Book Reviews

Ornithology

Collected Papers in Avian Paleontology Honoring the 90th Birthday of Alexander Wetmore. STORRS L. OLSON, Ed. Smithsonian Institution Press, Washington, D.C., 1976. xxvi, 212 pp., illus. Paper. Smithsonian Contributions to Paleobiology, No. 27.

This festschrift for Alexander Wetmore begins with two "Appreciations," from S. Dillon Ripley and Jean Delacour; Storrs Olson then gives an account of Wetmore's work on fossil birds, outlining his main areas of study. Also included in the introduction are a bibliography of Wetmore's paleo-ornithological publications and an index of all the taxa he erected, with references to the relevant publications.

The volume contains 18 papers covering a diversity of subjects ranging from the evolution of avian flight (considered in the light of evidence taken from *Archaeopteryx*) to subfossil birds such as moas and flightless ducks. Several new taxa are described; these include a new order, the Alexornithiformes, which Brodkorb erects for a new Cretaceous land bird apparently ancestral to the Coraciiformes and the Piciformes, and a new family, the Primobucconidae, which Feduccia and Martin propose for some of their piciform birds. Other papers raise interesting taxonomic and zoogeographic questions that indicate that certain hypotheses may have to be rethought. Ostrom's paper "Some hypothetical anatomical stages in the evolution of avian flight" takes up a topic that, as he notes, has never been discussed in detail. He traces what he believes must have been the anatomical modifications that occurred from the forelimb of coelurosaurian dinosaurs, through the *Archaeopteryx* stage, to the wing of the modern bird capable of true powered flight. It is difficult to assess this well-presented paper without undertaking the research oneself, but I have two minor criticisms. First, though some degree of attachment of the remiges to the wing skeleton is doubtless necessary if the animal is to use them for powered flight (or indeed for any other purpose), their firm attachment is not invariably indicated by the presence of quill nodes on the ulna. The absence of such quill nodes in *Archaeopteryx*, therefore, should not be employed to support the idea that the animal was incapable of flapping flight, whatever other evidence there may be for that theory. Second, Ostrom's suggestion (first made in *Q. Rev. Biol.* **49**, 27 [1974]) that the forelimb could have been used as an insect trap is open to objection. Harrison (*Nature* **263**, 762 [1976]) makes it quite clear that if the wings had been used as a flyswatter the feathers would soon have become so abraded that they would have been rendered useless for that purpose; yet the specimens with feathers show no evidence of the type of damage. I therefore prefer Harrison's belief that the well-developed remex feathers probably served to increase the wing area and enabled the bird to glide; this would have been advantageous when it attempted to escape from predators.

I would also like to comment on the paper by Collins concerning the affinities of the "swiftlike" family Aegialornithidae, which he places within the nightjars (Caprimulgiformes). This family has hitherto been placed with the swifts (Apodiformes); as recently as 1975 Harrison, using all the wing elements attributed to *Aegialornis gallicus* in the British Museum, produced apparently satisfactory evidence that the group had more affinities with the swifts, particularly the tree swifts, than with the nightjars (*Ibis* **117**, 164 [1975]). Collins, on the other hand, bases his conclusions on the humerus alone, believing that the coracoids, the proximal phalanges of digit 2, and the tarsometatarsi (not seen by Harrison) are not correctly associated with the humerus and belong to the orders Charadriiformes and Coraciiformes. This may be true, for there is no record of any two elements' having been found in articulation; Harrison, however, does show that the nonhumeral wing elements are of commensurate size and possess characters that would allow at least a tentative association. Collins's arguments would have been more convincing if supported by detailed comparative drawings.

This collection of papers is a fitting tribute to one of the greatest ornithologists of our time, who has helped to keep alive the interest in fossil birds during a period when they were virtually ignored by most other workers. Olson must be congratulated for helping to produce a fine collection of papers, covering such a wide range of topics as to be of interest to all ornithologists.

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Noctuidae

Legion of Night. The Underwing Moths. THEODORE D. SARGENT. Photographs by Harold J. Vermes. Drawings by Katherine A. Doktor Sargent. University of Massachusetts Press, Amherst, 1976. xiv, 222 pp. $15.

Noctuid moths compose one of the largest families of animals, including more than 2500 species in North America. Among Temperate Zone noctuids, the largest and most spectacular are the underwing moths of the genus *Catocala*. With 71 species in the eastern United States and 33 to 37 species at individual localities, the *Catocala* provide rich material for studies of diversity, seasonal fluctuations in abundance, isolating mechanisms, and trapping methods. Moreover, their remarkable color variation, long a challenge to the naming abilities of even the industrious lepidopterists and a nightmare to nomenclaturists and bibliographers, has added to the popularity of the *Catocala*.

This volume surveys the species that occur in the eastern United States, summarizes biological information about them, and gives an introduction to research on their behavior, their relationship to predators, their seasonal abundances, and the like. Sargent's principal innovation is to present in layman's terms the status of and the opportunities for scientific research by all kinds of biologists and amateur collectors. His logic and some of the techniques he discusses can be applied to other kinds of insects in addition to the *Catocala*.

Underwings are so called because their forewings are cryptically colored, resembling the tree bark where they rest by day, while their hindwings, which are hidden when folded, are brightly colored—red, orange, or white banded with black. The hindwings are suddenly flashed when the moth is disturbed, and this is believed to function to deflect attacks or to startle potential predators. In