lation. The act of mounting in copulation possibly is a stereotyped neural pattern stimulated by a soliciting posture resembling that seen in sunning Cliff Swallows. Certainly there are similarities in gross motor behavior between the "lean-forward" sunning posture and that of a sexually soliciting female. It is suggested that in instances involving swallows that we observed, the resemblance between the "lean-forward" sunning posture and that of a female soliciting copulation evoked "real" copulatory behavior.

Juvenal Cliff Swallows (identifiable by their yellow mouth linings, their plumages, and in part by specimens taken) were noted to solicit adults, presumably for food, by crouching, quivering their wings, gaping widely, and directing the head slightly upward. Solicitation for food was directed toward both adult Bank Swallows and Cliff Swallows and was ignored by adults of both species.

Emlen (1952) has theorized that positive and negative forces are operating in social flocks. He proposes that gregariousness is the "positive force" which brings birds together in flocks and that various forms of social intolerances and independence are the "negative forces" that regulate and determine the flocking pattern. Flocking usually occurs at localized centers of attraction such as sites for mud-gathering, nest building, or loafing. The gregarious nature of the various kinds of behavior witnessed by us is evidence of a localized center of attraction, in the above instances a "sunning surface." In our experience, after a flock was disturbed, one or two swallows returned to the surface almost immediately and these were quickly followed by other birds; these possibly were attracted to the site as much by the first arrivals as by the site itself. As more birds arrived the flock became more dense and "negative forces" in the form of inter-specific and intra-specific strife became increasingly manifest. Eventually an equilibrium was reached resulting in a more or less regular spacing of individuals in the flock resting on the surface of the road. The speculations by Emlen seem to be a good interpretation of flocking behavior in swallows and are supported by our observations.—Jon C. Barlow and Erwin E. Klaas, *Museum of Natural History, University of Kansas, Lawrence, Kansas,* and John L. Lenz, *Jackson Memorial Laboratory, Bar Harbor, Maine, February 7, 1963.*

First Breeding Record of the Spotted Owl in British Columbia.—Laing (Condor, 44, 1942: 175–181) reported taking a male of a nesting pair of Spotted Owls (*Strix occidentalis*) at Huntington, British Columbia, on May 31, 1927, but did not state how he knew the birds were nesting. Several other Spotted Owls have been reported or collected in British Columbia, but to the author's knowledge the following observations constitute the first breeding record of the Spotted Owl in this province. The area occupied by the family of Spotted Owls which I watched was limited to approximately one acre of forest on the north-facing slope of the Skagit River Valley, 5.4 miles west of Allison Pass on the Hope–Princeton Highway, in Manning Park, British Columbia. The forest was a mature mixed stand of *Tsuga heterophylla, Thuja plicata, Pseudotsuga Menziesii, Picea Engelmannii,* and *Abies amabilis* with very little underbrush. A few hundred yards to the south and east of the forest where the owls were seen was a burned area of several thousand acres.

Evidence that the owls were nesting in the area was first obtained on May 16, 1962, when an adult owl flew toward the author and his wife and landed in a tree 20 feet from them. An adult owl gave further evidence on June 7 when it struck the author a glancing blow on the shoulder with its talons.

On July 28 Gordon Orians and Christopher Perrins accompanied the author in a search for the owl's nest and for owl pellets. Two fledged young and one adult owl were seen. The young owls were able to fly but were a little awkward in regaining a perch. They had downy feathers on their heads and breasts at this time. On July 29 Perrins saw both adult birds.

The owl pellets found in the area contained the remains of the following mammals: five *Glaucomys sabrinus,* five *Peromyscus* sp., two *Zapus* sp., two *Ochotona princeps,* and one *Phenacomys intermedius.* There was evidence of one bird, *Loxia* sp.—Christopher C. Smith, *Department of Zoology, University of Washington, Seattle, Washington, December 10, 1962.*

The Vocal Apparatus of Two South American Owls.—In earlier studies of the vocal apparatus of American owls (Miller, Condor, 36, 1934:204–213; 37, 1935:288; Auk, 64, 1947;132–135) the syringes of eleven species of nine genera were examined. In 1958 I had the opportunity to preserve for dissection the syringes of the Mottled Owl (*Ciccaba virgata*) and the Andean Pigmy Owl (*Glau-*

cidium jardinii). The specimens are both from males taken in the vicinity of San Antonio in the Western Andes west of Cali, Colombia, at an elevation of 6500 feet.

The Andean Pigmy Owl is a species that weighs about 15 per cent more than the North American Pigmy Owl (*Glaucidium gnoma*). Despite this fact the measurements of the syrinx are the same as in *gnoma*. Those of *jardinii* are: length of vibrating membrane, 3.6 mm.; length of membrane as per cent of bronchial diameter, 200; bronchial diameter, 1.8 mm.; tracheal diameter, 2.7 mm.; body weight, 74.8 gm. Also, the notes of *jardinii* did not impress me in the field as differing in pitch or quality from those of *gnoma*.

The one point of difference in these two species shown by the dissections is the smaller number of modified bronchial rings in the sound chamber of *jardinii*. Thus in *jardinii* the insertion of the intrinsic muscle, which marks the posterior end of this chamber, is on the fourth (right) and fifth (left) bronchial semirings whereas in three examples of *gnoma* it was on the fifth and sixth rings. As in two of the three *gnoma*, the attachment is asymmetrical, a condition noted in several other species of owls.

The syrinx in *Ciccaba* is noteworthy for the degree of enlargement and elongation of the bronchial sound chamber. The measurements are: length of vibrating membrane, 7.5 mm.; bronchial diameter, 2.9 mm.; tracheal diameter, 5.1 mm. The insertion of the intrinsic muscle is symmetrically on the ninth bronchial rings and the percentage enlargement of the bronchus at the point of the vibratile membrane is 258. Other owls previously reported have shown percentage enlargements up to 238, the maximum being in males of the Great Horned Owl (*Bubo virginianus*). Also the sound chambers seem to be more abruptly rounded and enlarged anteriorly in *Ciccaba* than in other owls in which they are also relatively elongate (fig. 1; compare with the Spotted Owl, *Strix occidentalis*, Miller, *op. cit.*, 1934:208).

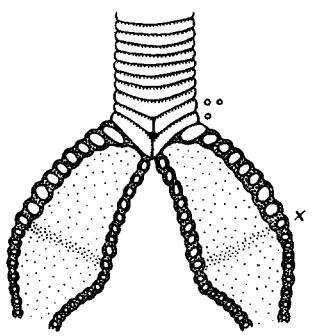

Fig. 1. Dorsal view of syrinx of the Mottled Owl, *Ciccaba virgata*, x 2. Letter "x" marks ring on which intrinsic muscle inserts at point of maximum enlargement of right bronchus; o = last tracheal ring; oo = penultimate ring. Thickened vibratile portion of internal membrane, extending between ends of bronchial semirings, shown by heavy stippling at level of muscle insertion.

The ends of the cartilaginous semirings of the syrinx of *Ciccaba* are heavily enclosed and supported at their free ends by dense connective tissue. In this respect and in the involvement of nine rings this owl is like the Flammulated Owl (*Otus flammeolus*). Thus the voice box of the Mottled Owl in general is more enlarged and more specialized than in other owls with the exception of *flammeolus*.

Relative to its size, *Ciccaba virgata* should be able to produce an especially low-pitched note. For example, it has a vibratile membrane equal in actual dimensions to that of *Strix occidentalis* which species may weigh 500 to 600 gm. rather than 264 gm., as in the specimen of *virgata* at hand. Unfortunately, I only heard Mottled Owls give barking notes, not mellow hoots or whistles which latter would have given an opportunity to judge pitch. However, I was impressed with the similarity in quality, and presumably in pitch, of its barking and that of *Strix occidentalis* even though there were differences in cadence.—ALDEN H. MILLER, *Museum of Vertebrate Zoology, Berkeley, California, December 21, 1962.*