ECOLOGY AND FIELD BIOLOGY, by Robert Leo Smith. 2nd ed., 1974. Harper and Row, Publishers Inc., New York. 701 p. Price not given, hardback.

In this second edition many improvements have been made and much of the text has been rewritten to focus on the ecosystem as the central theme. The book is well organized and authoritatively written. The author has achieved good balance between theoretical ecology and applied as well as between the descriptive and quantitative. A new section on resource management has been added.

Although intended for college undergraduates the book has features that make it attractive as a reference for both educators and graduates. These include 163 pages of appendixes, suggested readings, general references, and a bibliography. Further, the text contains many charts, diagrams, and photographs—all black-and-white.

About 262 pages are devoted to energy flow in ecosystems, biogeochemical cycles, ecosystem development, man and the food chain, and man and the biogeochemical cycles. The effects of pollutants have been updated and emphasized. The next section, 155 pages, deals with populations and ecosystems, population regulation and interactions, social behavior, speciation, and natural selection. The next section discusses the organism and the ecosystem; finally, the diversity of ecosystems is covered.

In my opinion, the book is outstanding as a reference and college textbook.

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SCIENCE AND SOCIETY, by David E. Newton. 1974. Holbrook Press, Inc., Boston. 316 p. $5.50 (softback).

The nature of science (aims, methods, assumptions and limitations, "proof," and "what really goes on in science"); the social impact of science and technology (problems of pollution, power, and population, experiments on controlling people, and antiecology); and science as a modern social institution (social responsibilities, politicking, providing information, financing, and related problems) are the book's three sections and, very roughly, their contents. They give a surprisingly broad, prismatic, and thought-compelling look at interactions of science and society. Exceptionally well-chosen essays—a few of them classics—direct to divergent views and further readings. The recommended readings are of very high quality. Newton closes with nine "problems" (including Topic 8, "Disenchantment with Science") with enough lead materials to aid (via reading, discussion, and debate) in comprehension of the imperfectness of current adjustments of science and society.

The book is suitable for high-school honor students in natural science, for college undergraduates (it would be excellent for an upper-division colloquium), or for continuing education groups. Whoever the reader, Newton treats him as being as intelligently alert as he obviously is—a winning approach with good students of any age.

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BIOLOGICAL SYSTEMATICS, by Herbert H. Ross. 1974. Addison-Wesley Publishing Co., Reading, Mass. 345 p. $12.95.

This information-packed book will be welcomed by teachers who have attempted to find a textbook for a course in systematic biology only to find that none existed which encompassed botanical, microbiological, and zoological systematics. This integrated approach should be of value not only to students, teachers, and embryo systematists but also to others in science whose objective is to understand the why and how of the diversity of organisms.

The author's objectives as stated in the preface are not only to present the integrated approach but also to "emphasize the scientific aspects of systematics" and to "present the theory and practice of systematics simply and clearly." The book is written in a style that is easy to understand and nearly all major points are reinforced with abundant examples. Most of the hypothetical examples are so simple that a novice could follow. This method may be irritating to some; however, this simplified approach does get the point across.

The author has divided the book into 12 chapters beginning with a historical development of the field of systematics. This is followed by a brief treatise of investigating and recognizing systematic problems and how one goes about gathering evidence. Ross's forthright treatment of scientific reasoning in systematics is a valuable part of the text, although his simplified definition of abductive reasoning as simply "stretching the mind" may not please those with extensive training in logic and reasoning. Progress in systematics has been impeded in some cases by the myth that a definitive treatment with all problems solved is *expected* of the investigator. Ross urges that if "we bring together *all* evidence concerning a problem, we must admit that some of it may be *contradictory*" and "expression of differences, if *clearly explained,* is one of the most powerful tools in stimulating greater search for new evidence or more careful examination of hypotheses and deductions." Those noble suggestions are certainly not unique, but, unfortunately, many textbooks on systematics fail to adequately reinforce them.

The speciation processes are generally adequately covered, although botanists will find the treatment of polyploidy and apomixis disappointing. Both are given only brief coverage and the author does not clearly establish the magnitude of their importance in plant systematics. Guides on interpreting species are presented along with suggestions as to how to proceed with naming when only scanty materials are available.

Chapters on phylogeny, fossils, geographic dispersal, and pathways of ecological diversification are useful in that they contain procedures for constructing family trees and interpreting fossils. Sequences and pathways of dispersal are given additional emphasis with a discussion on the latest developments in global geotectonics. The section on nomenclature compares the rules for naming different organisms as well as the different systems of classification.

The final chapter deals with the future of systematics and includes sections on information retrieval systems and the role that systematics can play in ecological, behavioral, and biochemical evolutionary studies.

Finally, the usage of *Ghinko* for *Ginkgo* in one place in the book will surely catch the attention of botanical systematists.

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AN INTRODUCTION TO QUANTITATIVE ECOLOGY, by Robert W. Poole. 1974. McGraw-Hill Book Co., New York. 544 p. Price not given.

The author has put this textbook together using the modern approach of mathematical analysis of ecological concepts. Topics covered include population, population growth, density, dispersal, competition, various other interactions, and communities. The entire book is related to models and their construction and use: chapters 9 and 10 are outstanding in the explanation of these ideas.

The book has an upper division college reading level and assumes the student has a good foundation in natural science and statistics but only a minimal mathematical background. Little calculus is used and no models or statistical methods have been derived. The statistics included are applied directly to the presented problem and are used to interpret the model uses, implications, and assumptions.

The unique and informative section of chapter 1 on matrix algebra forms the basis for many of the later statistical methods introduced in the book. The sequence to matrix models, statistics, probability distributions, and Stochastic models of exponential growth flows smoothly and is quite understandable.