

American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1978

DECEMBER 22, 1959

A New Sciuravid Rodent of the Genus *Pauromys* from the Eocene of Wyoming

BY ALBERT E. WOOD¹

In 1923, Troxell described the lower jaw of a very small rodent from the middle Eocene (Bridger) of Wyoming in the Yale Peabody Museum (Y.P.M. No. 13601) under the name of *Pauromys perditus*. This has been the only specimen hitherto referred to the genus. Recently, however, another rodent jaw fragment (A.M.N.H. No. 11722) of about the same size, from the Twin Buttes member of the Bridger formation, was found in the collections of the American Museum of Natural History and turned over to me for study through the kindness of Dr. George Gaylord Simpson, to whom I am very grateful.

Pauromys is of interest not only because of its small size, but also because it may be related to the ancestral stock of the Cricetidae, a family not known before the early Oligocene. This was suggested by Schaub (1925, p. 109), and more recently Stehlin and Schaub (1951, pp. 336, 384) have transferred the genus to the Cricetidae. Wood (1937, pp. 248-249) argued against this relationship, on the grounds that *Pauromys* possessed a rather distinct arrangement of the hypolophid from that found in early cricetids. More recently, however (Wood, 1955, p. 171; 1959, p. 167), he has been less impressed by the distinct position of the hypolophid, though he still considers the genus to be a sciuravid rather than a cricetid, because it still possessed P₄, a tooth

¹ Biology Department, Amherst College, Amherst, Massachusetts. This study was assisted by grants from the Marsh Fund of the National Academy of Sciences and from the National Science Foundation.

that is absent in all the Cricetidae, if *Pauromys* is excluded from that family.

While there are similarities between A.M.N.H. No. 11722 and *Pauromys perditus*, there are also rather notable differences, involving the size of P_4 , the structure of the mesostylid, and the condition of the lingual end of the posterior cingulum. It is very possible that additional material would justify the establishing of a new genus for this specimen, but it is impossible to determine the amount of individual variation with only the two specimens, and hence they are, at present, not justifiably separable beyond the specific level.

***Pauromys schaubi*, new species¹**

Figure 1

TYPE: A.M.N.H. No. 11722, lower jaw fragment with right M_{1-2} , the roots of P_4 , parts of the alveoli of M_3 , and a fragment of the incisor.

HYPODIGM: Type only.

HORIZON AND LOCALITY: Upper Bridgerian Twin Buttes member, red stratum at Twin Buttes, Bridger Basin, Wyoming; collected by Walter Granger, July 13, 1904.

DIAGNOSIS: Double mesostylids on M_2 at least; no lingual extension of posterolophid on M_{1-2} ; P_4 larger than in genotype; incisor elongate anteroposteriorly, with thin enamel; mental foramen large, beneath anterior root of P_4 ; masseteric fossa weakly delimited, ending beneath rear half of M_1 ; slightly larger than *P. perditus*; tooth measurements as given in table 1.

The two molars that are preserved in this specimen show what is apparently nearly the same pattern, although M_1 is less worn than M_2 . As in *P. perditus*, M_1 is appreciably narrower than M_2 , and the protoconid and metaconid are separate. However, the trigonid basin drains only anteriorly, the posterior arm of the protoconid abutting against the base of the metaconid. The anterior cingulum is separate from both cusps, although, with wear, it unites with the protoconid (fig. 1A). The posterior arm of the protoconid runs into the rear slope of the metaconid, as in the genotype (Wood, 1937, fig. 65), and would become united with it on further wear. The two mesostylids of M_2 are a very unusual feature. They unite with both the protoconid and the hypoconid and approach each other closely, surrounding two small basins.

¹ It gives me great pleasure to name this species in honor of Dr. Samuel Schaub, the outstanding worker in the field of rodent paleontology.

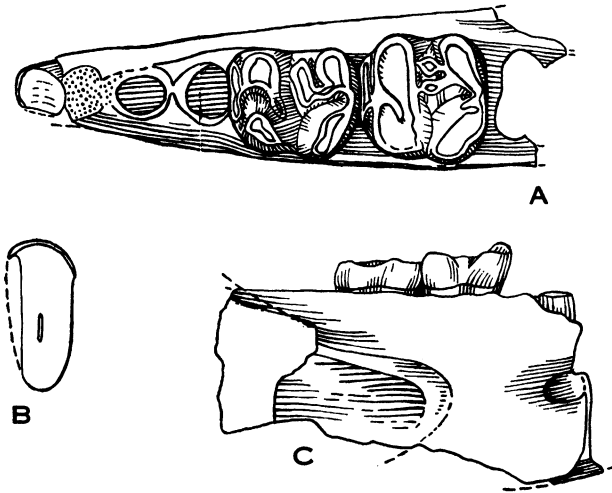


FIG. 1. Teeth and jaw of *Pauromys schaubi*, new species, A.M.N.H. No. 11722. A. Crown view of right M_{1-2} and jaw fragment. $\times 15$. B. Cross section of right I_1 . $\times 15$. C. Lateral view of jaw. $\times 10$.

This does not seem at all like the condition in *P. perditus*. M_1 apparently did not have the double mesostylid, as there is only a single union with the hypoconid and none with the protoconid, and the differences could not result from wear. In this tooth, the cusp was probably more like the elongate mesostylid of *P. perditus* (Wood, 1937, fig. 65). There is no suggestion of the prominent valley between the hypoconid and the mesoconid that characterizes *P. perditus*. At least at the stage of wear represented by A.M.N.H. No. 11722, there is no trace of a distinct lingual arm of the posterior cingulum, though an irregularity of the enamel on the postero-internal corner of each tooth, most obvious on M_2 , may mark the end of a formerly distinct cingulum, now removed by wear. In any event, the posterior cingulum could not have been so distinct as in *P. perditus*.

The premolar, as shown by its roots, was somewhat shorter and narrower than M_1 , but must nevertheless have been considerably larger than in *P. perditus*. As in Troxell's species, M_3 seems to have been longer and narrower than M_2 . The alveolus for the anterior root of M_3 is about 15 per cent narrower than the posterior root of M_2 .

The incisor fragment (fig. 1B) has a thin cap of enamel extending over the rounded anterior face. The tooth is narrow in comparison to its length and is apparently somewhat concave on the lateral sur-

face. The incisor pattern is different from that figured for *Sciuravus* (Wood, 1959, fig. 25B), and does not at all resemble that of the earlier North American cricetids, which are much more equidimensional. The tooth is similar to the broken incisor of the type of *P. perditus* except that in that form there seems to be no lateral concavity.

Only a part of the jaw is preserved (fig. 1C). The masseteric fossa is clearly indicated, though its preserved boundaries are weak. The scar for the insertion of the deep portion of the masseter lies beneath the rear half of M_1 , extending slightly farther forward than in *P. perditus*. The dorsal border of the coronoid would obviously have passed the alveolar margin, from which it was separated by a shallow groove, about at the rear of M_3 , as in *P. perditus*. The mental foramen is large, and lies beneath the anterior root of P_4 , being farther to the rear than in *P. perditus*, as this foramen is not preserved in the Yale specimen, which is broken off just in front of P_4 .

Pauromys schaubi and *Pauromys perditus* are surely related species, although there is question as to the closeness of their relationship. In view of our essentially complete ignorance of evolutionary trends in the Sciuravidae, it is impossible to draw many conclusions. If, however, as seems probable, the sciuravids were derived from the paramyids, the lack of a distinct lingual end of the posterior cingulum would presumably be a primitive character in *P. schaubi*, as may also be the closer union of the anterior cingulum with the protoconid than with the metaconid. The characters of the mesostylid are very distinctive for both species and do not permit any phylogenetic conclusions to be drawn. In general, however, *P. schaubi* seems to be somewhat more primitive than *P. perditus*. This is not what would be expected in view of their relative ages, because *P. perditus* is from Dry Creek (Troxell, 1923, p. 155), and hence from the early Bridgerian Black's Fork member, whereas *P. schaubi* is from the late Bridgerian Twin Buttes member.

Although the exact ancestry of these small rodents is quite uncertain, the closest resemblances are to small members of the Paramyidae included in the genus *Microparamys* (Wood, 1959). The similarities here include the partial isolation of the anterior cingulum and the development of a buccal extension of the cingulum; the small size of P_4 ; and the lack of a distinct posterior cingulum. The structure of the mesostylid is quite different in the two genera, however; the mesostylids of *Microparamys* are small, rounded enlargements of the ectolophid, rather typical of the Paramyidae. Nevertheless, early Eocene species of *Microparamys* are the only known rodents that could have given rise to *Pauromys*.

TABLE 1
 MEASUREMENTS (IN MILLIMETERS) OF TEETH OF *Pauromys schaubi*
 AND *Pauromys perditus*

	<i>Pauromys schaubi</i> , Type, A.M.N.H. No. 11722	<i>Pauromys perditus</i> , Type, Y.P.M. No. 13601
P ₄ -M ₃	4.6 (est.)	3.75
P ₄		
Anteroposterior	—	0.59
Transverse	—	0.57
M ₁		
Anteroposterior	1.10	1.08
Width metalophid	0.87	0.74
Width hypolophid	0.96	0.80
M ₂		
Anteroposterior	1.10	1.10
Width metalophid	1.06	0.92
Width hypolophid	1.11	0.98
M ₃		
Anteroposterior	—	1.13
Width metalophid	—	0.85
Width hypolophid	—	0.81
I ₁		
Anteroposterior	1.32	—
Transverse	0.60	—

This species neither strengthens nor weakens the possibility of a special affinity between *Pauromys* and the Cricetidae. The time from middle Eocene to lower Oligocene is sufficient so that the necessary changes to develop the cricetid tooth formula and pattern could have taken place from *Pauromys*, although there is no present evidence that they did. For the present, therefore, it seems best to leave *Pauromys* in the Sciuravidae, with the understanding that it is a possible cricetid ancestor.

REFERENCES

SCHAUB, SAMUEL

1925. Die hamsterartigen Nagetiere des Tertiärs und ihre lebenden Verwandten. Abhandl. Schweizerischen Paläont. Gesell., vol. 45, pp. 1-114.

STEHLIN, HANS G., AND SAMUEL SCHAUB

1951. Die Trigonodontie der simplicidentaten Nager. Schweizerische Palaeont. Abhandl., vol. 67, pp. 1-385.

TROXELL, EDWARD L.

1923. *Pauromys perditus*, a small rodent. Amer. Jour. Sci., ser. 5, vol. 5, pp. 155-156.

WOOD, ALBERT E.

1937. Rodentia. *Part 2 in* Scott, W. B., and G. L. Jepsen, The mammalian fauna of the White River Oligocene. Trans. Amer. Phil. Soc., new ser., vol. 28, pp. 155-269.
1955. A revised classification of the rodents. Jour. Mammal., vol. 36, pp. 165-187.
1959. Rodentia. *In* McGrew, Paul O., The geology and paleontology of the Elk Mountain and Tabernacle Butte area, Wyoming. Bull. Amer. Mus. Nat. Hist., vol. 117, pp. 157-169.