

vibrations to cut tough leaves, how some butterfly larvae induce ants to feed and protect them, and how wasps use their venom to modify cockroach behavior. These examples anchor broad entomological knowledge into vivid accessible narratives.

One of the commendable qualities of this volume is that it provides technical details, yet strives to be accessible for general but attentive readers. For example, readers not only learn that the insect cuticle is a waterproof exoskeleton but also that it is composed of helically arranged chitin fibrils that confer remarkable strength. Similarly, rather than simply cataloging insect anatomy, the authors emphasize functional morphology. Illustrative examples are used to exemplify some key features of insect biology, for example, how crickets sense gravity with tiny modified club-like hairs, how ants generate sounds through stridulation, or how the bombardier beetle coordinates complex chemical reactions to produce a boiling-hot defensive spray. Throughout, the authors inspire curiosity with their collection of informative well-researched case studies.

A notable strength of this book lies in its visual documentation. Photographs, drawings, tissue illustrations, and scanning electron micrographs are found on most pages. This visual guide allows readers to see the microstructure of a butterfly wing scale, the miniscule sensors that allow some beetles to detect the smell of burning pine forests, and other structures such as tarsal claws, spiracles, sensory hairs, and the elaborate sculpturing of insect eggs. In this way, the volume reveals a hidden world largely inaccessible to the unaided eye. This visual storytelling reinforces the central theme that much of insect diversity and functional morphology lies at the microscopic scale.

Although most of this publication celebrates the intricacy and diversity of insect life, it concludes with a brief discussion of human-driven insect declines. Throughout the book, the authors pull together scientific principles from physics, chemistry, and biology to provide a brief tour into the hidden world of insects. The results are richly contextualized chapters that will appeal to readers who value learning about some general principles of insect biology while touching on more detailed mechanistic explanations.

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ORGANISMIC ANIMAL BIOLOGY: AN EVOLUTIONARY APPROACH.

By Ariel D. Chipman. Oxford and New York: Oxford University Press. \$105.00 (hardcover); \$56.00 (paper). xxx + 205 p.; ill.; index. ISBN: 9780192893581 (hc); 9780192893598 (pb). 2024.

How best to introduce students to biology for the first time is a difficult task. What course design to use, what foci to set, what textbook to select if any, and

what to leave out, all represent really tough choices. In *Organismic Animal Biology: An Evolutionary Approach*, Ariel D. Chipman provides a novel solution worth considering. Intended for students with minimal biology training, this volume is meant to provide a first foundation in both biological concepts as they apply to all of life, and in zoology, the study of the diversity and biology of animals. It aims to achieve this by including both “principles” chapters focused on concepts and biological phenomena (such as hierarchical organization, speciation, multicellularity, or germ layers) and “zoology” chapters introducing specific animal groups, usually at the level of phylum. The latter intercalate among the former when enough conceptual ground has been provided—Cnidaria and Ctenophora are introduced right after organisms, multicellularity, and diploblastic development were covered; likewise, readers learn first about molting before being introduced to the arthropods. The sum total of 32 chapters is further enriched with text boxes focusing on specific topics, many lovely illustrations and photographs, and a useful glossary of almost 600 terms.

The volume’s greatest strengths are in the range of topics it can cover without having to be superficial at any point, and the meaningful way in which it pairs an understanding of concepts and mechanisms with that of the natural diversity these have made possible. It is theoretical biology meeting anatomy and natural history at a realistic level for a beginning scholar of biology.

It is also important to highlight what the book does *not* do. There are no references to cited literature, and no way to double check the information provided, or to embark on further reading. And, perhaps most importantly, there is almost never an explanation of how a given insight or piece of data was generated—or by whom: the knowledge output of science and the practice (and practitioners) of science generating said output never meet in this volume. How we know what we know remains to be discovered elsewhere. Lastly, I was taken a bit aback by the price point, which will likely limit the volume’s broader distribution.

I was at first skeptical whether the world of biology instructing needed yet another textbook. After reading *Organismic Animal Biology: An Evolutionary Approach* I felt it provided a refreshing take. It is worth considering by anyone exploring novel ways of introducing the newest generation of scholars to the complexity of biological thought and form.

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