Americana,' 1831, and Nuttall in his 'Manual,' 1832, describe it, but not as if they considered it new. Mr. Chapman, however, goes further and would explain why the dorsal feathers wear only down to the black bases. He says that microscopical examination "shows that at their apical portion the barbs are separated and that the barbules do not become fairly interlocked until the black basal part is reached." The black area is therefore more protected and furthermore it is asserted that the black pigment by virtue of its density adds strength to the feather. The fact that the female never entirely wears away the brownish border and the fact that the "interlocking" of the barbules in many cases does *not* correspond with the black area, both militate against Mr. Chapman's theory and suggest other factors to explain the deciduous feather tips.

Incidentally a new and valuable point of difference between the plumages of the two sexes is brought out. "The male has the feathers of the head, nape and rump basally white, while in the female they are basally black," — this difference holding at all seasons of the year. The Snowflake is one of the interesting species that undergo but one moult in the year. — J. D., Jr.

Allen on Alleged Changes of Color in the Feathers of Birds without Moulting.[1] — It is small wonder that this paper should bristle with exclamation points. It is a summary and criticism of the work of some of the more important writers upon the subject of color changes in feathers without moult, and it deals unsparingly with those who have asserted as possible the complete rejuvenation of an abraded feather. Beginning apparently with the Rev. John Flemming, there have been many writers of greater or less repute, even down to the present day, who have advanced various theories to account for color changes in plumage otherwise than by moult. The most radical of them have assumed that a recoloration of the individual feathers takes place and even a renewal, by a new growth of barbs, of the ragged edges of worn feathers. After stating that this "delusion" "forms a most instructive chapter in the general history of the origin and persistence of error," Dr. Allen proceeds to sketch this history and demonstrate the worthlessness of most of the evidence presented in its support. He maintains that, almost without exception, the hypotheses advanced are not supported by facts and that if moulting specimens of birds had not been so generally discarded in making collections, speculation upon supposed color changes would not have run riot. In brief, "the inventors of these diverse theories have assumed and attempted to explain conditions that in nine cases out of ten had no existence; namely, a color change demonstrately due — normally at least — to molt, which they have supposed must happen in some other

[1] Alleged Changes of Color in the Feathers of Birds without Molting. By J. A. Allen. Bull. Am. Mus. Nat. Hist., Vol. VIII, Art. III, pp. 13–44 (March 18, 1896).

way." This is the matter in a nutshell. Moulting birds have not fallen into the hands of some of the older observers and they have jumped to the conclusion that no moult had taken place. Even so, it is not easy to understand why the observations of Bachman, Homeyer, Brehm and others who have traced the various stages of moult in many species should have had so little weight against the opinions of Ord, Yarrell, Schlegel, Fatio, Gätke, and the other delusionists. But since we find the latter still supported by reputable writers of to-day, the present paper is all the more welcome, and ought to stimulate further investigations; for if it can be proved that a certain species acquires by moult the plumage that it theoretically should acquire by recoloration and rejuvenation, theory begins to totter. This is exactly what Dr. Allen does, and he cites a number of species in his support, so that the theories for the most part become respectable ruins. The fact seems to be that few observers have had sufficient material on which to build, and if the time devoted to inventing theories to fit the material had been intelligently spent in accumulating such specimens as were needed, the many fanciful and superfluous hypotheses now current would not have arisen. It is hardly profitable to dwell upon them and they may be read in the paper now under discussion. Neither is a microscope necessary to controvert them. When, for example, Severtzof by aid of this instrument describes a color bearing fluid ascending in the old feather by capillarity, exuding from the broken barbs, or depositing its pigment in successive layers on the cell walls, what do such observations mean if the feather is really renewed by a moult? Dr. Allen, by proving the delusionists wrong in part, believes them wrong in all their conclusions and gives adherence to the opinion of Bachman who, in 1839, said: "If the feathers in birds, then, which have been long stationary in their growth, are capable of receiving a new set of secretions, and of assuming opposite colors, we must seek for some new law of nature not hitherto discovered." — J. D., Jr.

The Mockingbird and Yucca aloifolia.— The sixth annual report of the Missouri Botanical Garden[1] contains one paper of especial interest to ornithologists. It is entitled 'Studies on the Dissemination and Leaf Reflexions of *Yucca aloifolia* and other Species,' by Herbert J. Webber, and the facts it brings to light are strikingly illustrative of the close relations which economic ornithology and botany may have for each other. The fruit of this species of yucca has an edible sticky pulp, in which the seeds are imbedded without a core. Mr. Webber finds that the Mockingbird is particularly fond of this fruit and is an important agent in the dissemination of the seeds. In eating the pulp some of the seeds stick to the bill and are shaken off, falling at a suitable distance from the plant to allow of germination and growth. But in their haste and

[1] Missouri Botanical Garden. Sixth Annual Report. St. Louis, Mo. Published by the Board of Trustees, 1895.