

Notes on the Moulting of *Spinus pinus* and of *Hirundo erythrogaster*.

—In the January 'Auk,' Mr. Stone has so pleasantly reviewed my paper on 'The Plumages and Moults of the Passerine Birds of New York,' that it is evident we are in complete accord as to the facts and conclusions which we have each reached working along independent lines. There are, however, two species, the Pine Finch and the Barn Swallow, about which there is yet a word to be said. Mr. Stone appears to be correct in claiming a prenuptial moult in the Pine Finch, but it is ordinarily so extremely limited that I considered it as the irregular renewal, found in spring in so many species, which scarcely deserves the name of a distinct moult. Two of Mr. Stone's Pennsylvania birds taken in May show more evidence of growth of new feathers about the head and throat, and even of new tertiaries, than I would have suspected from the other material I have studied. The re-examination of nearly 150 specimens, taken every month in the year, shows that birds of April, May and June are exceedingly worn. Among seven April and eleven May specimens, I find so little evidence of the growth of a few new feathers, and only on the throat, that Mr. Stone's specimens which I have examined are indeed a surprise to me, and suggest unusual precocity. As, however, this species is subject to a considerable amount of wear, it is probable that it belongs with those species having a very limited first prenuptial moult which is not repeated a second year, and the wear, quickly affecting the new feathers, obliterates evidences of moult.

Mr. Stone and I do not quite agree about the Barn Swallow (*Hirundo erythrogaster*), for he speaks of an "apparent prenuptial moult," basing his opinion on a bird (Phila. Acad. Nat. Sci. No. 28576, September 1, Pennsylvania), which he considers an adult after the postnuptial moult, and therefore requiring a prenuptial moult to produce the attenuated lateral rectrices of the breeding bird. The specimen in question has been kindly loaned to me, and I am satisfied it is a young bird in fresh juvenal plumage, for the slight forking of the tail and the green tinge of the back with reddish-brown edgings on the rump, nape and wing-coverts are characteristic of a dozen other young birds in my own collection. The green tinge, by the way, is peculiar to the young of all our Swallows, and of other birds with iridescent feathers, like Crows and Blackbirds, in which adults are usually bluer or purpler than young birds. Here is a case where immaturity might be shown by softening the skin and examining the ossification of the skull.

Three other interesting Barn Swallows have been sent to me by Mr. Stone. Two of them have already been noticed in his valuable paper on moult, and I agree with him that two of them (Phila. Acad. Nat. Sci., No. 28574, August 7, Pennsylvania, and No. 28577, September 1, Pennsylvania), are adults just beginning the postnuptial moult, which, doubtless, would have been completed after they had reached winter quarters, or perhaps while on the journey thither. The same sort of feather renewal takes place among some of the Tyrannidæ, Laridæ, Limicolæ and others

of strong flight, and the body feathers are very apt to precede in their growth the remiges and rectrices, although in the two specimens cited, the rectrices are already partly renewed. The third specimen (Phila. Acad. Nat. Sci., No. 15661, French Guiana), is unfortunately undated, but it is evidently passing from the juvenal plumage by what must be called a postjuvenal moult. The worn first primary, inner secondaries and a few of the rectrices, together with a green-tinged back, indicate a young bird. The crown now worn brown also indicates juvenal plumage, while new feathers are breaking from their sheaths, both on the head and throat. These birds all bear out my conclusion that adult Swallows moult earlier than young birds which undergo a complete postjuvenal moult, often in midwinter. It is, on the whole, expedient to speak of a postjuvenal moult and not of a prenuptial, even in those species which are late in assuming a first winter dress, which then becomes that of the first summer simply through wear. This sequence of plumages obtains largely both among the North American *Hirundinidæ* and *Tyrannidæ*, and I am glad of this opportunity of calling attention to it.

I would also correct here a slip of Mr. Stone's pen at page 118 of his review in 'The Auk,' where he has inadvertently credited the Cross bills with a "prenuptial" moult, meaning of course, the postnuptial.—
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To Remove Fat from Bird Skins.—Fat on sea and water birds is especially difficult to get rid of. It means long and tedious scraping, often with unsatisfactory results. Benzine, sulphuric ether, alkalies and other solvents of grease and oils, are either unpleasant to use, dangerous in a room with fire or lamp, evaporate rapidly or are expensive, and after all only dissolve the contiguous layer of fat at each application, often leaving the skin in bad condition.

One day, when almost on the point of throwing away in despair a hopelessly fat specimen, which had been scraped until nearly disintegrated, and, after having been treated with cornmeal, sawdust and plaster of Paris, still showed oil when pinched, the idea occurred to me of using an absorbent at a sufficiently high temperature to melt out the oil and absorb it at the same time. Some plaster of Paris was put in a bread tin, heated on top of the stove until fairly hot to the hand, and then a thick layer was spread on the bird skin. This was pressed down and manipulated until a sufficient time seemed to have elapsed, when it was carefully brushed off. The result exceeded my expectation. A second application practically removed all the oil. Since then I have continued using this method with success.

The skin must, of course, be first scraped so as to break the fat-containing tissues and as much fat as possible scraped off, using cornmeal or sawdust as an absorbent while operating. After this the hot absorbent may be applied. The skin may seem very dry after the operation, but this is really only on the surface, and going over it with a damp



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