

CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

(Continuation of Contributions from the Museum of Geology)

UNIVERSITY OF MICHIGAN

VOL. IV, No. 8, pp. 129-132 (1 pl.)

JANUARY 15, 1934

A NEW FOSSIL HAWK FROM THE
OLIGOCENE BEDS OF
SOUTH DAKOTA

BY

A. WETMORE AND E. C. CASE



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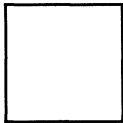
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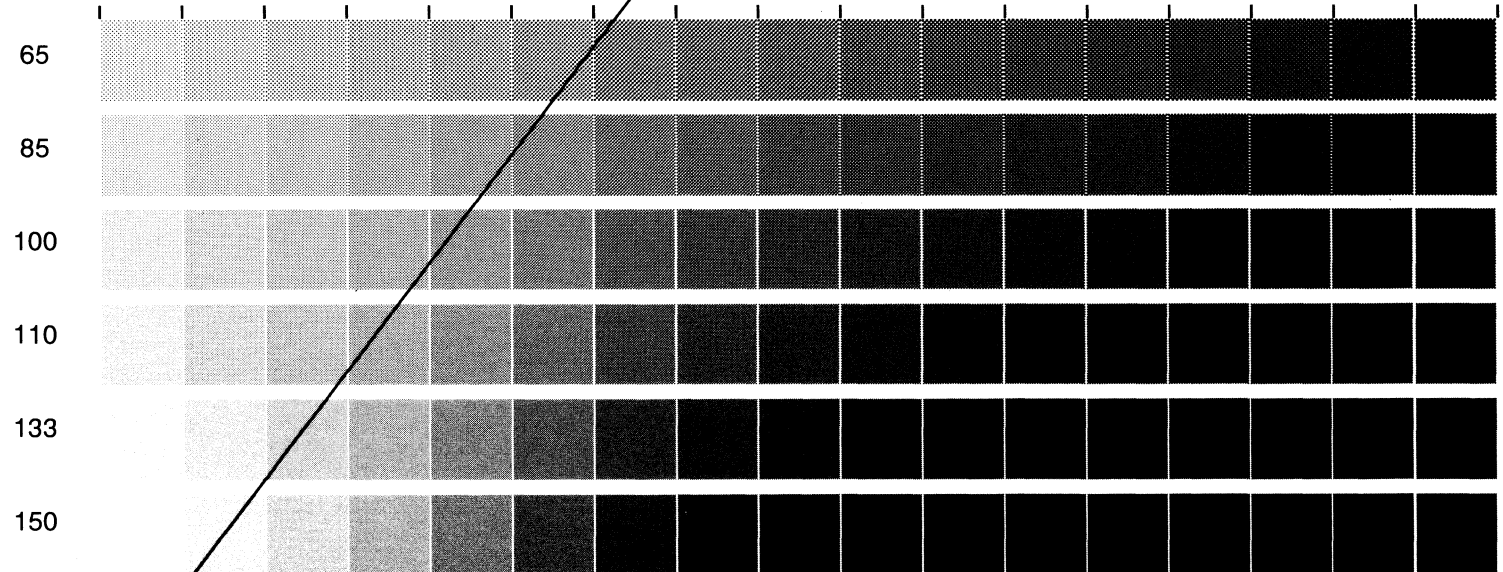
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CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

(Continuation of Contributions from the Museum of Geology)

UNIVERSITY OF MICHIGAN

Editor: EUGENE S. McCARTNEY

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(Continued on inside of back cover)

A NEW FOSSIL HAWK FROM THE OLIGOCENE BEDS OF SOUTH DAKOTA

By A. WETMORE AND E. C. CASE

IN THE summer of 1932 an expedition from the Museum of Paleontology of the University of Michigan spent some time collecting in the Oreodon zone of the Oligocene beds exposed in the breaks of Pass Creek, Washabaugh County, South Dakota. This region has not been so carefully gone over as the part of the Big Bad Lands farther west; although it is not so rich in material it yielded good results on careful searching. The most important find of the summer was the skull of a bird, described below.

The dominant facies of the Big Bad Lands is the characteristic clay of the Oreodon beds, but the lower part of the section showed many patches of more or less indurated clayey sand. Some of these sands softened in water and resolved into typical quicksand; others were more resistant. One of the patches of sand stood out as a slight prominence on a small gully, and on it were exposed the bones of a rhinoceros. In excavating this specimen the skull of the bird was discovered about three feet back from the face of the sandstone. In the same patch of sandstone there were found the lower jaw of a mouselike rodent, the skull of a catfish, and the skull of a *Mesohippus*. Evidently this outcrop marked some site in a watercourse where the quiet water permitted the finer sand to collect and bury the bones which were swept into it, or carried in by the floating cadavers.

Buteo grangeri, sp. nov.

(Plate I)

Characters. — Similar to *Buteo melanoleucus* (Vieillot),¹ but slightly smaller, with frontal relatively narrower between orbits,

¹ *Spizaetus melanoleucus* Vieillot, *Nouv. Dict. Hist. Nat.*, Vol. 32, p. 57, 1819.

premaxilla stronger, heavier, and deeper; palatine bones somewhat more slender.

Description. — Type, a skull, lacking the mandibles, Museum of Paleontology, University of Michigan, No. 14405, from the Oreodon beds of the Oligocene; collected in the Big Bad Lands of Pass Creek, Washabaugh County, South Dakota, by the members of the expedition of the Museum of Paleontology, in August, 1932.

Premaxilla strong, with lower margin descending in a distinct festoon, strongly hooked at end (tip missing), relatively deep, and rather narrow (exact width uncertain owing to crushing); frontal relatively narrow between orbits; postorbital process strong, but relatively short, separated by a broad notch from the squamosal; basitemporal plate broad; occipital condyle relatively large; palatine bones rather narrow.

Specimen brownish white.

MEASUREMENTS	Mm.
Interorbital width of frontal.....	19.3
Greatest depth of premaxilla (approximate).....	21.0
Greatest length of cranium to cranio-facial hinge (approximate)...	54.0

Remarks. — The preservation of birds in fossil deposits is a rare circumstance at best, and in the majority of cases avian bones such as are found fossil come from the limbs. Fossilization of skull fragments in this group is of rare occurrence, owing to the fragile nature of the bones of this part of the skeleton, so that the discovery of a skull as nearly complete as the type of *Buteo grangeri* is most unusual. It is one of the few fossil bird skulls known at present from Tertiary deposits, and gives most valuable information on this part of the skeleton.

The specimen consists of a complete skull except for the lower jaw. It is somewhat compressed and distorted by crushing, and the beak is detached at the cranio-facial hinge, with some sections of the former connections missing, but with enough in contact to indicate the proper position of the various parts. In the illustrations the beak is shown properly placed in relation to the rest of the skull. It has not seemed desirable at this time to attempt to free the skull completely, for the underlying matrix affords support

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to thin bones that would be shattered and lost in any effort to clear them entirely. There has been sufficient preparation, however, to bring out clearly the characters necessary for study. The fossil is especially remarkable for the preservation of the delicate bones of the palatal region and of the roof of the mouth in general; these are preserved in such a way that their proper relations are shown.

At a glance this skull may be identified as that of a hawk, since the forms of the beak, the cranium, and the palate are definitely of that group. Only slightly further study is required to indicate that it is a species of the family Accipitridae, the aggregation that includes the common hawks in contradistinction to the falcons. After somewhat prolonged comparison with an array of modern skulls of this family, it appears that the Oligocene species is to be placed in the genus *Buteo*, a group that has wide distribution and many living forms in the world today, including such familiar species in the North American avifauna as the red-tailed and red-shouldered hawks. Seemingly, hawks of this general type were also abundant in late Tertiary time, for a number of fossil species are known, an array which is being constantly augmented as studies of the fossil birds of North America continue.

Although in the technical description *Buteo grangeri* has been compared to the South American eagle *Buteo melanoleucus* (known currently as *Geranoaëtus melanoleucus*, but here placed in the genus *Buteo*), the Oligocene form is quite similar to the living red-tailed hawk, *Buteo borealis*, except that it is larger. The contours of the cranium closely resemble those of the red-tail, differing only in those minor details of shape and outline that separate allied species. The premaxilla as preserved is deeper and is decidedly more compressed, so that on first glance it suggests the goshawks, but on careful examination it is found that the apparent slenderness is due to crushing during preservation. There is also a slight distortion in the region of the basioccipital, as a result of which the occipital condyle lies decidedly above the level of the basitemporal plate, thus suggesting what is found in some of the larger eagles and in the Old World vultures of the subfamily *Ægyptiinae*, instead of being on about the same plane as in *Buteo*, but here again the

condition is due to a slight distortion that has somewhat displaced these parts in relation to one another.

Hawks of the type under discussion here have been represented previously in the fossil record of the Tertiary from the Pliocene and Miocene, and have been found especially in the deposits of Sioux County, Nebraska. *Buteo grangeri* carries the line of these predatory birds still farther back, into the upper section of the Oligocene. It marks a highly important contribution to our present scanty knowledge of the bird life of the American Oligocene, and to the records of the antiquity of our modern types of birds in general.

This species is named in honor of Albert Gallitin Granger, alumnus of the University of Michigan, through whose interest the type was obtained.

PLATE I

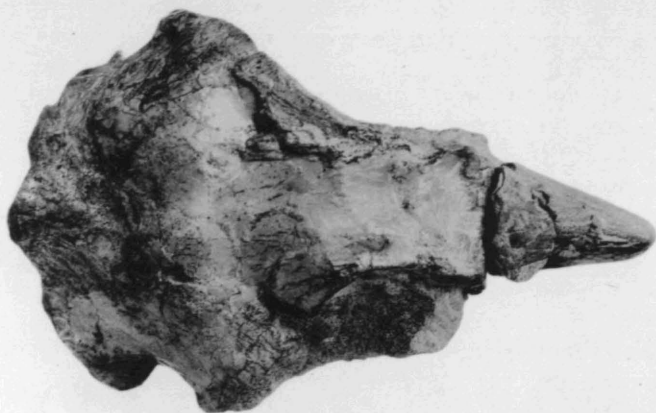


FIG. 1. From above



FIG. 2. From below

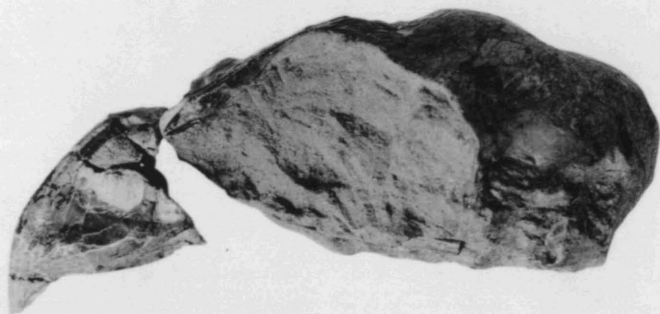


FIG. 3. From the left side
Skull of *Buteo grangeri* Wetmore & Case. $\times 1$

(Continued from inside of front cover)

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