BOOK REVIEWS

CHONDRICTHYES III, HOLOCEPHALI. Handbook of Paleooichthyology, Volume 4. B. J. Stahl. 1999. Dr. Friedrich Pfeil, Wolfratshauer Straße 27, D-81379 München, Germany; Tel.: +49–89–7428270; Fax: +49–89–7422772; E-mail: E-mail:100417.1722@compuserve.com. ISBN 3-931516-63-6. 164 p. $100.00 (hardcover).—Living holocephalans (chimaeras, ratfishes) are mere remnants of an older and much more diverse non-elastic branch chondrichthyan assemblage; the single surviving order (Chimaeriformes) contains three extant families, the Chimaeridae (two genera, 24+ species), Callorhynchidae (Callorhinichus, three species), and Rhinichidae (three genera, eight species). However, as many as 12 orders or suborders coexisted during the Carboniferous when holocephalans may have been the dominant marine fishes (Moy-Thomas and Miles, 1971). Holocephalans first appear in the fossil record in the Late Permian (Upper Devonian—Lower Carboniferous: Europe, North America, Iran, Australia). Authorship, synonymy, systematic history, geographic distribution, and details concerning morphological variation, size, etc., are given for families and genera. Species are listed in alphabetical order (after the type species), and additional information concerning their morphology, type specimens, and changes in generic assignment is sometimes provided. However, the basis for regarding species as valid is not explicitly mentioned; Stahl only comments on decisions concerning their synonymies made by previous authors (most notably by Woodward, 1889). Given that many nominal taxa are based on isolated teeth or compound tooth plates (almost exclusively in the cochliodonts, psammodontids, and copodontids), and that there may be much intraspecific or individual variation in tooth structure (heterodonty, e.g., in Psephodus magnus and Deltodus sublaevis), the validity of many species in groups in which

it much more useful than the rather porous anatomical introduction of a previous Handbook of Paleoichthyology volume on Mesozoic and Cenozoic chondrichthyans; Cappetta, 1987). Sandwiched between the systematic catalog and the morphological overview are brief chapters on the habitat, adaptations, relationships, and classification of holocephalans. Separate indices for genera and higher categories are provided for convenience. Consequently, this Handbook is very similar in overall organization to Zangerl’s (1981) contribution to the series. Stahl’s opus is superbly produced, with excellent reproduction of halftones and copious illustrations (about as many as there are pages). Unfortunately, one of the worst characteristics of the Handbook of Paleoichthyology series is maintained in Stahl’s volume: The “References and Bibliography” section is severely abbreviated so that numerous references cited in the text are excluded. Instead, readers are summarily referred to standard bibliographies of fossil vertebrates for the complete citations.

The systematic catalog of Stahl’s book (“Systematics”) begins with a cladogram (p. 46) that provides a foundation for the order in which most taxa are subsequently presented. Each superspecific holocephalan taxon is morphologically described, and much useful information is given for each taxonomic entry, including the temporal range for each family, genus, and species (omitted for Psammodontidae, p. 85, which should read: Upper Devonian—Lower Carboniferous; Europe, North America, Iran, Australia).