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Review

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- S. B. MCDOWELL, *Rutgers University, Newark, New Jersey 07102.*

MOLCHE UND SALAMANDER.—By Gerd von Wahlert. Kosmos; Gesellschaft der Naturfreunde Frankch'sche Verlagshandlung Stuttgart. 71 pp., 30 pl., 2 figs., 1965. DM 5.80.—This short, paperback volume is one of 12 in the German series *Das Vivarium*, a compendium of information on vivaria. It is a semipopular survey of urodeles with emphasis on life history and care in captivity. Interest to readers of *COPEIA* lies mainly in the author's unorthodox classification, a rather extreme extension of von Wahlert's earlier suggestions.

Primitive salamander groups are treated in a fairly standard manner. Species generally assigned to *Ambystoma* by American workers are split into four genera following the current usage by European workers. As in his earlier work von Wahlert recognizes a superfamily Plethodontoidea, but he now recognizes not two but three families, Desmognathidae, Plethodontidae, and Bolitoglossidae. The author is strongly influenced by the gross structure of the tongue and includes free-tongued genera plus the permanently larval genera in the Bolitoglossidae. It is unfortunate that authors of texts and of semipopular accounts feel compelled to make taxonomic changes of such magnitude based on superficial analyses of but few characters, and it is hoped that the classification adopted in this volume will not be accepted uncritically by those unfamiliar with the American fauna.

The format of the volume is attractive. Numerous sketches of most genera of salamanders are presented, most redrawn from earlier authors. A defect of the drawings is the absence of any scale. Among the new illustrations is one of the terrestrial embryo of *Bolitoglossa adspersa*, a species that was

thought until recently to be viviparous. Brief accounts of the genera are accurate and informative, but designed for the non-professional.—DAVID B. WAKE, *Department of Anatomy, University of Chicago, Chicago, Illinois.*

INTERSEXUALITY IN VERTEBRATES INCLUDING MAN. By C. N. Armstrong and A. J. Marshall, eds. Academic Press, London and New York. 1964. xi + 479 pp., 90 shillings.—Although we often use sexual structures as taxonomic characters, many vertebrate zoologists tend to regard hermaphroditism and other types of intersexuality as deviations without phylogenetic significance. In the past decade, however, several workers have encountered hermaphroditism in fishes and have come to realize that this rather widespread phenomenon must be more than an evolutionary cul-de-sac; it is a primary specialization of the reproductive system and in several independent teleost lineages it has formed the basis for further specialization.

"Intersexuality in Vertebrates including Man" will be of interest to readers of *COPEIA* primarily because of the chapters by James W. Atz (fishes), the late Charles L. Foote (amphibians), and Thomas R. Forbes (reptiles). Each has reviewed the literature pertaining to all aspects of intersexuality. Genetics, ontogeny, anatomy, physiology, endocrinology, experimental studies, and teratology are some of the topics covered.

Only in fishes do we find species that are normally hermaphroditic as well as a large number of abnormal hermaphrodites. Atz has compiled reports of functional hermaphroditism in 11 families belonging to five orders, to which we can now add the Ipnopidae and the Evermannellidae (Mead *et al.*, 1964. *Deep-Sea Research*, 11:569-596) and the Polynemidae (Longhurst, 1966. *J. Conseil.* 30:58-74). He has also made an attempt to standardize the terminology applied to the several kinds of hermaphroditism found in fishes, although subsequent workers have not always followed his recommendations and it now appears that additional terms may be needed as new patterns of sexuality are discovered.

Other chapters in the book deal with the genetics of intersexuality and with intersexuality in birds, mammals, and man. The