mites, a singular Nematode worm, *Sphærularia bombi,* which lives in the abdomen of the queen, and a Microsporidian belonging to the genus *Nosema* and allied to the *N. apis* recently shown to be the cause of the "Isle of Wight disease" of the honey-bee. Several of these parasites may simultaneously attack a colony of humble-bees and completely destroy it in a very short time. The reviewer, on August 18, 1909, found under a stone at Zermatt, Switzerland, a small alpine humble-bees' colony which had been utterly wiped out by no less than three of these parasites. The cells and brood had been devoured by a mass of wax-moth larvæ (*Aphomia*) which were nearly ready to pupate. Among these lay a number of puparia of the Tachinid *Brachycoma,* while perched on the top of the nest among four dead and dying humble-bees was a fine female *Mutilla europæa.* It is certainly remarkable that notwithstanding the inroads of all these parasites and prædators and the small size of the colonies compared with those of many other social insects, the humble-bees, nevertheless, manage not only to survive, but to maintain their position among the commonest insects of the north temperate zone. And this dominance of the genus *Bombus* is even more surprising when we stop to consider that its species very easily succumb to excessive moisture, especially in countries like Great Britain.

Chapters V. to VII. of Sladen's work treat of the practical methods of studying the humble-bees, of finding and taking their nests, of the construction of artificial or observation hives, and of attracting to the latter the overwintered queens. In these chapters, which show how Sladen acquired his intimate knowledge of humble-bee behavior, we can also detect the advantages he has secured from his practical study of the honey-bee. By "domestication" he means merely the bringing of the humble-bee into the same relations to man as those obtaining in the case of the honey-bee. In the proper sense of the term, of course, neither of these insects can be domesticated.

The eighth chapter of the work is devoted to the taxonomy of the British humble-bees and is illustrated by five fine colored plates, showing the males and females, and a plate of line-drawings, showing the male genitalia, of the 17 species of *Bombus* and six species of *Psithyrus* known to occur in Great Britain. The work concludes with a short chapter on making a collection of humble-bees, one containing a number of interesting notes and anecdotes and a brief appendix with some additional miscellaneous observations. It is certain that this volume will long remain a classic and an inspiration not only to British students of humble-bees, but to many of our entomologists, whom its perusal should encourage to acquire an equally intimate knowledge of the practically all but unknown habits of the numerous North American *Bombi.*

W. M. WHEELER

The Snakes of South Africa: Their Venom and the Treatment of Snake Bite. By F. W. FITZSIMONS. With 193 figures, mostly original photographs. New edition. Cape Town and Pretoria, T. Mashew Miller; New York, Longmans, Green & Company. Pp. xvi + 547.

This book is a natural history of South African snakes that, while written in a popular way and primarily for South Africans, and mainly devoted to the relations of the poisonous species to man, deserves to be brought to the attention of students of herpetology. The writer attempts to acquaint the residents of South Africa with the general habits of the snakes of their region, and to point out to the general reader, in simple language, the possibilities of being bitten by a poisonous snake, the action of the venom, and the best treatment that the investigators of the nature of snake venom have worked out.

As the principal aim of the book is thus to educate the non-scientific readers in a region where venomous snakes abound, one can not quarrel with the author for devoting considerable space to the poisonous species, even though his only original contributions to this subject are the results of investigations of the toxicity of the South African species. There

is nothing of interest to the student of herpetology in the first two chapters, on the classification, evolution, history, distribution, general habits and identification of species of snakes, and the chapter on snake charmers, Kafir superstitions, etc., and the one on human physiology may also be ignored.

On the other hand, the herpetologist will find much of interest in the accounts of the habits of different species. The writer is evidently a careful field observer, and his descriptions of the feeding and breeding habits of certain forms are a distinct contribution. For example, the description of the feeding habits of the puff adder (p. 225) could hardly be improved. A very notable feature also is the numerous photographs of snakes, both in their natural haunts and in captivity. The series showing a specimen of *Dasypeltis scabra* eating an egg and ejecting the shell, and the photographs of the mole snake, ringhals cobra, and puff adder with newly born young are notable, and there are many others of equal interest. There is also a considerable amount of information on the habitat preferences of various forms that will be useful.

The author is to be commended for the care exercised in guarding against the errors that are so liable to occur in a popular account. The word skin is rather loosely used for the stratum corneum in the account of sloughing (p. 16); snakes do frequently eat dead animals in nature (p. 40); it is doubtful if many naturalists still hold the opinion that the fangs of opisthoglyphs are primarily for holding the prey (p. 139); and the toad is not a reptile (p. 227). It is rather surprising that the writer advocates sucking the wound made by the bite of a venomous snake, since this is dangerous unless one is sure that there are no abrasions about the mouth, and Noguchi asserts that the procedure is quite useless. It may be added that the author's style is rather tautological, there is some irrelevant matter, and a closer grouping of the subject matter would be advantageous.

The reviewer would suggest that an easy key to the South African species would much increase the value of the book. It is doubtful if many persons would take the trouble to dissect out the jaws to identify the species; at any rate it would not be easy to use the author's key, scattered as it is over several chapters.

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General Physics. By W. WATSON, F.R.S. Longmans, Green & Co. 564 pages, with 311 figures and diagrams.

It is a very interesting fact that Professor Watson, who has given to us the comprehensive "Text-book of Physics" with its nine hundred and fifty pages, should find it necessary to arrange another text to meet the needs of "engineering, medical and other students." Not only has he condensed and rearranged his larger work, he has placed the emphasis on different topics and has omitted many. Among these may be noted the discussion of the energetics of a voltaic cell and that of Maxwell's electromagnetic theory. Fifty pages in the older text are given to electrolysis and electric cells where only sixteen are required in the new text. The three hundred pages given to electricity and magnetism in the older text have here been cut in half, notwithstanding the fact that much new matter is added on account of the discussion of radioactivity and wireless telegraphy.

It is rather probable that the newer text will suit the needs of a larger number of instructors in general physics in American colleges than did the older text. For it can be said that the table of contents includes all the main essential principles of physics with a reasonable number of applications to the affairs of every-day life. The presentation is direct, matter of fact, concise, clear. There is no time or space for the spectacular or ornate. The author, being an Englishman, does not give an explanation, right or wrong, of the curving of a base ball, nor of a tennis ball—though had he done so he might have claimed that he was but following the example set by the illustrious Newton. Nor is the mono-rail car discussed. But in America