

CHENDYTES, A DIVING GOOSE FROM THE CALIFORNIA
PLEISTOCENE

WITH SET OF DRAWINGS

By LOYE MILLER

SOME MONTHS ago Dr. Frank C. Clark of Santa Monica, California, placed in my hands for description, a small collection of bird bones which he had accumulated while collecting invertebrate remains from a Pleistocene deposit just north of Santa Monica. This exposure is presumably part of the Upper San Pedro horizon of Ralph Arnold (Mem. Calif. Acad. Sci., III, 1903), although a check of the invertebrate fauna has not been carefully made. The accumulation is typical littoral marine such as is exposed at the lumber yard, one of Arnold's collecting stations. The matrix is heterogeneous sand and gravel laid down in shallow water, rich in molluscan remains and containing water-worn specimens of numerous vertebrates. The bird remains here discussed have all undergone change in composition comparable to those specimens taken at the lumber yard in San Pedro. The organic matter appears to have entirely disappeared, leaving the specimens very porous and highly absorbent like unglazed pottery. Much mineral matter seems to have been laid down within the tissue and the specimens clink together with a vitreous sound; but the larger cavities have not been filled by crystals.

At least three species of birds are represented in the collection, only two of which are determinable. One of these two still survives as a common member of the local avifauna, the Farallon Cormorant. The other species is of especial interest as representing a gigantic species of diving anserine, heretofore unknown to science. The size of the bones at once suggested a goose as large as *Branta canadensis*; but even a casual comparison with *Branta*, *Chen*, *Anser*, and *Coscoroba* brings out osteological differences that set it off from any of the living geese. Our typical geese are great walkers and relatively poor divers. They have long slender tarsi and the cnemial crest of the tibia is thrust well forward, allowing a greater degree of straightening of the knee joint.

In the more expert diving species such as the Surf Duck and the Buffle-head, there is a tendency toward the erect position of this process that reaches a climax in the grebes and loons. In the Surf Duck at least, the walking position when on land comes almost to the erect posture of the true divers. The inability to straighten the knee joint is perhaps one of the determining factors in this body pose.

The distal end of the tibia in typical anserines displays a pronounced curve toward the median line, an effect that throws the condyles off the main axis of the tibial shaft. This excentricity perhaps reaches its maximum in the swans, is less in river ducks and the geese, and shows in the Surf Duck the minimum degree that I have observed among the living species. The fossil bird surpasses *Oidemia* in this character.

In all these respects the big goose-like fossil is a diver—really a sea duck as big as a Canada Goose. Presumably his habits were those of the Surf Duck which winters along our southern California shores, feeding almost in the surf and rafting just outside the breaker line.

The specimens were generously donated by Dr. Clark and the type has been deposited in the Museum of Paleontology at Berkeley.

Chendytes lawi, new genus and species

Type specimen, no. 27001, California Museum of Paleontology, tibio-tarsus, Pleistocene of Santa Monica, California. Size of *Branta canadensis* but shaft straighter with condyles less displaced toward axial plane; tibial condyles more nearly equal in size

than in most modern anserines; cnemial process rising straighter above the articular face. Other characters of the cnemial region are evident on comparison but are difficult to express.

Associated in the deposit with the tibia designated above as the type, there was also found a complete tarso-metatarsus. The location in the matrix was such as to afford much weight in assigning the tarsus to the same species as the tibia, and the size and the osteological character of the two are very much in harmony, so that such

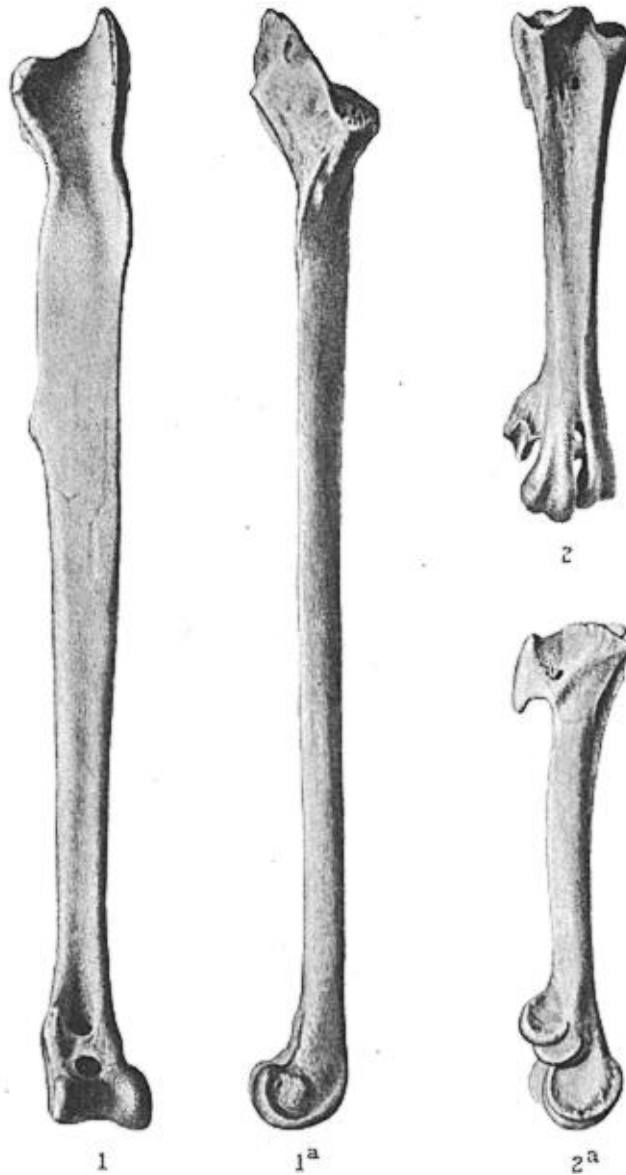


Fig. 40. CHENDYTES LAWI. 1, 1a, TIBIO-TARSUS; 2, 2a, TARSO-METATARSUS. FIGURES APPROXIMATELY NATURAL SIZE. FROM DRAWINGS BY J. L. RIDGWAY.

assignment is hazarded. Its short, stocky proportions and concave anterior profile at once suggest the surf ducks and separate it from the geese. Comparison was made with *Arctonetta fischeri*, *Somateria v-nigra*, *Oidemia deglandi*, and *Oidemia perspicillata*. The closest resemblance is with *Oidemia perspicillata*. From this species it differs in the greater relative thickness of the shaft, the less elevated outer margin of the anterior face, and the greater concavity of this profile longitudinally. At the proximal end the bone shows a different ratio of transverse to sagittal diameter, the sagittal diameter being relatively less. In an uncorroded bone of the fossil species this disparity would be even greater. When viewed from the rear, the fossil shows a degree of flattening in marked contrast with the Recent bird, which has the inner margin much elevated and the plane of the posterior face much inclined toward the outer side. This character of the fossil is due only in part to corrosion. The inner trochlea is raised and is slightly separated from the middle trochlea, as compared with the Recent bird.

A single vertebra in the collection represents an anserine species about the size of *Branta canadensis*. It may properly have come from an individual of the species under discussion.

This species is named in honor of Mr. J. Eugene Law, whose continued efforts, both biological and administrative, have materially advanced the cause of ornithology in the western United States.

Phalacrocorax auritus (Lesson)

There are two fragmentary tarsi in the collection that are not distinguishable from the surviving Farallon Cormorant. The material represents both proximal and distal extremities of the bone and the greater portion of the shaft in each case, so that, despite much corrosion before entombment, the specimens are considered determinable.

Los Angeles, California, April 15, 1925.

PELICANS VERSUS FISHES IN PYRAMID LAKE *

By E. RAYMOND HALL

THE PYRAMID LAKE region of Nevada has acquired great popularity of recent years on account of the excellent trout fishing there. The trout grow to great size. Of the several hundred individuals seen by the writer as taken from Pyramid Lake during the summer of 1924, none weighed less than three pounds, and several were seen that weighed 22 pounds; there are authentic records of much larger ones.

During the past few years, however, the trout have been decreasing in the lakes of that region (Pyramid, Winnemucca and Walker); also, and more especially, in the streams which feed these lakes. Apart from the interest of the sportsman, the fishing industry is of considerable importance for the reason that Reno and the other towns in the region secure a large part of their supply of fresh fish from these waters. Most of this supply comes from Pyramid Lake itself. This lake is a part of the Piute Indian Reservation, and some of the Indians depend as a means of livelihood wholly, and many depend in part, upon the taking and marketing of these fish. Also the

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