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NEW RODENTS FROM THE EARLY MIOCENE DEPOSITS OF SIXTY-SIX MOUNTAIN, WYOMING

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During the summers of 1930, 1931, and 1933, Dr. E. M. Schlaikjer working for the Museum of Comparative Zoology, Harvard University, made a large collection of early Miocene mammals in the southern portion of Goshen Hole, Wyoming. Most of these were obtained from the slopes of Sixty-Six and Bear Creek mountains, from beds that Schlaikjer (1935) interpreted as the Lower Harrison formation.

On two occasions during July, 1959, Sabra B. Black, Laura McGrew, Bryan Patterson, and I made a brief reconnaissance of the area on the western slope of Sixty-Six mountain. During this reconnaissance, it became evident that Schlaikjer's Brule-Lower Harrison contact was actually a local channel conglomerate developed within the early Miocene sediments. He states (1935, p. 112), "At the northwest end of Sixty-Six mountain in the N.E. 1/4, Sec. 7, T.20N., R.60W. the typical Brule clay is overlain by a three-foot clay conglomerate above which are nineteen feet of clay sands that grade upward into the gray sands with pipy concretions." The "typical Brule clay" below the conglomerate, however, is the unit from which the rodents described below were obtained together with a badly weathered *Cyclopidius* skull and jaws and the posterior portions of two rami of *Mesoreodon cheeki*. These specimens were found in place and they clearly indicate an early Miocene, probably Gehring equivalent, age. Below the grey, tuffaceous sand and grading into it are buff clays with some sand which are probably equivalent to the Brule. In this area deposition appears to have been continuous from the Oligocene through the early Miocene with no sharp lithologic or erosional break within this sequence. The clay conglomerate is not extensively developed either on Sixty-Six or Bear mountains and

where it does appear on Sixty-Six mountain it lies within early Miocene sediments as is clearly shown by the oreodonts and rodents described below. A full account of the relationship of the Oligocene and Miocene sediments in the southern part of Goshen Hole is still in progress and will be published at a later date.

I would like to take this opportunity to thank the Kellam family of Torrington, Wyoming, who helped us immeasurably during our stay in the Goshen Hole area. I would also like to thank Professor Bryan Patterson for his criticisms and suggestions. The drawings are by Mr. Clifford J. Morrow and were made possible by a grant from the Gulf Oil Corporation.

Abbreviation used: M.C.Z. — Museum of Comparative Zoology, Harvard University.

Family CRICETIDAE

Scottimus kellamorum[1] n. sp.

Figure 1

Type: M.C.Z. No. 7342, a right maxillary with M^1-M^2.

Hypodigm: Type only.

Horizon and locality: Section 11, T.20N., R.61W., Goshen Co., Wyoming. Arikareean, from the supposed Gehring equivalent, early Miocene.

Diagnosis: Smaller than *Scottimus lophatus;* teeth narrower in relation to length than in *Scottimus exiguus;* antero-posterior lophs more prominent than transverse; protoloph very weak on M^1, absent on M^2; metaloph very weak on M^2, incomplete on M^1.

Description: In general, the upper molars of *Scottimus kellamorum*, like those of *S. lophatus*, are longer and narrower than those of the various species of *Eumys*. The mure is as strongly developed as in *S. lophatus*, but there are more accessory transverse crests than in that species. The cusps on M^1-M^2 are high, and the crests are at a lower level. The anterocone of M^1 is extremely large. There is a connection between the paracone and protocone on M^1, but it is shifted posteriorly and thus does not form a transverse loph. A comparable crest is not present on M^2. The paracone and metacone are joined by a low crest which in turn is joined by the mesolophid. There is a short crest projecting lingually from the mure between the protocone and hypocone on both M^1 and M^2. The anterior cingulum on M^2 is ele-

[1] Named for David and Jean Kellam of Torrington, Wyoming.

vated and strongly developed. The posterior metacone arm on M^1 is directed backward to fuse with the elevated posterior cingulum, whereas on M^2 it passes lingually to the hypocone to form a weak, transverse metaloph.

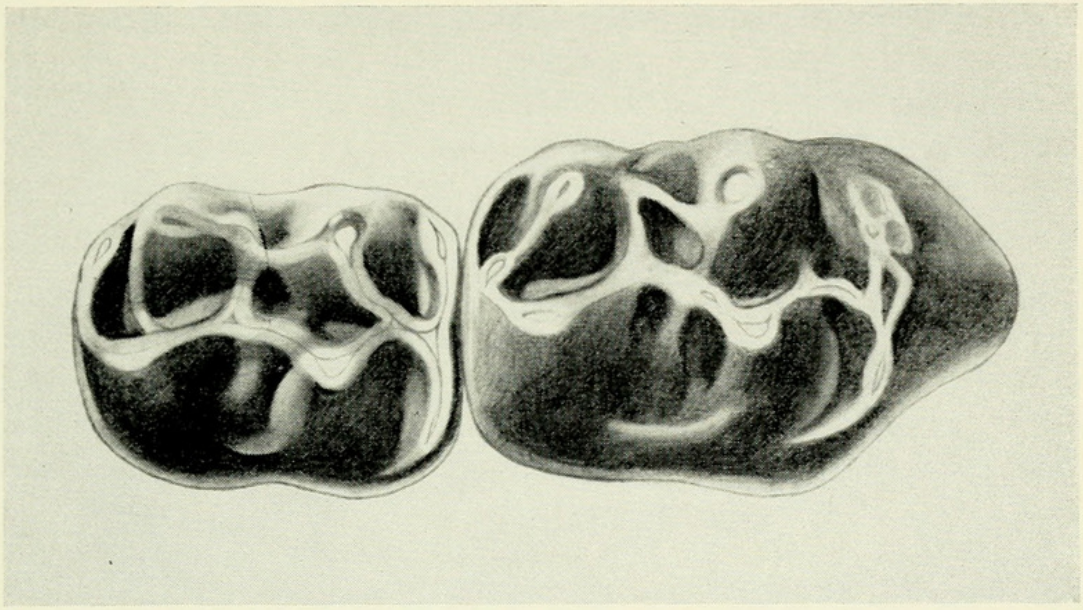

Figure 1. *Scottimus kellamorum* n. sp., Type, M.C.Z. No. 7342, RM^{1-2}, anterior end to the right, X20.

Discussion: Two species of Oligocene eumyines described by Wood (1937) seem referable to *Scottimus*. These are *Eumys exiguus*, from the Middle Oreodon beds of South Dakota, and *Leidymys vetus*, from the Middle Oligocene Cedar Creek beds of northeastern Colorado. Wood (*op. cit.*, p. 254-255), in describing *Eumys exiguus*, stated that it was transitional between typical *Eumys* and *Scottimus*. Galbreath (1953, p. 72) stated that all the specimens referable to *Eumys exiguus* in the University of Kansas collections from the Cedar Creek beds were also "closely similar to the type of *Leidymys vetus* Wood. In fact there is no question in my mind but that they represent the same species." However, he did not synonymize the two, stating, "I think this small species (*Eumys exiguus*) is generically distinct from the species of *Eumys* but am not prepared to say whether or not it should be referred to *Leidymys* or to another genus." Under the circumstances, it seems proper to place *Eumys exiguus* in *Scottimus* and to refer *Leidymys vetus* to the synonymy of this species. This brings the number of recognized species of *Scottimus* to three; *S. lophatus*, *S. exiguus*, and *S. kellamorum*.

In the development of antero-posterior rather than transverse lophs *Scottimus kellamorum* is more advanced than *S. exiguus*. Since *S. exiguus* is of middle Oligocene age this is, of course, to be expected. *S. kellamorum*, however, is not as advanced a species as the earlier *S. lophatus*. The transverse crests seen on M^1 of *S. kellamorum* are also present on *S. lophatus*, but these crests are not seen on M^2 of *S. lophatus*. This would seem to exclude *S. lophatus* from the ancestry of *S. kellamorum;* presumably a species similar to *S. exiguus* was ancestral to both.

Eumys sp.

M.C.Z. No. 7334, a partial left ramus with the incisor and M_1-M_2 cannot be indentified specifically. It does not show any tendency toward the formation of a strong central antero-posterior lophid at the expense of the transverse lophids, and hence is certainly not the lower dentition of *Scottimus kellamorum*. The posterior protoconid arm is extremely elongate on both M_1 and M_2. On M_1, a short anterior metaconid arm just fails to reach the anteroconid whereas a longer protoconid arm does so. In size and general pattern the teeth closely resemble those of *Eumys elegans* and *Eumys obliquidens*. Unfortunately the lower teeth of *Leidymys nematodon* and *lockingtonianus* are unknown.

Family HETEROMYIDAE

Heliscomys schlaikjeri[2] n. sp.

Figure 2

Type: M.C.Z. No. 7335, a right maxillary with P^4-M^2.

Hypodigm: Type only.

Horizon and locality: Section 11, T.20N., R.61W., Goshen Co., Wyoming. Arikareean, from the supposed Gehring equivalent, early Miocene.

Diagnosis: Size larger than that of any other known species of *Heliscomys;* internal cingulum undivided; posterior cingulum on P^4 extending from hypocone to metacone; central transverse valley straight, directed somewhat posteriorly.

Description: No trace of the paracone remains on the anteroloph of the premolar. In this respect, the tooth is typically perognathine. The posteroloph bears three cusps, the metacone

and hypocone being of equal size with the protocone and the entostyle being smaller. The entostyle curves forward and joins the internal edge of the protocone at the same level as does the hypocone. There is a small posterior cingulum running from the hypocone to the base of the metacone, and separated from the posteroloph by a small pit.

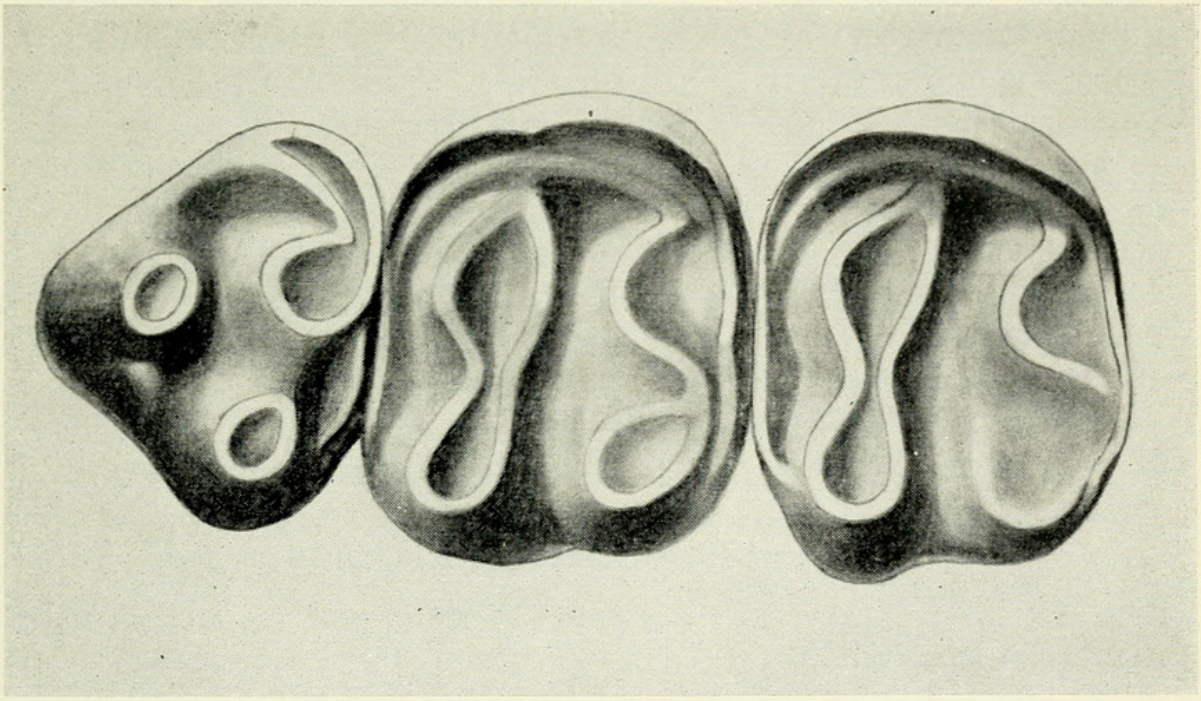

Figure 2. *Heliscomys schlaikjeri* n. sp., Type, M.C.Z. No. 7335, RP^4-M^2, anterior end to the left, X30.

The molars are somewhat more lophate in appearance than are those of *Heliscomys gregoryi* (Wood, 1933) and *H. hatcheri* (Wood, 1935), although the principal cusps are still prominent. In this respect the teeth resemble more closely those of *H. tenuiceps* (Galbreath, 1948). The molars of both agree in having anterior and posterior cingula that rise rather steeply to join the protostyle and entostyle. These cusps are closely appressed with no gap between them, a further point of resemblance to *H. tenuiceps*. The median valley is straight on both teeth, slanting somewhat posteriorly, not sinuous as in *H. gregoryi* and *H. hatcheri*. The anterior cingulum is stronger than the posterior on both M^1 and M^2.

Discussion: Although it is somewhat larger and shows a few minor differences, *Heliscomys schlaikjeri* is extremely close to *H. tenuiceps*. Both species have an undivded internal cingulum

[2] Named for E. M. Schlaikjer in recognition of his extensive work in the Goshen Hole area.

and a straight median valley, characters found neither in *H. hatcheri* nor in *H. gregoryi*. In *H. schlaikjeri*, in addition to the somewhat larger size, the median valley of the molars is directed somewhat more posteriorly and the posterior cingulum on P^4 has shifted position. The latter distinction seems unimportant since the presence or absence and the position of the posterior cingulum are variable in *Heliscomys*. In *H. hatcheri* this cingulum varies from absent to present, in some cases extending along the entire posterior margin of the molars; in a specimen from Pipestone Springs described by McGrew (1941), it appears to be completely absent, while in *H. tenuiceps* it connects the hypocone and the entostyle. Recently, Reeder (1960) has described two new genera of heteromyids from the White River formation and has emphasized their large size and the quadricuspidate nature of P_4 in *Apletotomeus* and the quinquicuspidate P_4 of *Akmaiomys*. These genera are known only on their lower dentitions and hence can not be compared with *H. schlaikjeri*. *H. schlaikjeri*, however, is somewhat larger than either genus.

Table of Measurements (in mm.)

	P^4	M^1	M^2	M_1	M_2
Scottimus kellamorum					
anteroposterior		2.50	1.85		
transverse protoloph		1.60	1.43		
transverse metaloph		1.53	1.35		
Eumys sp.					
anteroposterior				2.10	2.00
transverse metalophid				1.40	1.90
transverse hypolophid				1.70	1.90
Heliscomys schlaikjeri					
anteroposterior	0.90	1.10	1.10		
transverse	1.20	1.40	1.40		

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