

Pouched Mammals

The Biology of Marsupials. BERNARD STONEHOUSE and DESMOND GILMORE, Eds. University Park Press, Baltimore, 1977. viii, 486 pp., illus. \$39.50. Biology and Environment.

The Biology of Marsupials. DON HUNSAKER II, Ed. Academic Press, New York, 1977. xviii, 538 pp., illus. \$36.

The identity between the titles of these two volumes belies the differences in their content. The volume edited by Stonehouse and Gilmore is almost entirely about Australian marsupials whereas that edited by Hunsaker is mainly about American marsupials, with some reference to Australian species.

There is a small amount of overlap between the volumes. The taxonomy of marsupials is dealt with by the same author in both volumes. The paper in the Stonehouse and Gilmore volume has a most useful annotated list of all marsupial species that is completely up to date. The paper in the Hunsaker volume clearly reviews the certainties and uncertainties of marsupial classification, and describes in detail the ecological and morphological similarities between members of the South American didelphoids and members of the Australian dasyuroids. The author makes a strong case, using all the available evidence, for following Ride's classification at the ordinal level, but he argues for a closer relationship between the didelphoids and dasyuroids. He does not believe that the bandicoots deserve a separate order. Both volumes also have papers on marsupial chromosomes, that in the Hunsaker volume extending to cytogenetics. These papers emphasize the usefulness of marsupial chromosomes in evolutionary investigations. Finally both volumes have papers describing the diseases of marsupials, that in the Hunsaker volume being an extensive and complete consideration of the diseases of both American and Australian marsupials.

The Hunsaker volume consists of eight long papers that cover, in addition to classification, chromosomes, and diseases, the ecology of American marsupials, their behavior, the central nervous system of marsupials, the development of marsupial lymphatic and immunohematopoietic systems, and the special anatomy of *Marmosa robinsoni*. With the exception of the last, these papers are of particularly high quality. The paper on ecology points out the relict nature of the South America caenolestid populations in relation to the utilization of colder habitats. The paper on behavior emphasizes *Didelphis* but gives good

coverage of what is known about behavior in other species. Both volumes show how little information, apart from Kaufman's excellent study on whiptail wallabies (*Anim. Behav.* 22, 281 [1974]), is available about the behavior of Australian marsupials. The paper on the central nervous system of marsupials notes how little marsupial brains differ from those of placentals and draws attention to the only true functional differences—the unique blood circulation of marsupials and the absence of double cones and oil droplets in the retinal cones of placental mammals.

In contrast to the Hunsaker volume, the Stonehouse and Gilmore volume consists of 24 much shorter papers organized in five sections. The papers are erratic in quality, ranging from superb papers on marsupial phylogeny, historical biogeography, and biogeography in relation to plate tectonics to a paper on the behavior of the Tasmanian devil that would hardly have been published in any reputable journal. The former three papers give a comprehensive review of what is known about the origin and distribution of marsupials. That on phylogeny gives an excellent figure on the stratigraphic distribution of fossil marsupials that will be of great value for explaining the vagaries of marsupial evolution to undergraduates. It also presents cogent arguments for the origin of marsupials in North America as opposed to South America.

There is a section of seven papers on various aspects of population and behavioral biology of a number of species. Most present no new data but review their subjects well. A paper on the success of marsupials as introduced species gives details of the introduction of marsupials in an amazing number of locations, including Britain, Germany, Hawaii, and the Channel Islands. Another paper deals with the continuing investigations in Australia of the causes of spontaneous mortality in all male *Antechinus* after their first breeding season. The authors suggest that changes in peripheral plasma corticosteroids are very likely the cause of such deaths. The next section deals with marsupial anatomy, with four papers covering various comparative aspects. One of these is a highly perceptive ecological comparison of marsupial and placental patterns of reproduction in which the author makes the points that marsupials invest fewer resources in their young than placentals do and that the marsupial cycle of reproduction uses less energy than the placental. She suggests that the reproductive biology of marsupials may have been a

considerable advantage in certain environments.

The final section of the Stonehouse and Gilmore volume deals with endocrine and metabolic studies. It includes a brief review of pituitary function, a comprehensive and interesting review of adrenocortical functions in marsupials, and papers on the metabolism of the quokka, on the brush-tailed possum, on reproduction in male marsupials, and on plasma acid phosphatase activity in two species of Tasmanian marsupials.

Both volumes are well produced, with few typographic errors and good indexes. The type of the Stonehouse and Gilmore volume is close set and irregular and sometimes irritating to read. Both volumes will be necessary reading for all those interested in marsupial biology. The volume edited by Stonehouse and Gilmore is particularly recommended for its seven papers on the taxonomy and the evolution of marsupials.

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Parts of the Solar System

Planetary Satellites. Papers from a colloquium, Ithaca, N.Y., Aug. 1974. JOSEPH A. BURNS, Ed. University of Arizona Press, Tucson, 1977. xxiv, 598 pp., illus. \$19.95.

The 33 known satellites add up to a tiny portion of the total mass of the solar system. However, they constitute a significant fraction of the accessible evidence concerning the origin of the solar system. A book on planetary satellites is timely, given the events in 1977 that have contributed, or will contribute, to this body of evidence: the discovery of rings around Uranus by stellar occultation; the indications of systematic cratering patterns on Phobos seen in photos from a Viking close approach; the launching of Voyager, which will pass close to Io and Titan; and the congressional approval of Jupiter Orbiter, which will yield more detailed data on the Galilean satellites.

The volume reviewed here is a consequence of an International Astronomical Union colloquium, but it is not a typical symposium proceedings, for a selection has been made of the papers presented at the meeting, some papers have been rewritten to make them comprehensive and systematic reviews, two introductory overviews have been added, and extensive cross-referencing has been incorporated. Hence the three-year delay between the colloquium and publi-

cation has resulted in a volume that is comprehensive and authoritative, yet reasonably compact and inexpensive. In several respects, it does not give the details of the best current work, but it does give heuristic explanations and the references in which to look for the details.

The contents of the book are 4 percent introductory, 28 percent on dynamics, 28 percent on physical properties, 27 percent object-by-object discussions, and 13 percent hypotheses about origin. The earth's moon is discussed only to the extent to which its dynamics or circumstances of origin help understand satellites in general.

In the dynamical part, three articles pertain to orbits as they are and three to orbits and rotations as they have evolved. The most important chapter, by Burns, is a comprehensive review of orbit evolution that avoids mathematical detail but does not use diagrammatic explanations as a substitute as much as it might. A review of satellite rotation by Peale is a helpful complement to his more technical papers. Missing is a similar discussion of planetary rotation, with which satellite orbit evolution interacts (perhaps drastically in the case of Venus).

The part on physical properties is organized according to manner of observation: photometry, polarimetry, spectrophotometry, radiometry, and occultations, with comprehensive reviews by Veverka, Johnson and Pilcher, Morrison, and O'Leary. The part on objects is a more miscellaneous collection of nine articles, of which the most intriguing are the discussions of Titan by Hunten and of Io by Fanale and colleagues.

As could be expected, the part on origins is the most idiosyncratic, with three quite different views, very little cross-referenced: what might be called the astrophysicist's view, by Cameron; the plasma physicist's view, by De, Alfvén, and Arrhenius; and the dynamicist's view, by Safronov and Ruskol. At the end, there is an entertaining review of the moon's origin by Wood, in which he manages to place everyone's hypotheses on a schematic fission-accretion-capture triangle of lunar origin ideologies. Unfortunately, it is obsolete in that it does not include the recent "catastrophic" school of Cameron, Hartmann, Wetherill, and others. As has happened with the moon, more data about the other satellites will undoubtedly bring us to new plateaus of confusion and debate.

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Books Received

Chemotherapy of Herpes Simplex Virus Infections. Papers from a meeting. J. S. Oxford, F. A. Drasar, and J. D. Williams, Eds. Published for the British Society for Antimicrobial Chemotherapy by Academic Press, New York, 1977. viii, 142 pp., illus. Paper, \$9.35. Reprinted from Supplement A of the *Journal of Antimicrobial Chemotherapy*, vol. 3, Mar. 1977.

Child Discourse. Papers from a symposium, Mexico City, Nov. 1974. Susan Ervin-Tripp and Claudia Mitchell-Kernan, Eds. Academic Press, New York, 1977. xii, 266 pp. \$9.50. Language, Thought, and Culture.

Cholesterol. John R. Sabine. Dekker, New York, 1977. xiv, 490 pp., illus. \$25.

COBOL Programming. A Structured Approach. Robert C. Nickerson. Winthrop, Cambridge, Mass., 1977. xviii, 318 pp., illus. Paper, \$9.95.

Color Atlas of Human Anatomy. R. M. H. McMin and R. T. Hutchings. Year Book Medical Publishers, Chicago, 1977. 352 pp. \$27.95.

Computer Methods for Mathematical Computations. George E. Forsythe, Michael A. Malcolm, and Cleve B. Moler. Prentice-Hall, Englewood Cliffs, N.J., 1977. xii, 260 pp. \$15.95. Prentice-Hall Series in Automatic Computation.

Computer Methods in Image Analysis. J. K. Aggarwal, Richard O. Duda, and Azriel Rosenfeld, Eds. IEEE Press, New York, 1977 (U.S. distributor, Wiley, New York). vi, 466 pp., illus. Cloth, \$24.95; paper, \$14.95. IEEE Press Selected Reprint Series.

Computers in Nonassociative Rings and Algebras. Papers from a meeting, San Antonio, Tex., Jan 1976. Robert E. Beck and Bernard Kolman, Eds. Academic Press, New York, 1977. x, 298 pp. \$14.

Culture and Psychotherapy. Theodora M. Abel and Rhoda Métraux. College and University Press, New Haven, Conn., 1977. 314 pp. \$12. Reprint of the 1974 edition.

Cytology of Transudates and Exudates. Emerich von Haam. Karger, Basel, 1977. vi, 124 pp., illus. \$21.50. Monographs in Clinical Cytology, vol. 5.

Data Structures, Computer Graphics, and Pattern Recognition. Papers from a conference, Los Angeles, May 1975. A. Klinger, K. S. Fu, and T. L. Kunii, Eds. Academic Press, New York, 1977. xiv, 498 pp., illus. \$23.

Development in Mammals. Vol. 2. Martin H. Johnson, Ed. North-Holland, Amsterdam, 1977 (U.S. distributor, Elsevier, New York). viii, 242 pp., illus. \$29.50.

Discrete Multivariate Analysis. Theory and Practice. Yvonne M. M. Bishop, Stephen E. Fienberg, and Paul W. Holland with the collaboration of Richard J. Light and Frederick Mosteller. MIT Press, Cambridge, Mass., 1977. x, 558 pp., illus. Paper, \$15. Reprint of the 1975 edition.

Eating in America. Dietary Goals for the United States. Report of the Select Committee on Nutrition and Human Needs, U.S. Senate. MIT Press, Cambridge, Mass., 1977. viii, 80 pp., illus. Paper, \$1.95.

Ecology and Behaviour of Nocturnal Primates. Prosimians of Equatorial West Africa. Pierre Charles-Dominique. Translated from the French by R. D. Martin. Columbia University Press, New York, 1977. x, 278 pp., illus. \$17.50.

Ecology of Marine Benthos. Papers from a symposium, Georgetown, S.C., May 1975.

Bruce C. Coull, Ed. Published for the Belle W. Baruch Institute for Marine Biology and Coastal Research by University of South Carolina Press, Columbia, 1977. xx, 468 pp., illus. \$27.50. Belle W. Baruch Library in Marine Science, No. 6.

The Economics of Fisheries Management. Lee G. Anderson. Johns Hopkins University Press, Baltimore, 1977. xviii, 214 pp., illus. \$14.

Effects of Labeling the "Drug-Abuser." An Inquiry. Jay R. Williams. National Institute on Drug Abuse, Rockville, Md., 1976 (available from the Superintendent of Documents, Washington, D.C.). vi, 40 pp. \$1.05. National Institute on Drug Abuse Research Monograph, 6.

Electrons in Finite and Infinite Structures. Papers from a NATO Advanced Study Institute, Ghent, Belgium, Aug. 1976. P. Phariseau and L. Scheire, Eds. Plenum, New York, 1977. viii, 444 pp., illus. \$45. NATO Advanced Study Institutes Series B, vol. 24.

Elements of Differential Geometry. Richard S. Millman and George D. Parker. Prentice-Hall, Englewood Cliffs, N.J., 1977. xvi, 266 pp., illus. \$16.95.

Local Anesthetics. Rudolph H. de Jong. Thomas, Springfield, Ill., ed. 2, 1977. xxiv, 338 pp., illus. \$32.50.

Manual of Neotropical Birds. Vol. 1, Spheniscidae (Penguins) to Laridae (Gulls and Allies). Emmet R. Blake. University of Chicago Press, Chicago, 1977. 1, 674 pp., illus. \$50.

The Marine Environment. John Lenihan and William W. Fletcher, Eds. Academic Press, New York, 1977. xiv, 170 pp., illus. \$14.50. Environment and Man, vol. 5.

Mathematical Games, Puzzles, and Fallacies. Sydney Lamb. Arco, New York, 1977. 72 pp., illus. Paper, \$1.95. Reprint of *The Magic of Numbers*.

The Nicholson Solar Energy Catalogue and Building Manual. Nick Nicholson. Baraka Books, New York, 1977. Various pages. \$9.50.

Towards a Rational Philosophical Anthropology. Joseph Agassi. Nijhoff, The Hague, 1977. x, 404 pp. Dfl. 57.50.

Vasectomy Counseling. Stephen D. Mumford. San Francisco Press, San Francisco, 1977. xii, 84 pp. Cloth, \$12; paper, \$6.

Vasectomy—The Decision-Making Process. A Guide for Promoters. Stephen D. Mumford. San Francisco Press, San Francisco, 1977. vi, 186 pp. \$15.

Volcanic Processes in Ore Genesis. Proceedings of a meeting, London, Jan. 1976. Institution of Mining and Metallurgy, London, and the Geological Society of London, London, 1977. vi, 188 pp., illus. Paper, \$20. Special Publication No. 7 of the Geological Society of London.

Water Re-Use and the Cities. Roger E. Kasperson and Jeanne X. Kasperson, Eds. Published for Clark University Press by University Press of New England, Hanover, N.H., 1977. 238 pp., illus. \$17.50.

Weak Interactions. David Bailin. Sussex University Press, Falmer, Brighton, England, 1977 (U.S. distributor, Crane, Russak, New York). x, 406 pp. \$18.95.

White Holes. Cosmic Gushers in the Universe. John Gribbin. Delacorte Press/Eleanor Friede, New York, 1977. viii, 296 pp., illus. Cloth, \$8.95; paper, \$4.95.

World Review of Nutrition and Dietetics. Vol. 27, Some Aspects of Human Nutrition. Geoffrey H. Bourne, Ed. Karger, Basel, 1977. x, 178 pp., illus. \$49.50.