Throughout the book there are color-coded text blocks: the topical content per se; "molecular mini-reviews," which are lists of related facts; and "clinical keynotes," which highlight a syndrome involving the molecular processes under discussion. This organization is sometimes difficult to follow, since the facts and exemplars require considerable background knowledge to place them in a conceptual context.

Although formulating a comprehensive overview of human physiology from a molecular standpoint is a strength, it is at the expense of depth and pedagogic hierarchy. This engenders statements that are potentially misleading unless readers already have substantial grounding in general biology.

Together, these considerations suggest that while too assuming for undergraduates and lacking the requisite depth for graduate students, the volume would serve well as a companion or review textbook in basic science portions of medical curricula.

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DNA SCIENCE: A FIRST COURSE. *Second Edition.*

By David A Micklos and Greg A Freyer; with David A Crotty. Cold Spring Harbor (New York): Cold Spring Harbor Laboratory Press. $39.95. xii + 575 p; ill.; name and subject indexes. ISBN: 0–87969–636–2. 2003.

As a textbook for advanced high school or early college students, this volume is a hybrid of an interesting history of genetics and molecular biology and a laboratory techniques manual. These chapters follow a natural succession, beginning with establishing the role of DNA as genetic material, learning its function and regulation. Three chapters provide an overview of modern approaches, methods, and techniques for studying genomes, human genetics, and evolution, as well as the basics of cancer molecular biology. In spite of a few problematic sections (e.g., a confused description of CHEFR electrophoresis), the book is a resounding success, bringing the founders of DNA chemistry and biology and their work to life. Small pictures show key researchers. Inclusion of a few biographical notes below their photographs would make the history even more vivid.

The laboratory sections include experiments that span a wide range of expertise, skill and, more significantly, equipment. The authors suggest ways to work around lack of equipment that would be used in research laboratories that utilize these techniques, but their success seems problematic. Some of these items suggest easy solutions: ascertaining the calibration of a micropipetter by using a commercial calibration service, rather than by individual and summed pipetting procedures that could give misleading results. If equipment and supplies are available, these exercises would provide an excellent introduction to molecular biology. There is one serious omission from the laboratory exercises: the use of a laboratory notebook to plan experiments and record results is not described or encouraged. Without this, laboratory exercises are more cookbook than instruction, and the experimental section of the course would be better described by the title *DNA Technology* rather than *DNA Science.* Nevertheless, with a skilled instructor and adequate equipment, this volume could be the basis of an excellent foundation in experimental molecular biology.

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PROTEIN PHYSICS: A COURSE OF LECTURES. *Soft Condensed Matter, Complex Fluids and Biomaterials Series.*

By Alexei V Finkelstein and Oleg B Ptitsyn. London and San Diego (California): Academic Press. $80.00. xix + 354 p; ill.; index. ISBN: 1–12–256781–1. 2002.

Coauthored by two leading protein physicists, this book is based on lectures they delivered at two research institutes in Russia. The first author, Finkelstein, is a well-known theoretician active in research of a broad range of fundamental questions in protein folding. The other author, Ptitsyn, who was Finkelstein's mentor, is widely remembered for his pioneering work on polymer collapse and the "molten globule" state of proteins. Unfortunately, Ptitsyn passed away in 1999 before this book was published.

The predominant theme of this volume is theoretical. As such, it is not intended as a reference on experimental aspects of protein physics. All 25 lectures emphasize conceptual understanding and physical principles, and are logically organized as a course. After the first introductory lecture, the rest are grouped into six categories, covering: interactions in and around proteins; polypeptide secondary structures; protein structures; cooperative transitions; structure prediction and design; and protein functions. From basic thermodynamics of phase transitions to protein structural classification and prediction, I am impressed by the breadth of the topics and the depth at which they are presented. Color illustrations are used throughout the text mainly for structural elucidation; and they are quite helpful.

This book is timely. The general field of "protein physics" has experienced a dramatic growth since the late 1980s. Since then, many physicists have moved into protein-related research. Physics departments around the globe have recruited new faculty members specializing in biophysics. Yet, before the publication of this volume, there was no textbook that gave a systematic rigorous exposition of the physics of proteins from a physicist's perspective. This book fulfills that need to a large degree. For example, the statistical mechanical treatment of cooperativity in Lectures 8 and 17 is very instructive for students. Although protein folding cooperativity is often discussed in the research literature, in-depth treatments of the basic principles involved are seldom found in textbooks.

A special feature of this book is that the main text is often interwoven with dialogues between an "inner voice" and the "lecturer." These rhetorical conversations are very useful in clarifying the finer points in the discussions and highlighting issues that remain to be resolved.

One aspect I found wanting in this book is that referencing is severely limited. Aside from figure and table credits, virtually no references are given in the text. A list of recommended reading is provided at the end of the book. But, for all the topics covered, the list contains only 15 textbooks. The Preface explains that the avoidance of references was designed to enhance readability. Protein physics is, however, an emerging as well as a rapidly developing field. It would have been pedagogically beneficial to provide more updated references to the research literature so students can explore approaches complementary to those advocated in this book.

I would also like to see some topics that arguably belong to protein physics, but were not addressed in this book. Examples that came to mind include insights into protein function from Poisson-Boltzmann treatments of charge interactions (Lecture 6), counterexamples from exact enumeration of simple lattice models to the proposed Boltzmann-like distribution of protein structure occurrence (Lecture 16), and possible variations of the preexponential factor in the transition-state picture of protein folding (Lecture 20).

These minor shortcomings notwithstanding, this book is highly original and well constructed. It presents an excellent and coherent picture of the physics of proteins. The volume should be required reading for every protein physicist. But I suspect that seasoned researchers who are already well aware of the diversity of opinion and the different players in the protein folding community would gain even more from this book than physicists just entering the field.

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GENETICS & EVOLUTION

Extinction: Evolution and the End of Man. *By Michael Boulter. New York: Columbia University Press.* $26.00. xiv + 210 p; ill.; index. ISBN: 0–231–12836–3. 2002.

Does the past show any basic trends? The late Stephen Jay Gould was basically negative on this issue. He argued that as often as not one could generate as much meaning through a computer program based on randomness as one could ever find in history. It is true that we get a basic rise up in complexity, but this is an artifact of the possibility of going up from zero complexity to something more, and of the impossibility of going down from zero complexity to something less. Gould's student, the late Jack Sepkoski, was more optimistic about the history of life and its meanings, and thought (thanks to a huge database that he gathered) that we do see life increasing in waves and then settling back into slow decline until another wave imposes itself.

In his volume, *Extinction: Evolution and the End of Man,* English paleontologist Michael Boulter seems to be more on Sepkoski's side than that of Gould, and thinks that we can see basic trends. In a way, the title is a bit misleading because Boulter really thinks of extinction in a creative fashion, as something that clears the way for the self-organizing nature of life to regroup and to push forward once more. I confess that I am not altogether sure how the end of man (and presumably woman too) fits into all of this. Certainly global warming and the like might spell our demise, but the connection with the fossil record strikes me as a bit obscure.

I should say that I left this book a bit depressed—not so much about the thesis, but about paleontologists. One of the big moves in the 20th century was to try to bring paleontology into the evolutionary synthesis—it was to be something that was as scientifically up to date and vibrant as other areas like genetics and sociobiology. Boulter confesses that he sees little relevance to selection or to genetics. "I must admit to having had trouble for years understanding Darwin's concept of 'natural selection.' What is natural and what is it that's being selected? Darwin's *Origin of Species* doesn't help much and nor does the nineteenth-century geneticist Gregor Mendel" (p 131). Gould and Sepkoski must be turning in their graves.

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