with understanding by a person with only high school physics, but the level is probably more appropriate for students who have completed a year of freshman physics in college. It is hardly quantitative enough to serve as a textbook in a college course, but it should be a valuable addition to a reading list for elementary courses. It also makes a welcome contribution to scientific literature for the adult nonscientist who takes science rather seriously.

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A Usage-Conscious Dictionary

Dictionary of Herpetology. James A. Peters. Hafner, New York, 1964. vii + 392 pp. Illus. $11.50.

In this lightweight dictionary, which weighs about 1½ pounds and contains approximately 3000 entries, Peters presents the current status of words as they are used in context by herpetologists. Over 10,000 articles and books were screened for literature citations. Not surprisingly, the same word may have varied connotations in herpetological writings, and different words may convey the same intent. Where writers differ about the use of a word, Peters largely refrains from prescribing or proscribing a given usage. The vocabulary of herpetology is recorded but scarcely judged. This will please some individuals and provoke others.

As Peters states in his preface, only words of special significance or application in herpetology were selected. The selection is skillful and the definitions—rather, the descriptions—are commendably clear and concise. The greatest number of terms has been drawn from the area of morphology, but other aspects of the biology of the reptiles and amphibians have not been neglected. The range of expressions extends from *abdominal pore, cinobufotalin,* and *fanning* to *neoteny, tail waving,* and *zeugopodium*. Especially praiseworthy are the instructive discussions of terms that have been used interchangeably (but questionably), such as *prevomer* and *vomer*. The purposes of the volume are well served by extensive references to specific articles in which the words have been employed.

Abbreviations abound in all scientific writings, and they are no less plentiful in the herpetological literature. Those who chafe at abbreviations now have a ready source to provide the meaning of AT., AZR., B.R., C.I., C.L.D., F.I., LOA., M.C.T., M.H.D., PBT., T.R.T., and VT. Two surprising, but hardly distressful, omissions are AOR and DOR, which have frequently been used to denote the state of being of animals captured in the wild: "Alive on Road" and "Dead on Road," respectively.

Thirty clear pen drawings, assembled at the end of the book, will undoubtedly aid the user to visualize certain structural features. However, these pictorial illustrations cover but a small proportion of the terms in the dictionary. Many more diagrammatic sketches, placed more appropriately with the terms where they occur, would have been more welcome.

The origins or derivations of the words are not traced, nor are pronunciations indicated. But Peters makes no claim to being an etymologist or a true lexicographer. Indeed, his dictionary does not purport to be historical or definitive. The book is exactly what it was designed to be, namely, a simple, handy guide to the working language of the herpetologist. As such, this deftly compiled volume will certainly find its way into the hands of many amateurs and professionals.

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Mathematics Textbook

Fundamentals of Modern Mathematics. J. M. Calloway. Addison-Wesley, Reading, Mass., 1964. x + 213 pp. Illus. $6.75.

This book of some 200 pages and eight chapters (on sets, mathematics and logic, sets of numbers, relations and functions, sequences and limits, calculus, counting and probability, and mathematical systems) was written for nonscience liberal arts students and stresses concepts more than manipulation. Required and suggested readings, which are listed at the ends of the chapters, are to be used as supplementary assignment materials if this book is used as the primary text. In reading the text and working the exercises, students are expected to have at hand and to use Webster's unabridged dictionary and the *Mathematics Dictionary* by James and James.

Although there are no formal prerequisites, it seems to me that to read this volume with profit students should know how to solve simple quadratic equations, should be able to handle simple inequalities, should know the basic theorems of Euclidean geometry, and should have some facilities with simple formulas.

The language of sets and the fundamentals of logic (truth tables, implications, valid arguments, indirect proofs, quantified statements) needed to understand theorems and their proofs are developed in chapters 1 and 2.

In chapter 3 Calloway begins with Peano's characterization of the natural numbers and then develops successively the systems of integers, rational numbers, and real numbers, each as an extension of the preceding system. In this treatment the integer 2 and the natural number 2 are the "same thing," although the integer 2 is first introduced as an ordered pair of natural numbers, as (5, 3). I feel that the idea of treating (5, 3) and 5−3, or 2, as the same thing does some violence to the language and concepts of sets on which modern mathematics is based. I believe that the concept of an isomorphism can be used effectively with elementary classes in developing the hierarchy of number systems in elementary mathematics.

I have no quarrel with the mathematics in the rest of the book. Indeed, the book is well written and there is an adequate supply of good exercises. There is ample material for a 1-year course of 100 lessons. A good semester course of 40 or 50 lessons can be based on material selected from chapters 1, 2, 3, 4, 5, and 6, or from chapters 1, 2, 3, 4, 7, and 8. Most nonscience liberal arts students who take a course based on this text will need the sympathetic assistance of an instructor to help them bridge the gap between the level of sophistication of portions of the text and the level of sophistication at which they are capable of operating. Nevertheless, instructors who are looking for a textbook to be used in a course in which attaining a degree of mathematical maturity is more important than covering a specified amount of material would do well to consider this book.

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