

SMITHSONIAN MISCELLANEOUS COLLECTIONS

VOLUME 87, NUMBER 19

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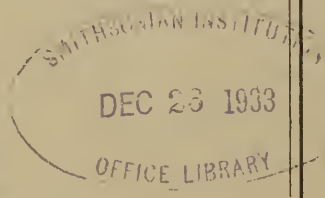
BY

ALEXANDER WETMORE

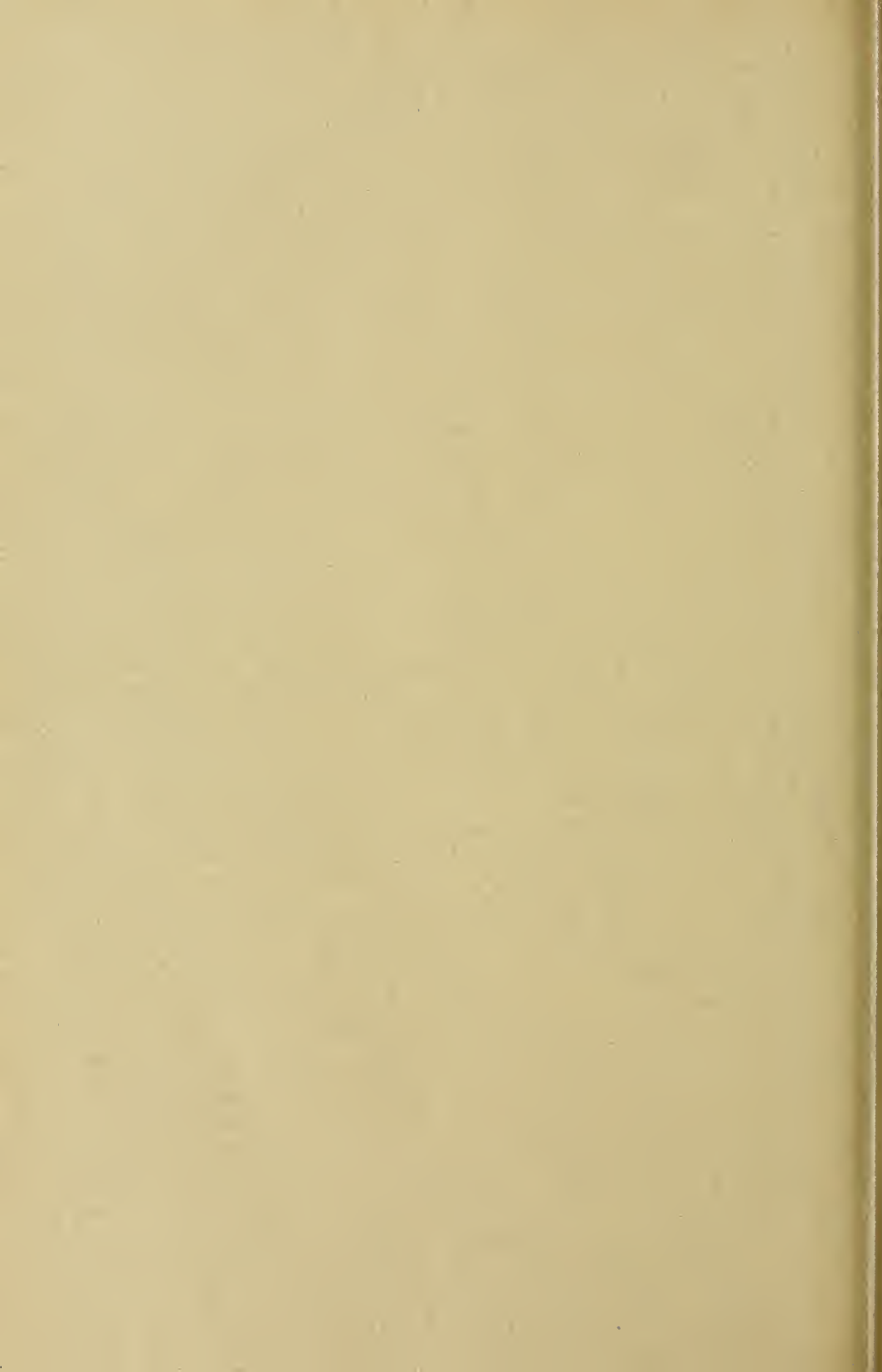
Assistant Secretary, Smithsonian Institution



(PUBLICATION 3227)



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AN OLIGOCENE EAGLE FROM WYOMING

BY ALEXANDER WETMORE

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Among the collections obtained by the paleontologic expedition conducted in 1932 by C. W. Gilmore, curator of vertebrate paleontology, United States National Museum, one of the most important specimens is a fossil eagle from Oligocene deposits in Niobrara County, Wyo. This bird was discovered, in beds practically barren of other fossils, by George F. Sternberg, who assisted Mr. Gilmore on the expedition. Great care was used to secure all available fragments, and broken bits have been skillfully fitted together in the laboratory by N. H. Boss, so that the final specimen comprises most of the important elements of the skeleton. The remains form the most complete representation known of an individual bird from the Oligocene deposits of America, and are of great importance in providing information on the early development of the accipitrine group in North America. Description of the specimen follows.

Drawings illustrating the specimen are by Sydney Prentice.

PALAEOPLANCUS STERNBERGI gen. et sp. nov.

Characters.—Somewhat similar to *Aquila* and the larger species of *Buteo*, but metatarsus with projecting wing of second trochlea reduced, differing in this respect from any of the related genera; skull small; premaxilla relatively slender with a pronounced festoon on lower margin; humerus and ulna relatively short and slender; sternum somewhat reduced; furcula with outer, free end greatly narrowed; humerus with ectepicondylar process somewhat reduced; pelvis relatively large; lower limb relatively strong; trochanteric ridge of femur considerably reduced; feet with toes unusually large and strong.

Type.—A partial skeleton, U.S.N.M. no. 12479, collected in the Upper Oreodon beds of the Oligocene on the east side of Plum Creek, Niobrara County, Wyo., on August 9, 1932.

Description.—Skull (fig. 1) with elongated, decurved, pointed tip, premaxilla relatively slender; narial aperture broadly open, somewhat elongated; ascending process of nasal fairly heavy; quadrate heavy; mandible rather slender, with external articular process well developed

and internal articular process relatively slight; other characters of skull, particularly the form of the cranium, masked by crushing.

Sternum represented by anterior portion of body only; light in weight and evidently pneumatic; costal margin on left side fairly well preserved and on the right less so; six costal processes indicated, with intervening spaces containing pneumatic openings; manubrium broken away.

Left articular end of furculum (remainder of bone missing) narrow and elongated, differing from the heavier, broader form of living

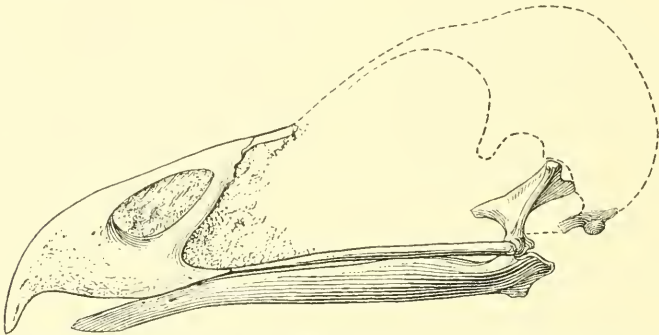


FIG. 1.—Skull of *Palaeoplancus sternbergi*, natural size. The cranial portion, shown by dotted lines, is crushed and distorted in the specimen.

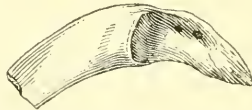
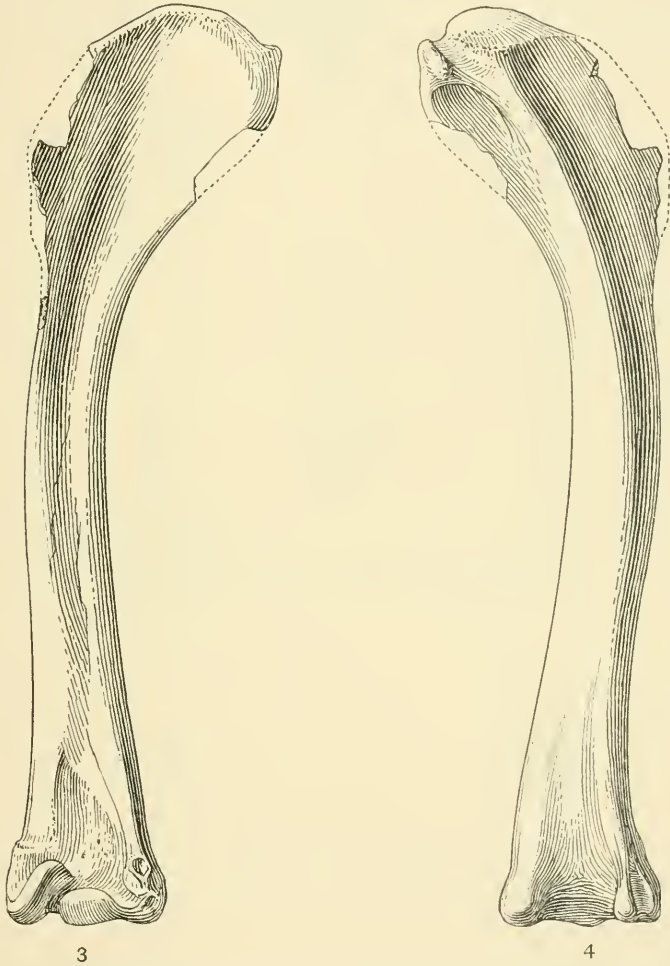


FIG. 2.—Lateral view of left side of furculum of *Palaeoplancus sternbergi*, natural size.

hawks and eagles (fig. 2); coracoidal attachment strongly developed, extending transversely across bone, projecting outward as a sharp ridge; scapular end elongated and pointed; bone evidently pneumatic.

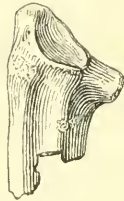
Right humerus (somewhat crushed but nearly complete) strong, with well indicated sigmoid flexure of shaft (figs. 3-4); agreeing in general appearance with humerus in large species of *Butco*, but with ectepicondylar process somewhat reduced; condyles of distal end moderate in size, somewhat distorted by crushing, so that their form in detail is not clearly evident; deltoid crest strong and well developed; upper end of shaft angularly ridged above line of attachment of latissimus dorsi; head somewhat slender, with characters partly lost by crushing.

Ulna (figs. 5-6) represented by most of right and proximal and distal ends of left element, strong, of usual buteonine form in so far as the detailed structure has been preserved; more or less crushed and distorted.

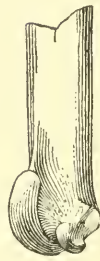


FIGS. 3-4.—Two views of right humerus of *Palaeoplancus sternbergi*, natural size. The specimen is flattened by pressure so that the distal end is somewhat distorted.

Radius (fig. 7), represented by right and left elements with distal ends missing, also relatively strong, of buteonine type: bicipital tubercle elevated and placed a relatively short distance below end of bone.



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FIGS. 5-6.—Proximal and distal ends of left ulna of *Palaeoplancus sternbergi*, natural size.



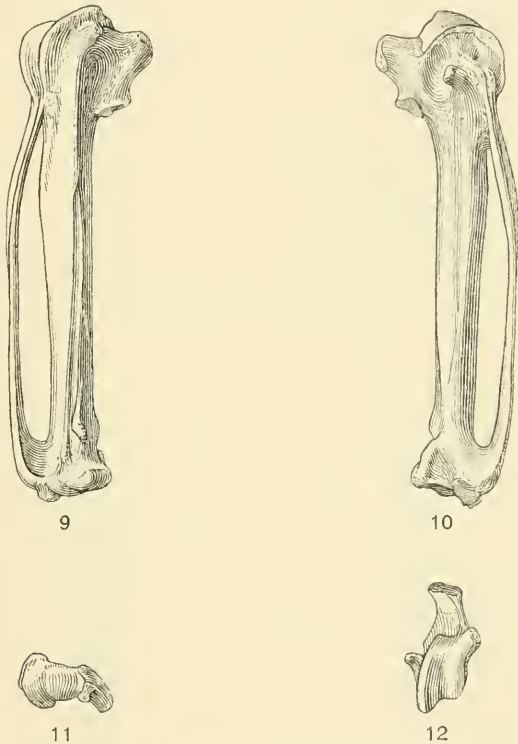
FIG. 7.—Proximal end of left radius of *Palaeoplancus sternbergi*, natural size.



FIG. 8.—Cuneiform from left wing of *Palaeoplancus sternbergi*, natural size.

Cuneiform bone (fig. 8) present, showing no especial peculiarities.

Metacarpals from both right and left sides (figs. 9-12) preserved (the former nearly complete, the latter with part of anterior end missing); relatively strong and robust; shaft of the second metacarpal particularly heavy; first metacarpal with extensor attachment projecting strongly, the tip inclining inward; attachment for pollex broad,



FIGS. 9-12.—Four views of left metacarpal of *Palaeoplancus sternbergi*, natural size. The smaller figures represent the proximal and distal ends.

the articular surface plane, enlarged by the expanded margins; carpal trochlea strongly angular with the anterior carpal fossa strongly marked; pisiform process projecting as a strong tubercle with a deep internal ligamental fossa about its base; external ligamental attachment also strongly marked; third metacarpal straight and strong, somewhat flattened from above downward toward distal end; a sharply outlined sulcus tendini musculi on outer face extending about two thirds the length of the bone, entirely on the lateral face; muscular



FIG. 13.—Second phalanx of the first digit from the left wing of *Palaeoplancus sternbergi*, natural size.

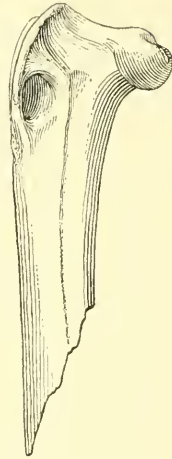
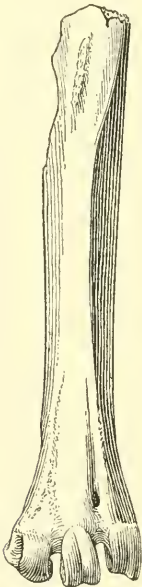
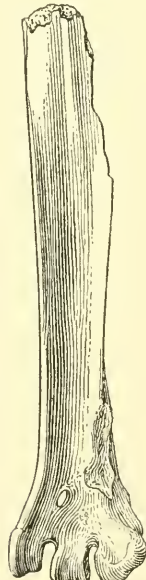


FIG. 14.—Proximal end of right femur of *Palaeoplancus sternbergi*, natural size.



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FIGS. 15-16.—Anterior and posterior views of distal portion of left metatarsus of *Palaeoplancus sternbergi*, natural size.

tuberosity at distal end of third metacarpal strongly raised; fourth metacarpal a thin plate, broad proximally and greatly narrowed distally; facet for third digit projecting distally beyond level of second; fornix metacarpi broad and strong.

Second phalanx of first digit (fig. 13) with a broad, strong upper margin, from which a bladelike process projects downward; metacarpal facet broad; digital facet roughly triangular in outline.

Pelvis with anterior portion of synsacrum missing, somewhat fragmentary in other portions; strong and robust, similar in detail, as far as preserved, to buteonine species.

Femur (fig. 14) represented by proximal half of right side (nearly entire) and much of left (badly crushed, so that most of characters are lost); relatively strong and heavy, differing from the buteonine type in relative shortness of the trochanteric ridge, which is considerably restricted; head of usual form, with large impression for attachment of the round ligament; neck relatively heavy; trochanter broad and strong; a single, large pneumatic fossa, oval in form; anterior muscular line strongly marked; shaft strong, elliptical in cross-section.

Metatarsus (figs. 15-16) represented by three fourths of the bone from the left side with the head missing, strong and well developed; outer trochlea relatively heavy (posterior plate missing and rest somewhat cracked and broken); middle trochlea strong with deep excavations on either side and a well-marked groove around articular surface; inner trochlea well developed, with inner face considerably excavated, and outer produced in a thin, bladelike process, the outer point not projecting as far as the body of the trochlea, being more restricted than in buteonine hawks; lower end of shaft flattened, with a heavily marked articular facet for the hallux; inferior foramen oval, with a shallow groove leading into it on anterior face; posterior face of shaft with slightly projecting margins, so that there is the appearance of a broad, shallow groove; outer margin flattened and nearly plane, expanded in center and from there sloping gradually toward either extremity; inner slope on anterior face also flattened, but more irregular; tibialis anticus tubercle elevated, strongly developed.

Of the toes there are present one right first metatarsal, the phalanges of both first toes (fig. 17), the basal phalanx of the right third toe, a third phalanx from a third toe, and part of an unguis phalanx. Hallux remarkably long, being decidedly longer than in *Buteo melano-leucus* (formerly *Geranoaëtus*), in which the metatarsus is larger than in *Palaeoplancus*. The foot, from the few elements present, appears rather slender.

Of the vertebral column the first and a part of the second cervical, parts of three dorsals, the first four caudals, and most of the pygostyle are preserved. Atlas and axis (fig. 18) in size and general form similar to those of the female red-tailed hawk (*Buteo jamaicensis*) (thus matching the relatively small head); dorsals with most of the processes broken away and offering little in the way of characters; pygostyle (fig. 19) and other caudal vertebrae relatively large, being as large as those of *Buteo melanoleucus*; form of pygostyle more like that of *Aquila chrysaetos*; muscular attachments on all caudals slightly less developed than in the modern species with which comparison is made.

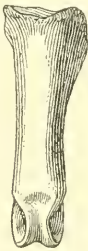


FIG. 17.—Basal phalanx of left hallux of *Palaeoplancus sternbergi*, natural size.



FIG. 18.—Anterior view of joined atlas and axis of *Palaeoplancus sternbergi*, natural size. The bones are somewhat distorted by crushing.



FIG. 19.—Distal view of pygostyle of *Palaeoplancus sternbergi*, natural size.

Measurements (in millimeters).—Skull: Length of premaxilla 29.8; length of mandible (approximate) 67.0.

Atlas: Width 9.0; depth 8.3.

Humerus: Length (approximate) 124.3; transverse breadth across trochlea (approximate) 21.8.

Metacarpus: Length 68.9; greatest height at proximal end 17.5; transverse breadth of shaft at center 5.5; vertical diameter at same point 6.2.

Second digit: Length 27.9; greatest breadth at center 5.2; greatest depth 10.4.

Femur: Transverse diameter through head 20.1; diameter of head 8.3; transverse diameter of shaft 9.6.

Metatarsus: Transverse diameter through trochlea (approximate) 18.0; transverse breadth of outer trochlea 3.9; of middle trochlea 5.3; of inner trochlea 7.0; least transverse breadth of shaft 9.0.

Phalanges: Length of phalanx of first toe 32.3; transverse breadth at base 11.3, at center 6.2; length of basal phalanx of third toe 23.7; length of third phalanx of third toe 19.8.

Remarks.—The general impression obtained from a survey of the skeleton of *Palaeoplancus* is that of a bird with relatively small head like that of a golden eagle, moderately developed wings, strong legs, and large feet with unusually long and powerful toes. The relatively weak development of the tail indicates less rapid flight, or possibly less addiction to soaring, than is seen in our living buteonine hawks and our eagles, but at the same time the strong feet suggest a predatory habit, and the grappling of active prey.

After some consideration of the peculiarities of the metatarsus, furcula, and humerus, and the other features mentioned in the diagnosis, it is seen that *Palaeoplancus* does not fall into any of the recognized subfamilies of the Accipitridae. It is like the buteonine group in general but differs in the points already indicated. The form of the pygostyle and of the furcula are somewhat like those of *Haematornis* (formerly called *Spilornis*¹) in the Circaëtinae, but no close alignment with this group is indicated. It seems necessary to propose that the form here described be recognized as a distinct subfamily to be called **Palaeoplancinae**, which should be placed between the Buteoninae and the Circaëtinae.

The species is named in honor of George F. Sternberg, skilled collector of vertebrate fossils, through whose efforts many valuable specimens have come to the National Museum.

¹ Swann, H. K., A monograph of the birds of prey, pt. 11, April 1, 1933, p. 147.