

adult male Purple Finches, makes it seem probable that cases of this kind occur in males only, the rosy pigmentation being replaced by yellow. The cause of xanthochroism in wild birds is less easily explained than in birds kept in captivity, although changes in the kinds of food eaten by this race are bound to happen, owing to their erratic wanderings and to the failure of some fruits to mature. No better example of this last has come to my notice than in 1927 in Cohasset, Massachusetts, where the white ash, arrow-wood (*Viburnum dentatum*), and cedar-berry crops failed utterly and the elderberry crop was very small. This condition must have had marked influence on bird-life in September and October.

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## SOME MANIFESTATIONS OF AGE IN MALE AMERICAN GOLDFINCHES

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In reading the description of the various plumages of the American Goldfinch (*Astragalinus t. tristis*) by Ridgway, and the succession of plumage-changes due to age or appearing at different seasons of the year as described by Dwight and Stone, it is noted that one part of the plumage of male birds has not received its proportional amount of attention at their hands, namely the median coverts. In fact, in discussing plumages, the above authors make no direct mention of changes taking place in the coloration of the median coverts, at least in the papers mentioned below.<sup>1</sup> Ridgway in "Birds of North and Middle America," Part I, page 109, refers to these coverts only once when writing of the nuptial plumage of the adult male, and here they are described as white.

Living male Goldfinches in first-winter plumage have yellowish-brown least coverts with a marked greenish cast. Such birds in their second-winter plumage have in life the lesser coverts of bright lemon-yellow, and the median coverts

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<sup>1</sup>"The Sequence of Plumages and Molts of the Passerine Birds of New York," by Jonathan Dwight, Jr., *Annals of the New York Academy of Science*, Vol. XIII, No. 1, pp. 73-360.

"The Moulting of Birds, with Special Reference to the Plumages of the Smaller Land Birds of Eastern North America," by Witmer Stone, "*Proceedings of the Academy of Natural Sciences of Philadelphia*, January, 1896, pp. 108-167.

of a "dark mouse-gray" color (Ridgway) with soiled white or "pallid mouse-gray" tips, sometimes with traces of yellow. Still older males have in the winter season bright lemon-yellow lesser coverts and also lemon-yellow tips to the median coverts, involving nearly the whole of the soiled white portion of the feathers. At the same time the dark mouse-gray color of the feathers has increased in depth of color, becoming "blackish mouse-gray" (Ridgway). Such old males, therefore, have a considerably larger area of lemon-yellow than those known to be in second-winter plumage. If one inspects a flock of Goldfinches feeding close by in winter time, it is usually quite easy to pick out such old males, since the overlapping feathers of the side of the lower neck and interscapulars, which generally effectively conceal the lesser coverts alone when the bird is at rest, are usually insufficient to hide the larger patch of yellow. Not only so, but such old birds have, in addition to the marked yellowness of the throat and sides of the head, a greater general yellowness than younger males, of course excluding the rectrices and flight-feathers.

The details of the plumage-changes above referred to in some detail have been worked out by collecting and mounting feathers from the median coverts of male birds in the three stages mentioned. The increasing blackness of the median coverts with age is easily observed, but the change from the soiled white tips of the median coverts to yellow tips appears not to be invariable, since occasional males in second-winter plumage have traces of yellow on the tips of the feathers. It is, however, thought probable that old males having the tips of the median coverts most uniformly yellow are in their third-winter plumage, and this opinion is strengthened by the rather infrequent occurrence of such birds.

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