

The specimen is much blacker than most breeding birds from Nova Scotia to Ontario, and compared with worn Newfoundland birds, loaned through Dr. H. C. Oberholser by the Cleveland Museum of Natural History, appears referable to *nigriceps*.

Hitherto the species has been recorded three times in Greenland: Qornoq near Godthaab; Sukkertoppen and Graedefjord. Hørring and Salomonsen, 1941, p. 74, refer the earlier records to *T. m. migratorius* Linnaeus, apparently without considering the then newly described race *nigriceps*. It is probable that all the records belong under the heading *Turdus migratorius nigriceps* Aldrich and Nutt.

I am aware that occasional dark birds, as dark as *nigriceps*, occur in the populations of *T. m. migratorius*, as far west as the Mackenzie delta, and the Greenland specimen might be a dark example of *migratorius*, but it seems advisable to refer it to *nigriceps* on probability.

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## UTAH'S BOOK CLIFFS AND BIRD MIGRATION

BY ROSS HARDY

THE majority of the mountain ranges of western North America have their main axes running in a north-south direction. One of the most important exceptions to this is the Uinta Mountains of northeastern Utah which extend about two hundred miles eastward from the northern Wasatch Mountains into Colorado. The West and East Tavaputs plateaus, located about 100 miles south of the Uintas and running in a parallel direction, are not so well known. The southern face of the West Plateau is much eroded, forming many vertical cliffs varying from 300 to 1500 feet in height. These southern supporting ramparts of these plateaus, known as the Book Cliffs, form the northern boundary of Castle Valley in Carbon, Emery, and Grand counties and the southern boundary of the Uinta Basin. The Green and Price rivers pass through these mountains in narrow, winding canyons.

Price, in Castle Valley (altitude: 5567 feet), is at the southern edge of these cliffs. The summit of the West Tavaputs, less than ten miles north, varies from 9000 feet to 10,050 feet. The cliffs north of Price, in the Kenilworth area, rise very abruptly, having a vertical southern exposure.

Spring bird migration into this region seems to come directly from the south, passing over the low-lying mesas and foothills of the extensive Castle Valley or coming along the Green-Price River system from the southeast. After passing through these low areas, the birds encounter a mountain range standing across their pathway which provides an almost mile-high change in elevation. Perhaps this acts as a temporary obstacle to many birds, especially if there is a dense cloudbank rising another mile or so higher and hiding the upper parts of the mountains. The sheer ledges below the clouds rising hundreds of feet into the thick mists would appear as a barrier. This is believed to retard temporarily the migration of birds in the spring. While the proof for these statements is by no means conclusive, it is believed the idea may be of value to future investigators who may be interested in this problem; at least certain data are best explained on the basis of this hypothesis.

Observations were made by the writer from September, 1933, to May, 1935, at Spring Canyon, in the western part of the Book Cliffs; during 1935-1936 at Sunnyside in the eastern part of Carbon County's Book Cliffs; and from September, 1936, to May, 1938, at Price, on the Price River between the two first-named points.

Usually many more migrants are seen in the spring than in the autumn in spite of the fact that the total population of a species traveling southward after the nesting season is undoubtedly greater than the northward-moving spring population. Some springtime migrating birds delay to feed in this area while waiting for the higher snow-covered areas to the north to become warmer. But not all these birds nest in these mountains, for some of them migrate farther and are not found in the areas immediately to the north.

The Northern Sage Sparrow (*Amphispiza belli nevadensis*) is common in the sagebrush areas of the pigmy conifers and in the greasewood in spring. These sparrows were especially numerous after the beginning of a spring storm. In spite of almost daily visits to the areas around Price, only one autumn record has been obtained—that of a single individual collected on October 10, 1936, in the pigmy conifers. This species was abundant in the same areas from March 17 until April 7, 1937.

Likely when storms are present, the sheer cliffs delay the northward migration and the birds remain at Price and near by. The northern slopes of these mountains are without cliffs and have a more gentle slope, and birds approaching from the north would travel over this gently rising incline for about thirty miles before coming to the abrupt edge of these cliffs that drop to the valley below. Also, thunderstorms of the type which cause high cloudbanks to rest upon the tops of these peaks were observed less often in the autumn than during the spring and summer. Birds such as Sage Sparrows migrating through the area in the autumn, once they reached the summit of the plateau, would no longer be impeded in their flight and would not linger near Price as they did in the spring.

Many clouds rested on the mountain summit north of Price just before sunset on March 16, 1937. A rather heavy rain had ceased and cloudbanks hung east, west, and north. The sun occasionally shone for a few minutes from the west. The mountains and the heavy cloudbanks northward seemed to act as a barrier to further migration, for more Mountain Bluebirds (*Sialia currucoides*) and Western Robins (*Turdus migratorius propinquus*) were in the pigmy forest area on this night than on any other night observed. Flocks numbering from four to twenty individuals were seen in numerous juniper and piñon trees. It was impossible to go more than fifty feet in any direction without encountering these birds. As dusk came on, a few flew north, but their places were filled by arrivals winging their way in from the south. When last seen at dark, the trees were literally filled with Bluebirds and Robins. The last of the northward-passing Montana Juncos (*Junco oreganus montanus*) twittered as they settled down in near-by branches for the night. The next morning, when it was clear weather, these birds had all gone. On other evenings, when the horizon was clear or nearly so, only a very small fraction of this number of Bluebirds and Robins were in these trees, although fully as many were seen winging their way northward.

A week of stormy weather often keeps many waterfowl along the Price River, but immediately upon the clearing of the weather, the waterfowl disappear. During clear weather, far fewer migrants are observed along the river than during stormy weather. So often did this occur that many of the zoology students at Carbon High School commented upon the fact that waterfowl and wading birds, usually rare along Price River, were abundant during stormy weather but were rarely found when the storm ended. Some of the species so affected were the White-faced Glossy Ibis, Brewster's Egret, Treganza's

Heron, ducks, and smaller shore birds. Likely during clear weather these water birds follow the Price River northward through the narrow winding Price Canyon. During stormy periods, the fog in this area would discourage such movement.

During storms along other streams much farther south in Castle Valley, as well as elsewhere in Utah, the writer has not found concentrations of migrating birds to the same extent as that which seems to be caused by the combination of cloudbanks and a long east-west range of mountains in the Book Cliffs region.

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AN ANCESTRAL GOLDEN EAGLE RAISES  
A QUESTION IN TAXONOMY

BY HILDEGARDE HOWARD

In studying the eagles of the Rancho La Brea Pleistocene several years ago (1932), I noted certain size discrepancies between the limb bones of the fossil and the modern Golden Eagle. However, as there were available for study, at that time, only a very few skeletons of modern Golden Eagle for comparison with the great series of fossils, no conclusions were drawn on the basis of these observations.

After Harvey Fisher's discovery (1944) of the small but important differences between the fossil and living California Condor, it appeared wise to review the subject of the Golden Eagle in more detail. A considerably greater number of modern bones are now available for comparison, numbering from 20 to 30 for all important limb elements, and about 18 skulls. The available fossil bones, however, still far exceed the modern, in most instances.

With regard to limb elements, the most outstanding distinction between fossil and Recent bones lies in the fact that, whereas the fossil humeri and ulnae average larger than the modern, and attain a maximum of 10 mm. greater length, the tarsometatarsi average shorter, and none of the 660 bones equals the maximum for the Recent eagle. Unfortunately, in no instance in the fossil series are wing and leg elements of individual birds associated. It is hardly proper, therefore, to state definitely that the Pleistocene eagle had relatively shorter legs and longer wings than the living bird, although the evidence from disassociated bones points in that direction.

Examination of individual bones in series of each limb element does not show any proportional or structural differences between fossil and modern bones.