and sanitary science, molecular biology, genetic engineering, etc. However, the present work does not purport to cover the detailed identification of all members of that bacterial family and, in fact, many members of the family *Enterobacteriaceae* presently unconnected to the medical establishment are given short shrift or ignored in this book. One could hardly expect otherwise, given the author's calling, the likely intended audience (presumably, clinical microbiologists), the physical limitations incident to fitting the most relevant information between the covers of a book of manageable dimensions, and the pervasive disciplinal insularity that poisons the scientific enterprise! Consequently, the apparent intention of this work and its place in the bacteriological literature would have been more honestly labeled if the clause "Emphasizing Those of Current Medical Relevance" were appended to its present title.

However, one might question the wisdom of making the disciplinal split in precisely the manner done in this book. If the history of etiology of infectious diseases is any guide, many medically important pathogens and colonizers of the future are nowadays lurking on plants and elsewhere in the nonmedical environment. In fact, the author of this book seems to be of two minds in the matter. Compare the statement on page 425 regarding "environmental" strains (meaning, in this context, pertaining to environments not of current medical relevance) belonging to the genus *Serratia* ("However, the author is of the opinion that any member of the family *Enterobacteriaceae* that is found in the environment eventually will occur in humans . . .") with the remark about members of the genus *Erwinia* on page 8 ("The bacteria of this genus are important economically because they produce disease . . . in various plants. These microorganisms are, of course, important to plant microbiologists and pathologists, but they are of no importance to medical bacteriology . . .")! Perhaps this important concept will be addressed and clarified the next time around, either by the present author or another.

The book begins with introductory chapters on taxonomy and nomenclature (16 pages), deoxyribonucleic acid (DNA) hybridization (9 pages), isolation and preliminary identification (19 pages), differentiation by biochemical reactions (26 pages), and serology (19 pages); it ends with a chapter on plasmids (10 pages), one on media and reagents (22 pages), and an index (6 pages). The bulk of the book consists of 16 chapters on the following individual genera (or other groupings): *Escherichia* (42 pages), *Shigella* (38 pages), *Enterodesiella* (7 pages), *Salmonella* (two chapters, 65 and 72 pages), Arizona Group (22 pages), *Citrobacter* (24 pages), *Klebsiella* (16 pages), *Enterobacter* (two chapters, 10 and 25 pages), *Hafnia* (5 pages), *Serratia* (19 pages), *Proteus* and relatives (17 pages), *Yersinia* (18 pages), *Erwinia* (9 pages), and other genera and groups (9 pages). These chapters are replete with tables, some of them occupying several pages, which for this reviewer constitute one of the more valuable features of the work. Although the book is indeed enhanced by the admirable tables, the inclusion of various sorts of determinative keys would have considerably improved its utility. Mentioning determinative keys brings to mind another conspicuous omission, the surprising lack of an explicit and definitive delineation of the *Enterobacteriaceae* as a group from all other bacteria and particularly from adjacent bacterial groups (e.g., *Vibrionaceae* and *Pasteurellaceae*).

Something more than, and different from, the formal taxonomic definition of the family given on page 4 would seem to be a prime candidate for inclusion in a book of this sort; however, no overt treatment of this topic is evident. Even a synoptic table, a determinative key or two, and a few basic references would have been helpful!

Chapters end with lists of references; titles are not included in these references, although they could easily have been included in the same space (with valuable increase in information content) by dropping down a couple of points in type size from the text font. The references are poorly copy edited (e.g., one finds what is obviously the same article cited in several different ways at the ends of individual chapters). The copy editing of the references brings up the general issue of the marginal quality of the production editing, including proofreading. Misspellings, orthographic and typographic inconsistencies, and other redactional errors and infelicities abound, entirely too many for a reference work. The index, which is short both in quantity and quality, provides no compensatory boons!

Attention to several other items might improve this book for some potential users. Although adequate (almost hair-splitting) attention is placed on identification of taxa or other groupings based on phenotypic characteizations, serologic properties, and DNA hybridizations, no information is presented on subspecific entities discernable by other means. For example, nothing is said about typing with bacteriophage and bacteriocin, nor about the demonstrated utility of such methods in solving problems in epidemiology and taxonomy. Except for the brief paragraph on page 39, the
book is silent about the miniaturized methods and the "black box" automated and computer-assisted identification systems, which are used so widely nowadays in clinical microbiology laboratories. The 20-page chapter on media and reagents is, of course, highly selective (an entire book would be needed to exhaust this topic); however, no explanation is offered for the rationale behind the selections—or the omissions.

As evidenced by its continued acceptance and maturation into a fourth edition, this book must be well-regarded by clinical microbiologists. One can hope that this high regard—undoubtedly merited—will continue to be displayed in the market place; that is, if the fairly steep price ($65.00) does not serve as a deterrent. However, optimism about the book's prospects in the nonmedical market niche slumps somewhat. Essentially all the material in the 16 chapters on individual genera of this fourth edition of Edwards and Ewing's Identification of Enterobacteriaceae is available, with at least the same degree of authoritativeness and completeness, in volume 1 of Bergey's Manual of Systematic Bacteriology (Williams and Wilkins, Baltimore, 1984). Moreover, the bacterial groups adjacent to the Enterobacteriaceae are given the attention they deserve in Bergey's Manual; its introductory chapters provide exemplary discussions of bacterial taxonomy and nomenclature, the use of nucleic acids, genetic methods, and serological techniques in bacterial classification, and a great deal more that is relevant to the theme of identifying Enterobacteriaceae. Only modesty precludes my exhibiting in public as enthusiastic an attitude about the handbook entitled The Prokaryotes (Springer-Verlag, Berlin, 1981), but similar laudatory remarks have been made about it by others. I expect most nonmedical bacterial taxonomists, confronted with the task of identifying a member of the family Enterobacteriaceae, would first consult Bergey's Manual of Systematic Bacteriology or The Prokaryotes. If methodological matters required further attention, these workers probably would refer to the Manual of Clinical Microbiology (American Society for Microbiology, Washington, D.C., 1985) or the Manual of Methods for General Bacteriology (American Society for Microbiology, 1981). If they remained inadequately informed after such intellectual exertions, they certainly could be advised to pick William Ewing's brains through Edwards and Ewing's Identification of Enterobacteriaceae. On the other hand, experience might teach nonmedical bacteriologists to go first to that book—with due cognizance of its limitations and merits!

Mortimer P. Starr
751 Elmwood Drive
Davis, California 95616