Explanation of Plate I.

Tongues of Colaptes, Dryobates and Melanerpes bh, basihyal; cb, ceratobranchial; eg, extensor glossi; ep, epibranchial; gh, glossohyal; n, nostril; s, part of salivary gland; t, tongue.

Fig. 1. Part of hyoid structure of a female flicker, (*C. a. a.*) with the muscle tissue entirely removed from the right cornu (eg, cb) and part of it removed from the tongue (bh), X-1.

Fig. 2. The glosso-basihyal articulation, much enlarged.

Fig. 3. The baso-ceratobranchial articulation, much enlarged.

Fig. 4. Barbed tip of the tongue of a downy (*D. p. p.*) X-2.

Fig. 5. Head of female flicker (*C. a. a.*) showing position of ensheathed epibranchials (ep) in right naris when the beak is closed, X-1.

Fig. 6. Head of red-head showing position of ensheathed epibranchials (ep) when the beak is closed, X-1. The eye and orbital differences in figs. 5 and 6 are due to preparation of the specimens rather than to structure.

The tongue is extended by contraction of the fibers in the paired extensor glossi (eg) muscles. Each of these muscles is attached to the medial side of the mandible about as far craniad as the nostril, and envelops the epibranchial bone (ep) from near its articulation with the ceratobranchial (cb) to its extreme distal end. During extension the tongue is guided by small muscles. Retraction of the extended tongue is effected chiefly by two small muscles which are attached to the tongue fascia and the caudal end of the basihyal sheath and extend along the trachea.

The tongue is highly extensile and more or less spear-pointed, except in Sphyrapicus it is moderately extensile and terminates in a sort of brush or mop.

In some forms (e. g., hairy) the ends of the epibranchials curve over the back and along the top of the skull then, lying side by side, curve craniad and beneath the right eveball. In Colaptes the epibranchials curve up over the skull and enter the right nasal cavity just behind the nostril and continue beyond it. (Fig. 5). In the downy, red-head, red-belly and yellow-bellied sapsucker these bones rest with the tips usually not anterior to a point midway between the anterior borders of the eyes. (Fig. 6). The distance which the epibranchials are able to slide around the skull is equal to the distance the bird extrudes its tongue. Thus there is a relation between the length of the epibranchials and the distance the tongue can be extended.

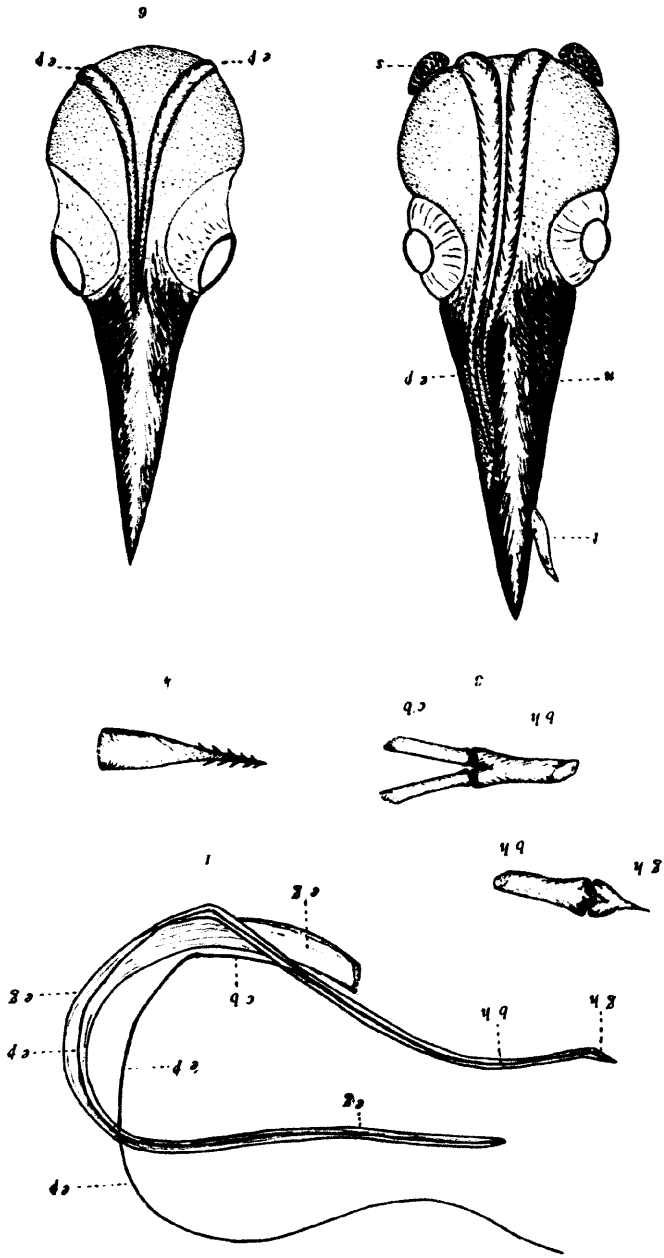
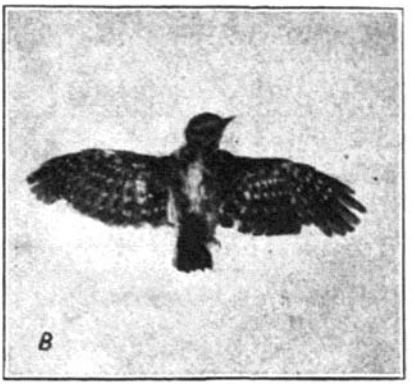


PLATE I



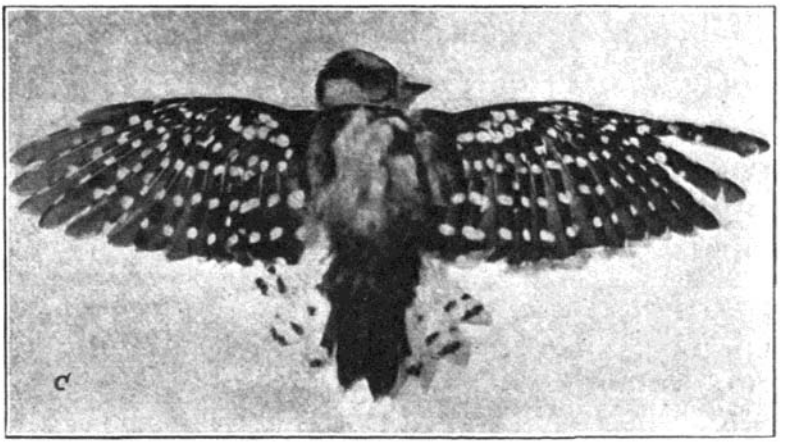
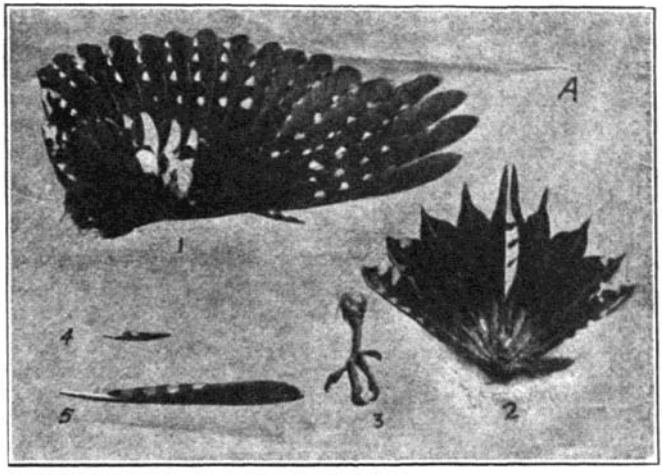


PLATE II

A. Yellow-bellied sapsucker at work. Photographed by John A. Jeske, Public Museum, Milwaukee, Wisconsin, March 10, 1924.

B. A female downy (*D. p. pubescens*) showing worn condition of tail, collected July 8, 1922, Cleveland County, Oklahoma.

C. Another female *D. p. pubescens* showing arrangement of spots on tail and wings. Photograph by G. Fox.



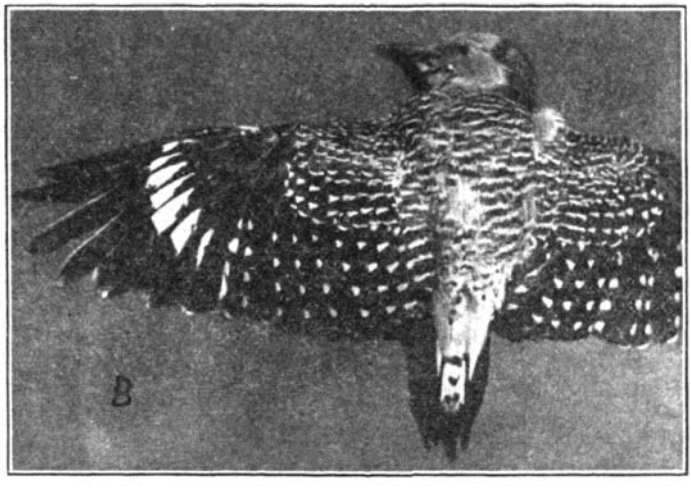


PLATE III

A. Yellow-bellied sapsucker. 1. Left wing showing spotting and rudimentary primary. 2. Tail expanded showing rudimentary rectrix. 3. Left foot. 4. First primary. 5. Second primary, 4 and 5, from right wing. The length of the first primary is 1.05, second, 3.65 inches.

B. Red-belly showing characteristic spotting.

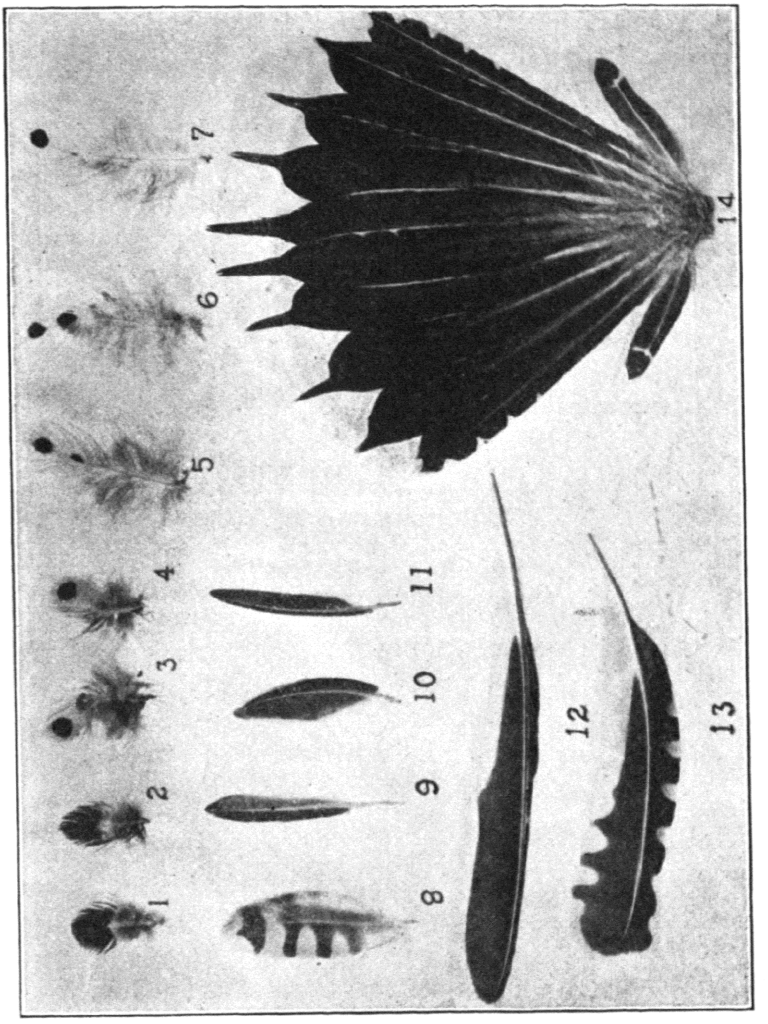


PLATE IV

Flicker (*C. a. auratus*). 1, 2. Feathers from black crescent of breast. 3, 4. Single-spot feathers from the anterior part of the breast. 5, 6, 7. Two-spot feathers from the flank. 8. A feather from the primary covert, right. 10. Spurious or first primary, left. 12. Fourth primary, right. 13. A secondary, right. 14. Tail spread to show form of rectrices and size of the first.