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There seems to be a great contrast in media here, a journal which is over 100 years old versus a CD-Book made using the newest computer technology. Something seems to be lost when one is perched in front of a computer screen browsing through Back's journal, as opposed to sitting comfortably in a chair, book in hand. In the end, however, it is the content of this product that is of value. The fact that this material is presented in a CD format gives readers access to information that otherwise might seem overwhelming. How many of us would wade through the pages of Back's journal to discover what types of goods Back took with him to the East Arm of Great Slave Lake, for example? With CD format, one can search the text for key words or phrases.

As a CD-Book, Back's journal will reach the eyes of many students and other interested people who otherwise would not have access to such a rare book. This broad availability will measure the success of the product. I recommend this CD-Book. Teachers, students, researchers, and people with a general interest in this type of history will find it to be engaging and informative reading material.

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PRINCIPLES OF INTEGRATIVE ENVIRONMENTAL PHYSIOLOGY. By G. EDGAR FOLK, Jr., MARVIN L. REIDSESEL, and DIANA L. THRIFT. Bethesda, Maryland: Austin and Winfield, 1998. ISBN 1-57292-108-0. 504 p., b&w and colour illus., bib., index, 5 appendices. Softbound. US\$60.00.

It is always a challenge to present physiology in an environmental context: to take it from the strict organ and cellular levels up to the animal living in its surroundings. To successfully make this leap, the author must have not only knowledge of physiology per se, but also a strong understanding of the environmental conditions that affect the animal. Furthermore, the author needs to emphasize that the animal must adapt to multiple stressors simultaneously.

Principles of Integrative Environmental Physiology is an excellent textbook that brings out all these points. Although not as broad as the classic *Animal Physiology: Adaptation and Environment*, by K. Schmidt-Nielsen (1997), this text provides much more detailed experimental data. As a consequence, it reads like primary literature at certain points and, even with over 500 pages of text, some sections seem so detailed that the overall essence of the chapter can be weakened. However, a choice must be made in this type of writing: more details or more overviews. In this case, the authors have chosen the former. This book, combined with a broader type of text such as Schmidt-Nielsen's *Animal Physiology*, would easily serve as a powerful set of readings for upper-level undergraduates and graduate students. In the preface, Folk notes that the primary work of Krogh, Kuno, Dill, Scholander, Irving, Schmidt-Nielsen, and Griffin is covered in this book, and thus the student sees the lineage of environmental physiological thinking, especially in Chapter 1, which deals with the history of this field.

When I teach environmental physiology, I usually try to point out the major areas in which the environment affects the organism, such as obtaining oxygen, water balance, and temperature regulation. In a single semester, one cannot cover all these influences and selections must be made. In this book, Folk et al. start with the radiant environment, next discuss biological rhythms, and then cover temperature quite extensively in the following four chapters. Thus temperature takes up almost half the text. Chapters 8 (Altitude) and 10 (Pressure) are classic discussions, and I found the additions of chapters on aerospace (Chapter 9) and human impact on the environment (Chapter 11) fascinating because one does not usually find these in general physiology texts. Consequently, those who have a tendency or a need to teach temperature-based environmental physiology will want to use this book. The single chapter on biological rhythms is very detailed and the best that I have seen in a general text. The last four chapters are good introductions to altitude, aerospace, pressure, and human impacts, but together they cover less than 100 pages and have nowhere near the depth of the almost 200 pages devoted to the chapters on temperature.

I found specific sections of the book very strong and others confusing or vague. For example, in the section on the radiant environment, the units of UV wavelength keep changing between millimeters and nanometers in the text and figures. While the values are correct, it is hard enough to get students to understand dimensional analysis without switching units. Some plots and figures probably stood very well in their original publications, but when extracted and put into this text, they need much more explanation. For example, Figure 3.14 is supposed to show periodical movement by a lugworm. From both the text and the figure legend, I cannot figure out what these data show: they are clearly some sort of rhythmic physiological recording, but with no axes and no mention of what was actually measured, I am left wondering what was recorded. The use of

figures from the primary literature creates inconsistency in style, quality, and detail of information. Some figures are very bold and straightforward; others are very complex; others are in color for no apparent reason. Other details are excellent: for example, the sidebars are very informative, the temperature section has a strong discussion on units and complexity of heat measurements, and the section on polar history and exploration is great, but too short.

The authors do an excellent job of noting that the strength of physiology comes from the integrative approach: considering the animal as a whole and recognizing that there are multiple stressors on the animal. I agree with them that this approach must be emphasized in our teaching of physiology. That is, it does the animal no good to alter a physiological function to fix one problem, only to have that fix cause a different and perhaps more serious problem in some other system.

One last aspect of this book deals with an almost philosophical approach to teaching environmental physiology. I know scientists that follow both schools of thought, and some will find the text just fine while others may have a problem. The issue is this: the book is heavily human based, and most of the details in the chapters relate to how some particular problem is important for humans. This is a good approach when teaching students who may have a strong background in classic physiology, as it will introduce them, perhaps for the first time, to a suite of environmental problems that face humans. Just enough work from other species is included to let these students know how other animals have dealt with these problems. Because of this focus, the authors use the term “extreme environments” in a manner slightly different from the way it is used in classes or books that focus on a broader suite of animals. For example, the heat of the desert is used as an example of “extreme” in relation to humans. But, for desert-living animals, this heat is perfectly normal, since they have adapted to that environment. Likewise, humans would not be able to tolerate the 1000 ATM of pressure that exist in the ocean’s greatest depths, but to the animals that live there, the 1 ATM pressure of the surface would be “extreme.” What is extreme to humans is perfectly normal to the animals that occupy that niche. The authors do note that animals live in these environments (like seals diving to 1500 m), but the reader comes away with the feeling that all environments not occupied by humans must therefore be extreme. Once again, to the student being introduced to environmental physiology for the first time, it is fascinating to know the limits that humans face and that some animals live beyond those limits. But to students already deeply involved in animal environmental physiology, the human focus may seem too narrow. This is why I recommend that this book be read simultaneously with a broader text.

In summary, *Principles of Integrative Environmental Physiology* achieves its goal of presenting the ways in which organisms meet differing environmental challenges and the idea that the animal must be taken as a whole. It has

some of the most detailed experimental information I have seen in general texts at this level and should be well received by teachers and students as they expand classical physiology into environmental physiology.

REFERENCE

SCHMIDT-NIELSEN, K. 1997. *Animal physiology: Adaptation and environment*. 5th ed. New York: Cambridge University Press.

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COMMONS IN A COLD CLIMATE. COASTAL FISHERIES AND REINDEER PASTORALISM IN NORTH NORWAY: THE CO-MANAGEMENT APPROACH. Edited by S. JENTOFT. Paris, France: UNESCO and Carnforth, UK, 1998. Man and Biosphere Series Vol. 22. xvii + 353 p., b&w illus., tables, figures, bib, index. Hardbound. £48.00.

This collection of essays is a result of the Norwegian Man and Biosphere (MAB) research programme, coordinated by the book’s editor and based on field research between 1992 and 1996. Although multidisciplinary in scope, the bulk of the chapters were written by social scientists. Not surprisingly, therefore, the main emphasis is on the economic, social, cultural, and institutional aspects of natural resource management. The objective of the volume is clearly to bring together the two major primary industries in North Norway—fishing and reindeer pastoralism—for a comprehensive comparative analysis that can offer possible ways to improve management regimes not only in Norway, but elsewhere as well.

The book is divided into three parts. Part 1, “Sustainable resource use and management: The challenge,” comprises half the volume and is a mixed bag of papers, ranging from problems of estimating carrying capacity to gender relations. There is a certain discontinuity between reindeer pastoralism and fishing in this part. The three chapters on pastoralism—i.e., those on reindeer carrying capacity (J. Fox), bioeconomic modelling of pastoralism (A. Skonhøft), and adaptation strategies under technological change (J.Å. Riseth and A. Vatn)—were written by a biologist and three economists, and they all feature quantitative models. On the other hand, with one exception (U.R. Sumailai’s short paper on the optimal landing strategies for cod and capelin in the Barents Sea), the chapters on fishing societies were written by scholars trained in the “softer” social sciences and are more qualitative in