

## FROM FIELD AND STUDY

**Observations of Behavior of the Andean Torrent Duck.**—Most members of the family Anatidae are notably cooperative subjects for ethological study, but the Andean Torrent Duck (*Merganetta armata*) has never been analyzed from a behavioral standpoint. Since this species has not survived in captivity (Delacour, *The Waterfowl of the World*, 1956), and since it inhabits the relatively inaccessible white-water rivers of the Andes, observations of it have been few.

As a member of the University of California Botanic Garden's Seventh Expedition to the Andes, I traveled widely in northern Perú during 1964. We explored several rivers of the Pacific slopes and the upper Amazon drainage, but *Merganetta* was seen on only three occasions. On the evening of April 11 a single drake was seen flying along the Río Utcubamba at Leimebamba, 2150 meters altitude. The river at that point tumbles among shore-line boulders and is only about four meters wide. Farther down river a duck and a drake were encountered on June 24. The river at this location (1900 meters in altitude) was about ten meters wide and still quite turbulent. In mid-stream the drake pursued the duck and made several attempts to grab the feathers of her back with his bill. Mounting was attempted, but the chase ended abruptly when the pair saw me standing only three meters away on the river bank. The duck immediately submerged. No forward diving motion was discernible. She simply sank out of sight on the spot. The drake held his position against the current for several seconds until the duck reappeared about forty meters upstream. She had covered this distance out of sight, apparently underwater, and now shot from beneath the surface to become immediately airborne. Both birds flew upstream and disappeared from view.

In the afternoon we returned to the same location, and this time two drakes and a duck were present. The drakes maintained a remarkable, upright posture while facing each other in the turbulent river. The duck, in normal swimming position, moved downstream much more slowly than the current. She did not swim directly away from the displaying drakes but moved off at an angle, turning her head slightly to the right to view the combatants.

The efforts of one drake to reach the duck were frustrated by the other which successfully maintained his position between the two and never allowed the aggressor to approach more closely to the duck than two meters. The drakes remained bolt upright, breast and most of the belly clear of the water, the neck stretched up and the bill pointing skyward almost 90° above the horizontal. While in this position and about half a meter apart, both drakes rapidly but rhythmically bobbed their heads while keeping the bill in a vertical position. After almost two minutes of such display, the drake, which I considered to be the aggressor, swiftly turned, leaped into the air, and flew upstream. The remaining drake moved to the side of the duck, and both swam downstream.

During their encounter the drakes did not obviously display their wings nor use them in combat, and no vocalization could be heard above the sound of the river.—J. KENNETH WRIGHT, *Museum of Vertebrate Zoology, Berkeley, California, March 1, 1965.*

**"Flightlessness" in the Dipper.**—Certain aquatic birds which can elude their enemies in the water are known to drop all their remiges at the same time (Van Tyne and Berger, *Fundamentals of Ornithology*, 1959:94). Among these birds are waterfowl, grebes, most rails, and many alcids. This phenomenon was unknown among passerine birds until Balat (*Zool. Listy*, 9, 1960: 257-264) in a three-year study of a marked population of the European Dipper (*Cinclus cinclus*) found a short period in which the bird is unable to fly. During an ecological study of its congener, the American Dipper, *C. mexicanus*, a few observations have been made which suggest that a similar event occurs in this species.

From August 16, 1964, to August 30, 1964, three banded adult Dippers were encountered in a "flightless" condition. Two of the three birds were run down and captured by hand. Four days after the initial capture, R. S. Hoffmann and I were able to run down and capture one of these birds a second time. The third Dipper was capable of longer flights and was captured with a fish net. Remiges 2 to 6 were extremely short in all of these "flightless" birds; this agrees with Balat's findings in *C. cinclus*; remiges 1, 7, 8, 9, and 10 are retained for an undetermined period. The rectrices were extremely short, and all appeared to be dropped at once. One of the Dippers was

known to have discontinued feeding its juveniles from 5 to 7 days before entering the flightless period. The Dippers, when pursued in this condition, attempted to evade capture by hiding among tumbled logs or in streamside vegetation, or by swimming away on or under the water. Balat (p. 262) found a partial molt in juveniles of *C. cinclus* in which the rectrices, remiges, and greater wing coverts are retained. On August 30 a fourth Dipper, believed to be a juvenile, was captured in a mist net. Body molt was in progress; the rectrices and remiges were not molting. The availability of water as an escape medium seems to permit the dipper to telescope its molt into a short, late summer period.—JOHN O. SULLIVAN, *Department of Zoology, University of Montana, Missoula, Montana, February 24, 1965.*

**The Syrinxal Structure of the Asiatic Owl *Phodilus*.**—The owls are divided into two families, the Tytonidae and the Strigidae, in most currently employed systems of classification. The reduction of these families to subfamilies by some authors does not alter the fact that the two are distinct assemblages evidently representing separate phyletic lines. The barn owls of the family Tytonidae in a number of respects stand well apart from the true owls. However, the genus *Phodilus*, which Peters (Birds World, 4, 1940:86) included in the Tytonidae but which Ridgway (U. S. Nat. Mus. Bull. 50, pt. 6, 1914:599–600) excluded, remains to be thoroughly studied in order to relate it properly to the two natural familial groups. I do not have material that would allow me to make a general evaluation of the problem of relationships, but dissection of the syrinx of *phodilus* has recently been possible, and it has revealed certain points of similarity and difference which will need to be taken into account later in drawing conclusions on affinities.

A body of *Phodilus badius*, preserved in formalin, was recently made available for study to Loye Miller and me through the kindness of Joe T. Marshall, Jr. The bird was a male, taken on April 26, 1964, by Ben King, at Chieng Khong, Chieng Rai, Thailand.

In studying the vocal apparatus of owls on several occasions (Condor, 36, 1934:204–213, with references to earlier literature; *ibid.*, 37, 1935:288; *ibid.*, 65, 1963:440–441; Auk, 64, 1947:133–135) I have been impressed with the fundamental similarity of structure of the syrinx among the genera of the Strigidae even though I was concerned with reporting certain specific and generic differences and sexual dimorphism in correlation with vocal differences. Initially in commenting on *Tyto* I mentioned but did not stress (1934, *op. cit.*:205, 211–212) its departure from the true owls in greater fusion of cartilaginous units, in the presence of a ligamentous connection between the bronchi, and in the lack of sexual dimorphism. These differences and others here to be reported do not appear in any of the true owls which I have examined (12 species of 9 genera).

A recently dissected specimen of a male *Tyto alba* permits elaboration and illustration (figs. 1, 2) of the following features which distinguish it from the Strigidae: (1) The bronchial tubes of *Tyto* are held together in parallel position in the region immediately behind the trachea rather than spreading laterally; this is accomplished by a strong ligament on the dorsal side. (2) The two semirings of the syrinx posterior to the pessulus are broadened at their dorsal ends and extensively fused with one another at both their dorsal and ventral tips and with the first complete bronchial ring anteriorly; this contrasts with parallel sided and unfused rings in the strigids. (3) The internal vibratile membrane does not show a thickened area opposite the ring on which the intrinsic tracheal muscle (*M. tracheolateralis*) attaches. (4) The mid-ventral area of the syrinx anterior to the ring on which this muscle attaches is a broad plate of cartilage, in which ring units are obliterated rather than a region of closely fitted but separate rings. (5) The expansion of the bronchial part of the syrinx at the point of muscle attachment reaches about 180 per cent of the bronchial diameter farther posteriorly rather than 200 per cent or greater as in the Strigidae.

When *Phodilus* is compared with *Tyto*, it unexpectedly shows distinct departures from it and yet no close conformity with the Strigidae. It has several peculiarities of its own. The important points in contrast with *Tyto* are: (1) There is less fusion of the rings of the syrinx on the dorsal side. (2) The pessulus is connected dorsally with a simple tracheal ring whereas it is connected in *Tyto* with a tracheal ring that has an anteriorly directed arch that invades the medial area of the adjacent anterior ring and interrupts the latter in the mid-line. (3) The internal membrane is more rounded and drumlike. (4) The *M. sternotrachealis* attaches to the trachea on a ring 11 units in