

Morphology of the bony stapes in the Menuridae and Acanthisittidae: evidence for oscine affinities.—The Menurae comprise one of the 4 suborders of passerine birds. For the past century it has contained 2 species of lyrebirds in a family Menuridae, and 2 species of scrub-birds in a family Atrichornithidae; both families have been considered "suboscine" on the basis of syringeal anatomy (Ames, Peabody Mus. Nat. Hist. Bull. 37, 1971). The Menurae have been placed taxonomically usually next to, but at the end of the list of the suboscine assemblage. The New Zealand wrens (Acanthisittidae, 3 living species) have also been placed with the suboscines on the basis of syringeal anatomy, but within the suborder Tyranni. Sibley (Emu 74:65–84, 1974) has concluded on the basis of both anatomical and egg white protein evidence (IFAG patterns) that the lyrebird is not suboscine, but is allied with the bowerbird-bird-of-paradise assemblage. Sibley had not examined the egg white proteins of *Atrichornis*, but because of its anatomical similarity to *Menura* he suggested that it be tentatively retained in a family next to the Menuridae. His major taxonomic conclusion was that the suborder Menurae be dropped, and the Menuridae and Atrichornithidae be placed next to the Ptilonorhynchidae in the suborder Passeres.

The vast majority of birds (most of the nonpasserine orders, and the entire "oscine" assemblage) possess the primitive condition for the avian stapes, with a flat footplate, and a straight bony shaft; this type of stapes does not differ significantly from the same bone in reptiles. On the other hand, the "suboscines" (Furnariidae, including the wood-hewers, Formicariidae, Conopophagidae, Rhinocryptidae, Cotingidae, Pipridae, Tyrannidae, Phytotomidae, Eurylaimidae, Pittidae, and Philepittidae) all possess a derived mor-

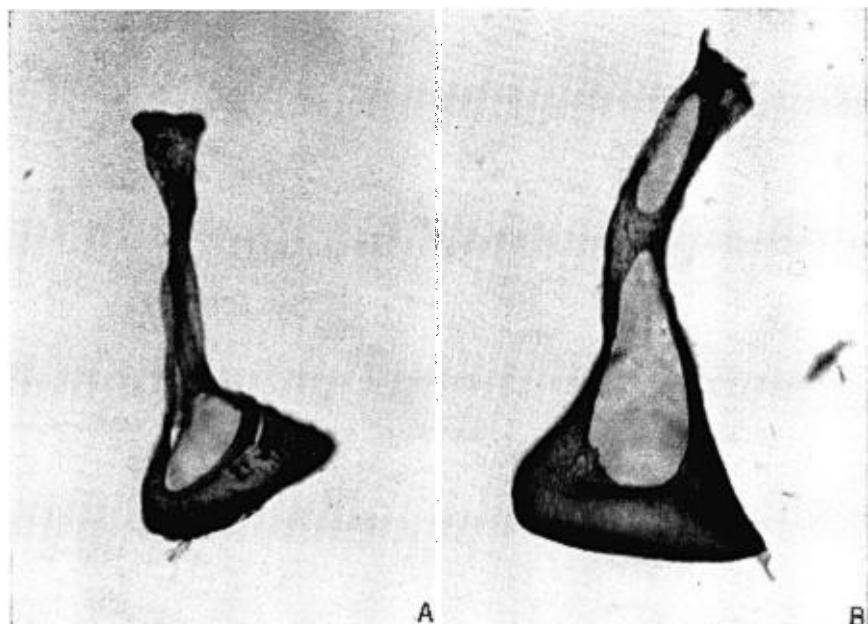


FIG. 1. Alizarin-stained stapes of A, *Smithornis capensis* (Eurylaimidae); and B, *Pitta reichenowi* (Pittidae). Approximately $\times 30$.

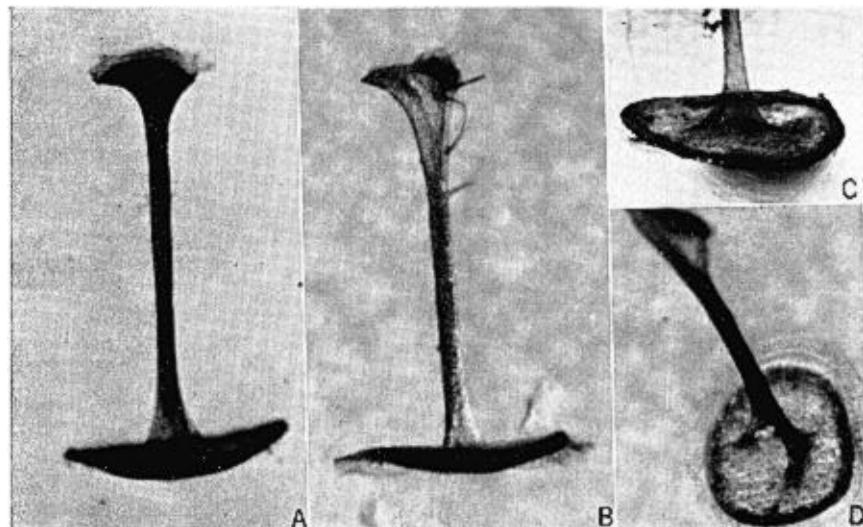


FIG. 2. Alizarin-stained stapes of A, *Menura superba*; B, *Irena puella* (Irenidae); C, footplate of *Menura* stapes; D, footplate of *Irena* stapes. Approximately $\times 20$.

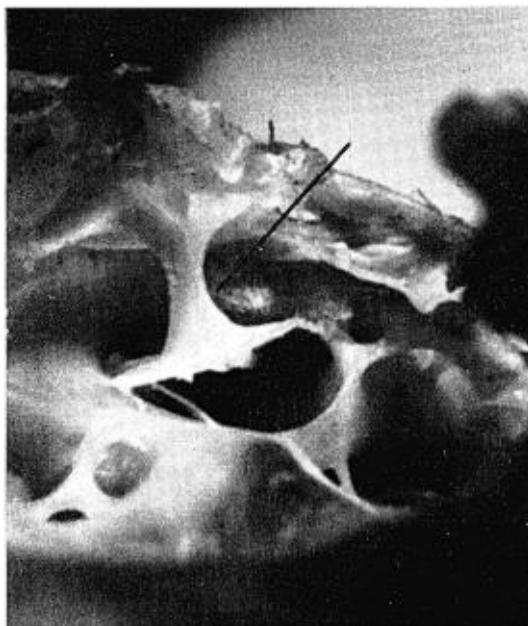


FIG. 3. Stapes of *Acanthisitta chloris* (Acanthisittidae). The footplate of the stapes was half out of the oval window, but still clinging by dried connective tissue. Photo from an unnumbered skull from the British Museum of Natural History. $\times 20$.

phology of the stapes (Fig. 1) with an expanded bulbous footplate area perforated usually by one (often 1 large and 1 small) fenestra (Feduccia, Auk 91:427-429, 1974). I have recently had the opportunity to examine the stapes in the lyrebird (*Menura superba*) and the New Zealand wren, the Rifleman (*Acanthisitta chloris*); both possess the primitive condition for the element. The stapes of *Menura* (Fig. 2) is illustrated next to that of the leafbird, *Irena*, a typical oscine. The stapes of *Acanthisitta* (Fig. 3) is also typically oscine, but with a shaft relatively more robust than those shown in Fig. 1.

Sibley's (1974 op. cit.) biochemical data, along with the evidence from the stapes compel me to conclude that lyrebirds are oscine, and are likely close to the bowerbird-bird-of-paradise assemblage. Additional new evidence will be needed to draw conclusions of the relationships of the New Zealand wrens, but at present I suggest that their closest living relatives are to be found among the oscines.

I wish to thank Dr. Charles G. Sibley for providing me with a specimen of *Menura* and encouraging this study. Dr. R. L. Zusi kindly permitted me to examine a specimen of *Acanthisitta* on loan to him from the British Museum (Natural History), and arranged for the photography of the specimen (Fig. 3). I continue to be indebted to Dr. R. W. Storer (Univ. of Michigan) and Dr. R. L. Zusi (National Museum of Natural History) for permitting me to examine specimens under their care. This study was supported by a grant from the University of North Carolina Research Council.—ALAN FEDUCCIA, Dept. of Zoology, Univ. of North Carolina, Chapel Hill 27514. Accepted 19 Dec. 1974.

Additional observations on hover-feeding by North American ardeids.—In a previous note (Rodgers, Wilson Bull. 86:70-71, 1974), I reported observing Snowy Egrets (*Egretta thula*) and Great Egrets (*Casmerodius albus*) hover-feeding in Barataria Bay, Louisiana. Since that time, I have observed Louisiana Herons (*Hydranassa tricolor*), Little Blue Herons (*Florida caerulea*), and a Black-crowned Night Heron (*Nycticorax nycticorax*) hover-feeding in Barataria Bay with Snowy and Great Egrets, Ring-billed Gulls (*Larus delawarensis*), Laughing Gulls (*Larus atricilla*), Forster's Terns (*Sterna forsteri*), Royal Terns (*Thalasseus maximus*), and Sandwich Terns (*Thalasseus sandvicensis*). These birds were feeding on dead or dying fish on or near the surface of the water. The fish were discarded from boats trawling in the bay. Kushlan (Wilson Bull. 84:199-200, 1972) previously reported observing Louisiana Herons aerial feeding with Snowy Egrets at a fresh-water pond, and Reese (Condor 75:352, 1973) reported Great Blue Herons (*Ardea herodias*) and Great Egrets feeding together on dead fish from the surface of Chesapeake Bay.

The behavior of all 5 species of ardeids hover-feeding on Barataria Bay was identical. On approaching the fish, the heron would hover, extend its head downward, and pick up the fish with its mandibles. At this time the legs of the heron usually dangled below its body with the feet often completely submerged.

One to 5 Louisiana and Little Blue herons were observed hover-feeding on 7 and 3 occasions respectively. Hover-feeding by the Black-crowned Night Heron was observed only once about one hour before sunset. The Louisiana Herons, Little Blue Herons, and the Black-crowned Night Heron were observed hover-feeding along with as many as 70 Snowy Egrets and 15 Great Egrets.—JAMES A. RODGERS, JR., Museum of Zoology, Louisiana State Univ., Baton Rouge 70803. Present address: Dept. of Biology, Univ. of South Florida, Tampa 33620. Accepted 17 Jan. 1975.