

One can keep these mounts filed vertically in a tight box or drawer of proper size, but should bear in mind that insect pests, if not guarded against, will destroy the feathers. Fresh naphtha flakes liberally used in the box seem to be a deterrent, but will not drive out an insect once it has reached its food. Naphtha probably only obscures the scent by which insects find their food. One should fumigate occasionally with a thoroughly volatile carbon-bisulphide.

When one brings together in this way the same sets of feathers from different individuals of the same species, even when the birds come from the same locality, he is early impressed with the quantity and quality of individual variation. He must be impressed, too, with the independence in pattern and contour design between the sets of feathers from different tracts on a single bird, and with the prevalence, usually, of a certain pattern and contour type throughout any particular set. Shape or contour and pattern design of feathers exhibit almost endless variety, even on a single bird, and the shape, width, and length of any certain feather frequently differs appreciably in different birds that on casual examination would be pronounced alike.

Sample sheets, presenting certain interesting types of feathers, are shown herewith. One cannot, of course, be too careful in allocating the feathers he plucks to the proper tract series. For instance, the outer or tenth primary in many fringillids is smaller than its own tiny covert. In some species, one may easily confuse the tertiaries with their coverts and wonder whether the alula series are, a part of them, coverts.

**Molt.**—The study of feather pattern and of molt run hand in hand. Each set of feathers on a bird's body proceeds with its molt in a manner more or less independent of the other sets or tracts. Particularly is this true of the wings and tail.

We may assume that the order of procession follows a scheme formulated by the phylogenetic relationships of the individual under study. It is of value, therefore, in examining a molting bird, to record in one's note book exactly what appears, to the minutest detail, and to continue to record such details in bird after bird of the same species. Observations on a single individual had best not be accepted as conclusive without repeated confirmations from other individuals of the same species.

Note from which part of a series renewal begins and where it ends and the relative progress of the molt in different tracts. One has no trouble in differentiating the fresh-pigmented new feathers from the abraded and faded old ones. Some banders have been fortunate enough, already, to retake individuals more than once during a molt and thus to obtain data on the speed of feather growth.

One who seriously undertakes a study of molting birds will do well to use wide sheets, one for each species, with columns ruled off and headed for each feather tract. Thus, using a single line for a band number, comparisons are readily made between individuals, since data on any tract is all in the same column. Date, age, and sex should, of course, appear with the band number.

Then there is the progressive change of plumages, wherein the same follicle is called upon to produce, first, a down feather of the natal plumage, then a feather of the juvenal plumage, then one of the adult plumage. Some continue the change by providing a feather of an eclipse plumage, alternating between feathers of successive breeding plumages. Much is to be learned from accurate recording of exact feather patterns in individuals whose type of feather changes with age, and whose particular life changes can now be traced by repeated readings of their identifying bands.

Naturally, the feathers of the wing and tail are easiest kept track of. A ready method of recording these details, suggested by Mrs. Ella H. Ellis, of Los Angeles, California, is a rapid sketch of a conventional wing and tail on which one notes the proportionate size of each growing feather. If one lets the white spaces represent old feathers, and darkens spaces to represent the growth of new feathers, with an extensive "X" denoting absent feathers, he can visualize at a glance the molt condition of a wing or tail. In like manner he can record pattern details for comparison with subsequent plumages of the same bird.

The Western Bird Banding Association is preparing a sheet with a conventional outline sketch for each aspect of the bird, and with each feather tract indicated and named. If the response in membership to this new Association warrants the expense outlay, these sheets should be ready by the time this article appears. They will be distributed at nominal cost to those who desire to cooperate in the study of molts. One need only mark on the sheet the new and absent feathers. Pin or tiny feathers on any of the tracts can readily be indicated.—J. EUGENE LAW, *Altadena, California, March 28, 1925.*

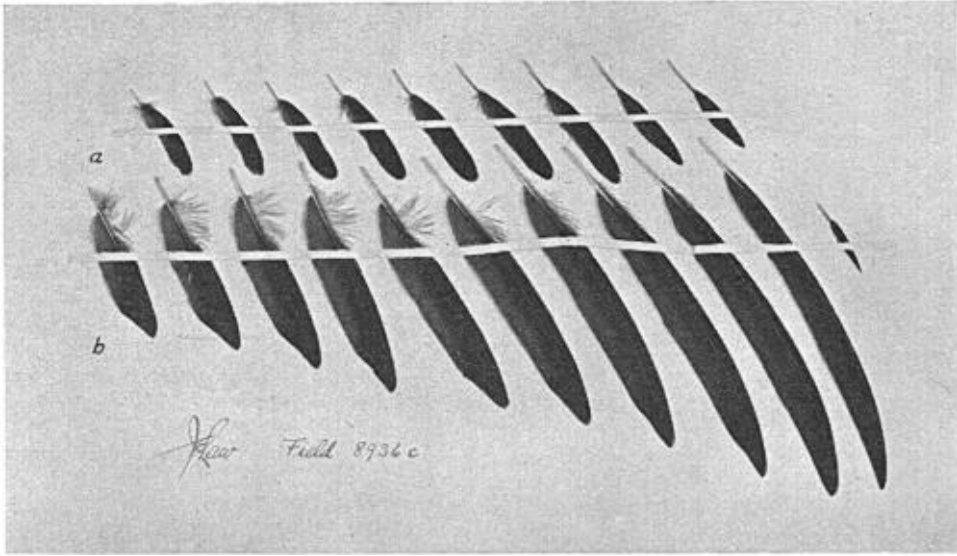


Fig. 37. FEATHERS FROM THE RIGHT WING OF A VAUX SWIFT. I.

a. Greater coverts of primaries.  
 b. Primaries. Note that there are 11 primaries, if the rudimentary outermost one be counted in. The eastern Chimney Swift also has this abortive outer primary.  $X\frac{1}{2}+$ .

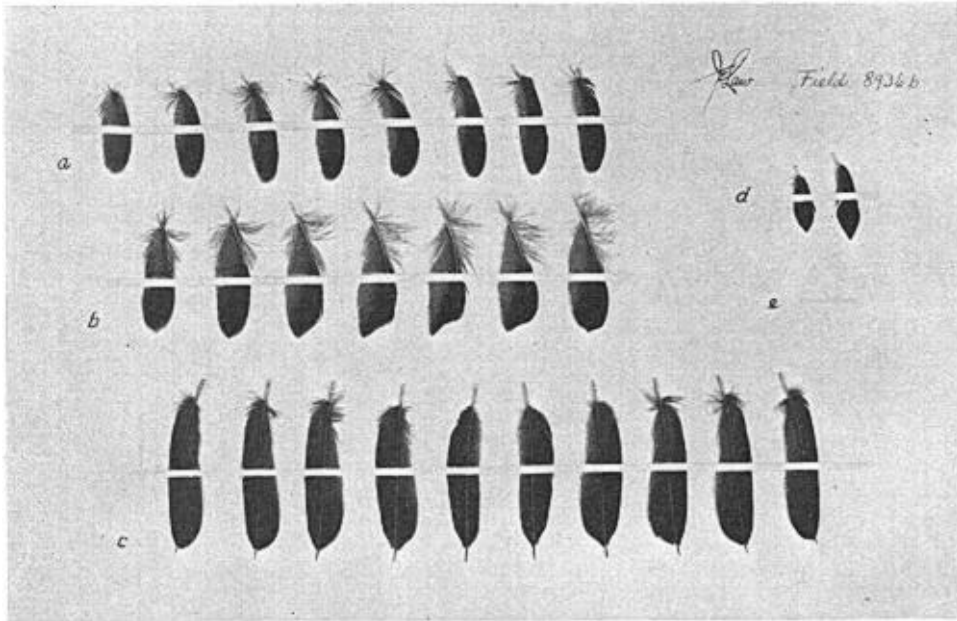


Fig. 38. FEATHERS FROM THE RIGHT WING AND THE TAIL OF A VAUX SWIFT. II.

a. Greater secondary-tertiary coverts. Perhaps the one on the left is a tertiary.  
 b. Secondary-tertiary series of remiges. Note the peculiar configuration of some of them.  
 c. Rectrices. Note the spine-like tips.  
 d. Alula set.  
 e. A filoplume, probably too faint to detect in the reproduction.  $X\frac{1}{2}+$ .