

the first or second year, No. 11284, which differs from the bird of Feb. 9 (No. 11000) in having the black of the head broken by mottled bars of black and chestnut, one above and one below the eye, and has no white patch in the angle of the lower mandible. The black of the head is not so intense as in No. 11000. This bird was shot in a shallow pond just above the house where I had not been for some days. A boy told me there were at least three small Ducks in this pond and he thought four. He had seen them two or three times in the last few days. On going to the pond, one end of which has a dense growth of rushes, two Ducks were seen, but only one killed, the other escaping wounded into the grass. The testes of the bird taken were rather more than a quarter of an inch long and an eighth of an inch in the smaller diameter. These little Ducks do not seem at all rare on the Island, and have much the habits of the Grebes, frequenting small fresh water ponds and depending rather on hiding in the grass or diving than on flight to escape pursuit. They are said by the native gunners to breed at various points on the island.

39. *Chen hyperborea* (Pall.). LESSER SNOW GOOSE.—“Accidental in Jamaica.” (Cory, Birds of the West Indies, p. 259.)

40. *Branta canadensis* (Linn.). CANADA GOOSE.—“Recorded from Jamaica.” (Cory, Birds of the West Indies, p. 260.)

41. *Dendrocygna arborea* (Linn.). BLACK-BELLIED WHISTLING DUCK.—Said to be common at points on the island and to breed in the mangrove swamps. (Gosse, Birds of Jamaica, pp. 395-399.)

42. *Dendrocygna autumnalis* (Linn.). BLACK-BELLIED TREE DUCK.—“The Red-billed Whistling Duck (*D. autumnalis*) though much less common in Jamaica than the preceding (*D. arborea*) is found there in some seasons as an autumnal visitant from the Spanish Main.” (Gosse, Birds of Jamaica, p. 398.)

43. *Phœnicopterus ruber* Linn. AMERICAN FLAMINGO. RED FLAMINGO.—The visits of Flamingoes to the coast of Jamaica are now very rare, and, so far as I was able to ascertain, none breed at present on the island. Formerly the visits of these birds seem to have been of regular occurrence.

[To be continued.]

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## TERTIARY FOSSILS OF NORTH AMERICAN BIRDS.

BY R. W. SHUFELDT, M. D.

UPON examining a collection of fossil birds from the Silver Lake Region of Southwestern Oregon, recently submitted to me by Professors E. D. Cope and Thomas Condon for description,

I have been enabled to identify fifty-one (51) species, thirteen (13) of which I find to be new to science. Out of these fifty-one species Professor Cope had on a former occasion published accounts of ten of them—two of which were new—in addition to the thirteen the present writer has been enabled to describe. Among other places, those described by Professor Cope appeared in an article contributed by him to the 'American Naturalist' in November, 1889, and so will not be especially dwelt upon here.

Abundant remains of *Æchmophorus occidentalis* occur in this remarkable collection of some 1500 specimens, and to a lesser degree do we find the fossil bones of *Colymbus holballi*, *C. auritus* (?), *C. nigricollis californicus*, and *Podilymbus podiceps*. Thus far, it is strange to say, no remains of any species of Loons have been met with, nor any large extinct Divers allied to them. Nor were any of the *Alcidæ* discovered. This is a significant fact, which to the student of the migration of animals during tertiary time, may prove interesting.

Gulls apparently were abundant, and I have been enabled to identify *Larus argentatus smithsonianus*, *Larus philadelphia*, *Xema sabinii*, and another which was most probably *L. californicus*. There were at least two extinct Gulls, and they were of moderate size, and probably not very unlike existing forms, which I have named *Larus robustus* and *Larus oregonus*.

The list of *Laridæ* is completed by *Sterna elegans* (?), *Sterna forsteri* (?), and *Hydrochelidon nigra surinamensis*.

Steganopodes appear to be limited to that big Comorant already described by Cope, the *Phalacrocorax macropus*, and to the probable occurrence of the Pelican, *Pelecanus erythrorhynchus*, of which I found only a part of an ulna in the collection, not quite enough in my opinion to absolutely prove its existence in the geological horizon under consideration. Nevertheless the bone belonged to a Pelican, which was not *fusca*, and as the other species is abundant on those Oregon Lakes at the present writing it was most likely the other species, that is, *P. erythrorhynchus*.

As they are today, Ducks, Geese, and Swans were very plentiful, and with but one or two exceptions they are all identical with existing species. I found more or less abundant fossil remains of *Lophodytes cucullatus*, *Anas boschas*, *A. americana*, *A. carolinensis*, and *A. discors*, and the remains of another Teal which I believe to be *Anas cyanoptera*. *Spatula clypeata* was a very

abundant Duck, and *Dafila acuta* was also found, as well as *Aix sponsa*, *Aythya marila nearctica*(?), *Glaucionetta islandica*, and *Claugula hyemalis*. There was an enormous Goose which I have named *Anser condoni*, in honor of Professor Thomas Condon of the University of Oregon, who was the first naturalist to discover any fossil remains of birds in that region. *Anser condoni* was a species as large again as the Canada Goose, probably exceeding it in size, as much as the Canada Goose exceeds in size one of our smallest Brant. There was *Branta hypsibatus* of Cope, and a new Brant which I have called *Branta propinqua*. Many fossil bones also occur of *B. canadensis*, *Anser albifrons gambeli*, *Chen hyperborea*, and the Swan described by Cope, or *Olor paloregonus*. In all an exceptionally fine series of fossil Anserine birds.

Of the various discoveries made none are more interesting than the fossil remains of a new species of Flamingo,—a form now extinct. Judging from its bones, this species was somewhat longer limbed than *P. ruber*, but not so robust as it in the body. I have named it *Phenicopterus copei*, in honor of Professor E. D. Cope of Philadelphia.

A small Heron was also discovered, extinct as well as new, which I have called *Ardea paloccidentalis*. Its remains are by no means plentiful. There were also two Coots, our common form, the *Fulica americana*, and a new extinct, smaller one, which I have designated as *Fulica minor*.

Among the Limicolæ I found the fossil bones of *Phalaropus lobatus*, and it has proved to be the only shore bird thus far discovered by the collectors. Gallinæ, however, were abundant, and rich, apparently, in species. Beautiful fossil bones of *Tympanuchus pallidicinctus*, as well as *Pediocætes p. columbianus* were readily recognized in the collection.

In addition to these was a larger and stouter *Pediocætes*, which I have dedicated to my friend Mr. F. A. Lucas of the U. S. National Museum, and called it *Pediocætes lucasi*; but there was also a much smaller type, likewise extinct, and new to science, which I have named *Pediocætes nanus*. Finally, we have an entirely new genus, which I have created to contain the thus far sole species representing it. This species was a large Grouse to which I have given the name of *Paleotetrix gilli*, in honor of Dr. Theo. Gill of the Smithsonian Institution.

Fossil bones of two extinct Eagles were also found in the collection. One of these, which I have called *Aquila pliogryps*, appeared to have been a large species of slender build, and may have had rather the habits of an active Falcon than those of the more sluggish Eagles, such as the common white-headed one for example. The other extinct form I have called *Aquila sodalis*, and it was a smaller form than *Aquila pliogryps*, being more nearly affined to our existing types,—perhaps to such a species as the Golden Eagle for example.

*Bubo virginianus*, among the Striges, is represented by an almost perfect specimen of the carpo-metacarpus and a toe-joint. The former is identical in character in all particulars with the corresponding bone in a skeleton of *B. v. subarcticus* with which I have compared it.

Remains of Passeres were not abundant in the collection, and I found but two extinct species, both of which are new to science. They were a Blackbird and a Raven. These I have designated respectively as *Scolecophagus affinis* and *Corvus annectens*. The last named was a Raven considerably smaller than any of our present day Ravens as found in the avifauna of the United States.

When printed, my memoir describing this very valuable collection will make some seventy-five quarto pages, and be illustrated by figures on stone of all the fossil bones of the new or otherwise interesting forms.

The work will of course take into consideration a great deal which will be impossible to set forth here, as the present paper pretends to nothing more than a notice of the collection as a whole. What I have given, however, will be sufficient for the thoughtful student in ornithology to gain some idea of the avifauna as far back as the Pliocene, in so far as what is now called South-western Oregon, was concerned. It will be observed that even in that horizon many of the species were identical with those now existing, and in the case of the extinct ones, they were forms that in the majority of instances, would not be out of place even in our present day avifauna, belonging as they did in most instances to modern genera and groups.