

Neurourology and Urodynamics, a new journal edited by Jerry G. Blaivas, Columbia University, and published by Alan R. Liss, Inc., New York, 1st issue, 1982.

This is a new multidisciplinary journal devoted to research on the upper and lower urinary tract and to sexual function. It is well printed, of high quality. It should be of considerable interest to biomedical engineers.

Reviewed by
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Membrane Physiology, edited by Thomas E. Andreoli, Joseph F. Hoffman, and Darrell D. Fanestil, published by Plenum Medical, New York and London, 1980, 468 pages. Paper bound, \$19.95.

This is a book of 22 chapters written by 32 authors. It contains three parts: 1) the nature of biological membranes, 2) methods for studying membranes, and 3) general problems in membrane biology. This is a soft-cover book containing the first three parts of *Physiology of Membrane Disorders*, published in larger, hard-cover form in 1978. Its low price is a delight to hear in today's book market. The lower price will make the book available to students and general readers. I hope that more publishers will take this approach to pricing. In recent years a number of my friends have taken the trouble to publish their books themselves in order to lower the price of the book for the students. They have discovered that a large reduction of price is possible; but it was lots of bother. It would be nicer if the publishers would reduce the price.

The book begins with J. D. Robertson's chapter on the anatomy of biological interfaces. I know Dr. Robertson has many high quality electronmicrographs which will illustrate the anatomy, but none is offered. Instead, this is a chapter of 18 pages with 262 references. In other words, it is a concise review of the literature. Unfortunately, this is the style of most chapters of the book. It is written for specialists, not for general readership.

Chapters 2 and 3, dynamics of lipids in biomembranes by T. E. Thompson and C. Huang and the structure and arrangement of proteins in the membrane by G. Guidotti, are very informative.

Chapters 4-11 are concerned with methods for studying membranes. Robertson discusses the nature and limitations of electron microscope methods, Sachs and Kinne treat isolation and characterization, Urry and Long discuss ultraviolet method, and Jacquez considers tracers. Then Macey presents a chapter on mathematical models of membrane transport processes—diffusion and osmosis, which is an elementary exposition remarkably well written. In an intuitively convincing fashion he carries the reader through to the point of electrogenic pump and facilitated diffusion. This chapter is followed by two other excellent chapters: Andreoli and Schafer's discussion of water and nonelectrolyte transport, and Horowicz, Schneider and Begenisch's discussion of electric methods for ion movements.

Chapter 11 presents molecular models of lipid bilayer membranes by Finkelstein. Chapter 12 by Krasne is concerned with ion selectivity in membrane permeation. In Chapter 13 Gunn discusses electrically neutral ion transport. Then Dunham and Hoffman discuss Na and K transport in red blood cells in Chapter 14, Schultz discusses ion-coupled transport in Chapter 15.

The last several chapters are especially interesting. They are concerned with cellular metabolic energy for active ion

transport, regulation of cellular volume, cell-to-cell communication, genes, immunology, hormones, and drug effects. Altogether this book gives an excellent review of a very broad field. Its attractive price should help its popularization.

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Vertebrate Locomotion, Symposium of the Zoological Society of London, No. 48, Proceedings of a Symposium held at the Zoological Society of London, March 27 and 28, 1980, edited by M. H. Day, St. Thomas's Hospital Medical School, London. Published by Academic Press, London, 1981, 471 pages. £37.20, \$89.60.

This is a volume of 17 papers written by 23 authors. It covers swimming (136 pages), flying (102 pages), walking, running, and primate arborealism (214 pages). The abbreviated titles of papers and authors are as follows:

- 1 Swimming movements, body structures and propulsion in cod by J. J. Videler
- 2 Mechanics of drag-based propulsion by R. W. Blake.
- 3 Locomotion of plaice larvae by R. S. Batty.
- 4 Structure and function of fish muscles by I. A. Johnston.
- 5 Nervous system of fishes by B. L. Roberts.
- 6 Flight adaptations in vertebrates by J. M. V. Rayner.
- 7 Flight, morphology and ecological niche by V. M. Norberg.
- 8 Echolocation for flight guidance and analysis by J. D. Pye.
- 9 Muscle energetics by G. Goldspink.
- 10 Stance and gait in tetrapods by S. C. Rewcastle.
- 11 Gaits and tetrapods, adaptations for stability and economy by R. M. Alexander.
- 12 Recruitment of muscles and fibers within muscles in running animals by R. B. Armstrong.
- 13 Locomotor loading and functional adaptation in limb bones by L. E. Lanyon.
- 14 Allometry of primate body proportions by L. C. Aiello.
- 15 Climbing: a biomechanical link with brachiation and with bipedalism by J. G. Fleagle, J. T. Stern, Jr., W. L. Jungers, R. L. Susman, A. K. Vangor, and J. P. Wells.
- 16 Comparative aspects of primate locomotion, with special reference to arboreal cercopithecines, by J. Rollinson and R. D. Martin.
- 17 Wrist rotation in primates: a critical adaptation for brachiators by F. A. Jenkins, Jr.

It is clear from this list that the majority of the papers are written from the point of view of elongation. This includes the adaptation of vertebrates to flight, the stance and gait as related to the size of the animal, the assessment of the importance of climbing as a link between brachiation and bipedalism, and the development of primate arborealism. From these papers one gets a view of the adaptation of the animals as related to ecological economy: the energy need of locomotion balanced by the ability to find food.

Several papers are devoted to the description of research methods. This includes Videler's paper on cod swimming, Batty's paper on locomotion of plaice larvae, Pye's paper on echolocation, and Jenkin's paper on wrist motion.

Other papers present important collections of data. Aiello presents allometry (scaling of characteristics to body size) of primate bodies. Roberts presents the organization of the nervous system of fishes in relation to locomotion.