AN ANCIENT PUEBLO TURKEY

A. W. SCHORGER

THE anatomy and color of the plumage of the domestic turkey has undergone considerable change from those of its wild ancestors. The turkey in the Southwest was domesticated at least as early as the Pueblo I period (c. 700–900 A.D.), and was held in captivity, possibly domesticated, during the Modified Basketmaker Period (c. 500–700 A.D.; Martin *et al.*, 1947: 528). It was of interest to determine if the bird kept by the Pueblos had undergone any change. The bones found at archaeological sites have shown no definite difference from those of the wild bird *(Meleagris gallopavo merriami)*. The best approach to the problem appeared to be an examination of desiccated turkeys that retained some of their plumage. In 1905 Hough (1914: 139) made a cursory examination of Tularosa Cave, which is located a short distance northeast of Reserve, New Mexico. A photograph in his paper showed a turkey that appeared to retain many of its feathers. Fortunately the specimen was still in the U.S. National Museum and was forwarded to me by Herbert Friedmann, to whom I wish to express my thanks. A photograph of the turkey in its present condition is shown in Figure 1.

Only the shafts for the most part of the primaries and secondaries remain, and there are feathers on various parts of the body. The rectrices are missing and may have been plucked. There are numerous pin feathers on the shoulders. Under normal conditions this would indicate that the bird was in molt and that it died in July or August; however, the presence of all of the shafts of the primaries shows that molt was not in progress. The Pueblos plucked their turkeys to obtain feathers for ceremonial purposes and for the manufacture of feather blankets, so that the pin feathers may result from plucking rather than molt. Hough's photograph indicated that the neck was feathered (Figure 2). This seemed so improbable that I concluded that the effect might be due to a shadow. Surprisingly the neck proved to be densely feathered to the base of the skull, a condition unique among turkeys. The shape of the neck feathers (Figure 3) differs decidedly from that of the normal neck feather (Figure 4) of a Merriam's Turkey taken from the same position on the neck. The shaft ends so abruptly that there was a possibility that a filoplume had broken off. None of the neck feathers show a filoplume extension, and under the microscope there is no indication of a fractured end. The neck feathers are semiplumes and more downy than the semiplumes to be found on the neck

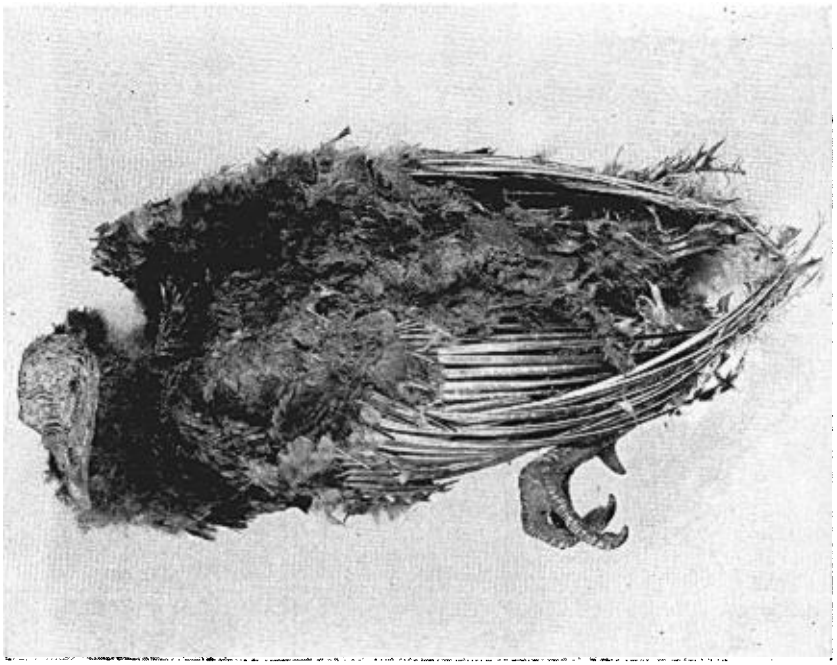

Figure 1. The Tularosa Turkey in its present condition.

of subadult wild turkeys. The nodes on the barbules of the latter feathers are less developed than on those of the Tularosa specimen.

The Tularosa Turkey, except for the neck, was not safely distinguishable from Merriam's Turkey. The bird, a male, was at least three years of age, judging from the spurs, which were 27 mm. in length and 16 mm. wide. The present domestic turkey is characterized by a great increase in the diameter of the tarsus. The width of the tarsus of the Tularosa Turkey, measuring from front to rear just above the spur, was 17 mm. That of the tarsus of an extra leg of a male found with this bird was 16 mm. These measurements are not abnormal. The tarsi measured 144 mm. in length and that of the extra leg 150 mm. These tarsi are distinctly shorter than those of the wild bird. Ridgway (Ridgway and Friedmann, 1946: 452) gives for the male Merriam's Turkey 159–175 (166.6) mm. The color of the tarsi of the Tularosa Turkey was dragon's blood red, and that of the extra leg was xanthine orange. The bill was mainly grenadine in color with spots of grenadine red. The tip was horn colored. All the pre-Columbian tarsi that I have seen had some shade of red. I do not believe that the "captive" bird of the Pueblos was far removed from the wild one. It

Figure 2. Thickly feathered neck.

is probable that the stock was increased from time to time by wild birds and their eggs. At Taos Pueblo I was told by an old Indian that the only turkeys raised by them were wild poults captured in the mountains and then held in confinement. One turkey, about a year old, seen in a pen, had no tail, but the "rump" was like that of Merriam's Turkey. By no means all of the turkeys came directly from the wild birds. I have seen a downy poult in perfect condition found at Cliff House, Mesa Verde. Archaeologists have unearthed egg shells, and found artificial nests made of adobe containing turkey feathers and fragments of shells.

The literature is void of definite information on what the captive

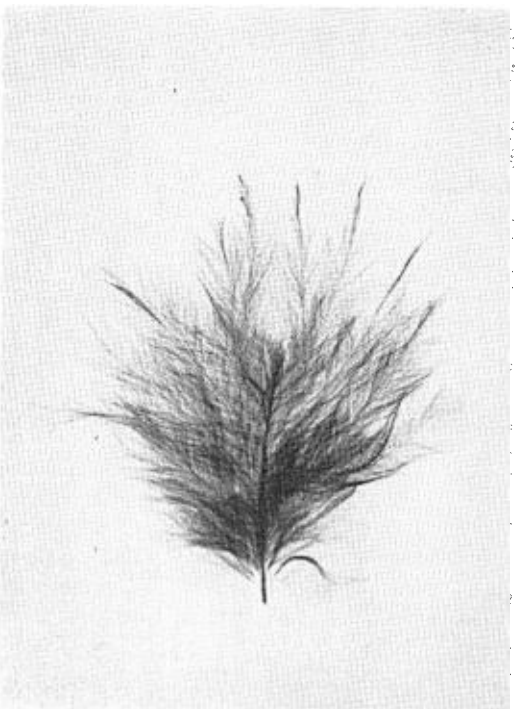

Figure 3. Feather from the neck of the Tularosa Turkey X5.

turkeys ate, and whether they were allowed to forage or were kept confined. It is known that practically every pueblo had its turkey pen and that in the cliff dwellings the pen was located in the rear of the cave. It is believed at Mesa Verde that the turkeys ranged most of the year, and three dioramas there show turkeys at large. Several of the early Spanish accounts mention turkeys in pens, but none of which I am aware speaks of them as running loose. Most of the pueblos were so situated that I doubt if even a Pueblo would have indulged in the labor of getting the turkeys up and down daily.

Clinging to the breast of the Tularosa Turkey was some dry dung in its original form. Some of this material was placed in water, triturated, and allowed to settle. The supernatant liquid was wine colored, and I concluded that the color was due to the water-soluble, anthocyanin coloring matter found in certain types of "squaw" corn. Some of the dung was taken to Professor Hubert B. Cooper, Jr., to check for the presence of remains of corn. None were found, but perfect granules of starch from some species of legume were present

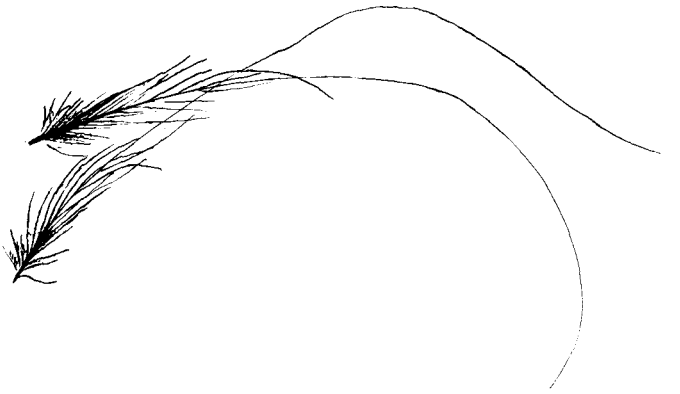

Figure 4. Normal feather from the neck of Merriam's Turkey X4.

in quantity. I then wrote to the Gila National Forest at Reserve regarding the presence of wild legumes. Norman F. Mathews informed me that there were no legumes growing within many miles of Tularosa Cave and that it lies strictly within the Pinyon-Juniper woodland type. In addition to corn the Pueblos raised beans similar to kidney beans. It is quite clear that the turkeys were also fed beans and that the Tularosa Turkey chanced to die on some dung deposited at a time when beans were being fed.

An incision was then made in the skin covering the crop, the tissue of which had disappeared. On tapping the turkey on the back, 190 cc. of corn kernels were obtained. These kernels were of colored flint corn and perfect in shape, though for the most part hollowed by insects (Figure 5). Attempts to germinate some of the whole kernels were unsuccessful. On 21 June 1960 I collected some dung at the turkey pen at Balcony House, Mesa Verde. This pen is not in the main cave but in a shallow one about 300 feet from it. This dung was also examined by Professor Cooper. He detected the presence of the pericarp and starch of corn, and the integument and starch of a legume. It is remarkable that the starch granules survived the digestive processes and a thousand years of exposure. The Tularosa Turkey did not die of disease, since a sick bird will not eat. It is my opinion that the cave was abandoned suddenly and that the turkey died of thirst.

The age of the turkey cannot be determined with any degree of exactness. At the time that Hough was digging, little attention was paid to stratigraphy. The houses were filled nearly to the roof with debris. Some of the kernels of corn were sent to Dr. Hugh Cutler, Missouri Botanical Garden, who has done much work on ancient corn.

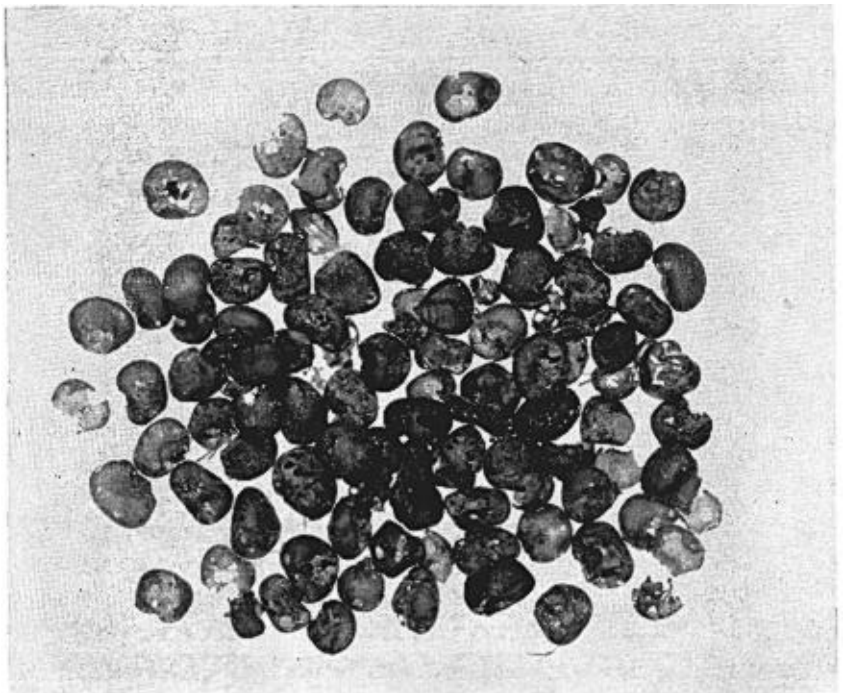

Figure 5. Corn from the crop of the Tularosa Turkey.

He measured the angles of the grains and informed me that corn of this type was grown as early as the middle of the Georgetown Phase (500–700 A.D.). Tularosa Cave has been thoroughly explored by Martin *et al.* (1952: 528). He concluded that it was occupied more or less continuously from 300 B.C. to 1100 A.D., and that turkeys appeared in the Pinelawn Phase (150–500 A.D.). It seems conservative therefore to give the age of this turkey at 1,000 years. Under date of 25 April 1960 Paul S. Martin wrote to me: "I think you would be perfectly safe in saying that the turkey dates back to 1100 A.D. and perhaps earlier. We found a couple of turkeys that dated from about the beginning of the Christian era and they were in fine condition." Unfortunately, these specimens were subsequently destroyed.

It is difficult to determine if the Tularosa Turkey is a mutant, a subspecies, or a new species. Attempts to locate a comparable specimen have been unsuccessful, and until this is done no decision will be made. There is a well-feathered turkey from Canyon du Chelly, Arizona, in the museum at Mesa Verde. It is in a glass case and could not be

examined closely. The head is missing, and of the neck only a few cervical vertebrae remain.

I wish to express my appreciation for the many courtesies extended by Jean Pinkley, Archaeologist, while at Mesa Verde.

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College of Agriculture, University of Wisconsin, Madison 6, Wisconsin.