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BOOK REVIEW

MECHANICAL DESIGN IN ORGANISMS. S. A. Wainwright, W. D. Biggs, J. D. Currey, J. M. Gosline. 1976. Halsted Press, N. Y., N. Y., $19.50. This book attempts to present an interface between mechanical engineering and biology by looking at mechanical function in organisms and their components and then correlating function with measurable mechanical properties and observed structure. The authors state in their preface that "the book is frankly evangelical" and that "we wish to modify biologist's view of the world and to impress upon them the importance of mechanical design in all aspects of biology". Unfortunately, their approach is about as successful as convincing Ralph Nader that the large business corporations have the safety of the American consumer as their prime concern.

This book has a number of useful and provocative concepts to present but was written for the individual trained in biophysics rather than the general or field biologist. For one thing, there are very few of us who have a working knowledge of mechanical engineering terminology, and so a good glossary at the back of the book would have been a great aid. I, personally, would have preferred a simple and more gradual introduction to the concepts of strength of materials than covering the subject as the authors did in 2 chapters. This can be very "heady" material for the non-engineer. The examples and discussions of biological organisms are interesting and very detailed with vertebrates where much more physical information is available. The authors do discuss the mechanical and structural properties of arthropod silks, resilin, chitin, and arthropod cuticle. I found chapter 7, "Support in Organisms" and chapter 8, "Ecological Mechanics" to be the best sections in the book primarily because they blended general principles with specific examples very well and presented a fine overview of the material. Chapter 8 points out the general ignorance on sensitivity and response of plants and animals to mechanical information in their environment and the requirements for extensive research in this area. The one major entomological mistake in the text is the use of the terms tendon and apodeme (p. 107-9) to mean the same thing.

This is not a text for the general entomologist, but the morphologist and physiologist may gain some sharp insights from the concepts presented.

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