

Preface to the Fourth Edition

It was said of the great statistician R. A. Fisher that whenever he introduced a result with the words "it can easily be shown that ..." one could be sure that two or three hours of hard work would be in store for anyone wishing to verify it. As a student I thought that many authors used this formula as a way to avoid explaining things that they could not explain. I hasten to add that in Fisher's case I am sure there was no lack of ability, though there may have been a lack of appreciation of the difficulties that his readers had. When I was writing the earliest version of this book, therefore, I resolved never to claim that anything was easy unless I was quite sure that it was. In the 35 years that have passed since then I believe I have kept this resolution, though I have often had to revise my views about what was simple enough to be left unexplained. Above all I have striven for clarity, being guided by a slogan from Keith Laidler: "Correctness, cogency, clarity: these three, but the greatest of these is clarity". Errors can be corrected, weak arguments can be strengthened, but lack of clarity leaves a fog that may take years to dispel.

The emphasis throughout is on *understanding* enzyme kinetics, not on covering every aspect of the subject in an encyclopedic style. So I have preferred to describe the principles that will allow readers to proceed as far as they want in any direction. In the words of Kuan-tzu (as quoted by Parzen): "If you give a man a fish, he will have a single meal; if you teach him how to fish, he will eat all his life".

I make no apology for continuing to illustrate concepts with abundant graphs, including the straight-line graphs that biochemists have used for three-quarters of a century, although it is sometimes argued that the appearance of com-

K. J. Laidler (1998) *To Light such a Candle*, Oxford University Press, Oxford

E. Parzen (1980) "Comment" *American Statistician* **34**, 78–79

puters on every desk has made graphical methods obsolete. Professional statisticians who really know and understand data analysis think differently; for example, Chambers and co-workers wrote

J. M. Chambers, W. S. Cleveland, B. Klein and P. A. Tukey
(1983) *Graphical Methods for Data Analysis*, Wadsworth, Belmont, California

There is no statistical tool that is as powerful as a well-chosen graph. Our eye-brain system is the most sophisticated information processor ever developed, and through graphical displays we can put this system to good use to obtain deep insight into the structure of data.

There is little to "see" in a biochemical experiment and almost all our information comes at second hand from instruments, so it is essential to convert it into something visible. At the same time judicious use of the computer is equally necessary—not just graphs, not just computation, but both, in partnership—and in this spirit I have not only retained but have expanded the final chapter of the book, which has been a well received feature of the earlier editions.

Enzyme kinetics is not a topic that changes greatly from year to year, so why is a new edition needed? The text has of course been updated, with greater recognition of the importance of enzyme kinetics for biotechnology and drug development, and many recent literature references have been added. The major and most obvious change, however, is in the manner of presenting the information. There are more than three times as many figures as there were in the third edition, and the need for page-flipping has been virtually eliminated: not only figures and tables, but also references and notes, all appear as close as possible to the context in which they are mentioned; any that cannot appear on the same page opening where they are mentioned are never more than a page away. Here it is a pleasure to acknowledge the willingness of Wiley-VCH to allow the book to be laid out exactly as I wanted.

The original ancestor of this book was called *Principles of Enzyme Kinetics*, and appeared in 1976. Later I decided that the treatment needed to be made more elementary, and in 1979 the first edition of *Fundamentals of Enzyme Kinetics* had a new title to reflect the different emphasis. Over the years, however, much of the text that was dropped in 1979 has been put back, together with a significant amount of new material that is not particularly elementary. A case could be made, however, for reinstating the original title, or just calling it

Enzyme Kinetics, but I have discarded this course in order not to give the impression that it is more different than it is from the third edition.

In this edition I have added numerous brief biographies of some of the scientists who created enzymology. Why? Will it help students to be better biochemists if they know that Maud Menten was a woman, that James Sumner was left-handed but had lost the use of his left hand in a childhood accident, or that Emil Fischer's father considered him too stupid to be a businessman? Obviously not, but it will help them to understand that enzymology did not spring from nowhere, but was developed by real people with the same difficulties and hardships that people face today.

Acknowledgments

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I acknowledge with gratitude the *Centre National de la Recherche Scientifique* for giving me the possibility of continuing working as *Directeur de Recherche Émérite*. It is likewise a pleasure also to acknowledge Dr. Bruno Guigliarelli, Director of the Laboratory of *Ingénierie et Bioénergétique des Protéines* of the *Centre National de la Recherche Scientifique*, and Dr. Marie-Thérèse Giudici-Orticoni, head of the group that I have joined since becoming Emeritus, both of them for their general support and for their success in creating a congenial working environment.

A different sort of acknowledgment is needed for Bob Alberty, still active at the age of 90 in the subject that he helped revolutionize in the 1950s. He first wrote to me in 1977, and I was delighted that my first effort to write a book about enzyme kinetics had found favor with a giant in the subject; subsequently he has given me much encouragement.

As mentioned already, the publishers were very cooperative in allowing a layout that would achieve my aim of