J. Biomechanics, 1976, Vol. 9, p. 425. Pergamon Press. Printed in Great Britain

BOOK REVIEW

BIOMECHANICS– An Approach to Vertebrate Biology. Carl Gans. Lippincott, Philadelphia. (1974). x, 261 pp. Paperback.

Although most people say that they "hate snakes," they are fascinated by them as is evident from the popularity of the Reptile House at any zoo that has one. The phenomena about snakes that elicit the greatest popular interest are (1) the ability of snakes to swallow something that has a larger diameter than that of the snake itself, and (2), the locomotion of snakes. The first of these phenomena is the subject of Chapter 2, "Egg Eating in Snakes," and the second one is considered in Chapter 3, "Locomotion Without Limbs." Snakes do not simply crawl but have five distinct methods of locomotion—lateral undulation, concertine locomotion, sidewinding, saltation, and rectilinear. "Burrowing in Amphisbaenians," a group of legless lizards, is the subject of Chapter 4. Some attention is also given to burrowing by caecilians, which are legless amphibians. The world-wide distribution of Amphisbaenians and of caecilians is shown by zoogeographic maps. Chapter 5, the last one in the book, is concerned with an "Analysis by Quantification: Air Breathing and Vocalization in Frogs." An electromyographic analysis is made of the muscles involved in vocalization as well as movement and pressure changes with respect to oscillatory and ventilatory changes. Mechanical components of vocalization in addition to its phylogenetic history are also included.

The research data upon which the book is based are described, discussed and illustrated by research records, charts, diagrams, etc. The pertinent anatomy for the various topics discussed is illustrated by line drawings, the mechanics by free body diagrams. There are many excellent and unusual photographs of the various animals discussed in the book. A selected bibliography is included with each chapter. The general tone of the book is set by the first chapter which is on "Structure and Function."

Dr. Gans is particularly well qualified to write such a book because he is a trained engineer who practiced engineering professionally for some time before obtaining his Ph.D. in Biology at Harvard. At present he is Professor of Zoology at the University of Michigan with special research interest in Herpetology.

This is a "landmark" book because it shows the usefulness and importance of mechanics in the analysis and understanding of animal behavior. As such it should be of interest and use to individuals working in biomechanics as well as to the vertebrate zoologist and comparative anatomist.

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