REVIEW OF SOME RODENT GENERA FROM THE BRIDGER EOCENE.

ROBERT W. WILSON.

PART I.

ABSTRACT.

The type species of nine rodent genera or subgenera are recorded from the middle Eocene Bridger formation of southwestern Wyoming. Three of the genera, *Paramys*, *Pseudotomus*, and *Reithroparamys*, are closely related forms quite distinct from the generally much smaller types representing the remaining six. In the present paper, the paramyids are not considered, and discussion is limited to the others, namely, *Sciuravus*, *Mysops*, *Tillomys*, *Taxymys*, *Colonomys*, and *Pauromys*. Although the inquiry is concerned chiefly with the characters, validity, and inter-relationship of these genera, species are also treated. *Colonomys* is placed in synonymy with *Sciuravus*, and three new species are established.

Work in connection with this paper has been carried on at the Peabody Museum of Natural History, Yale University. The type specimens of all Bridger species discussed are to be found here except *Sciuravus bridgeri*, n. sp., *Mysops minimus* and *Mysops fraternus*. The study is directed principally at the Yale Bridger collection, but use has been made of specimens from the American Museum of Natural History, United States National Museum, and the Academy of Natural Sciences of Philadelphia.

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Most of the drawings reproduced in this paper are the work of Mrs. Joy Stilson Parr. However, Figs. 6, 9, 13 and 14

are by Dr. Albert E. Wood, who very generously has given the originals to me for reproduction; and Fig. 5 was drawn by the late Mr. Rudolph Weber.

Résumé of History of the Genera Discussed.

In June, 1871, O. C. Marsh established the rodent genus *Sciuravus* with *Sciuravus nitidus* as the type. At the same time, he proposed a second species, *Sciuravus undans*. The first mentioned species was based on a maxillary with M^1-M^3; the latter type on a lower dentition with P_4-M_2. In November of the same year, Joseph Leidy proposed the genus *Mysops* with *Mysops minimus* as the type species, and a fragment of ramus with M_2-M_3 as the type specimen. Marsh, in 1872, proposed three additional genera, *Tillomys*, *Taxymys*, and *Colonomys* mentioned in that order. The genotype species of *Tillomys* is *Tillomys senex*, based on a ramus with M_1. He also described a referred species, *Tillomys parvus* likewise founded on a ramus with M_1. *Taxymys* was established with *Taxymys lucaris* as the type. The type specimen of *T. lucaris* is a fragment of maxillary with P^3-P^4. *Colonomys* was based on *Colonomys celer* with an isolated M^1 or M^2 as the type specimen. In addition to the three new genera, a third species of *Sciuravus*, *S. parvidens*, founded on a fragment of ramus with M_2, was also erected. Lastly, Leidy, in 1873, proposed a second species of *Mysops*, *M. fraternus*. The type specimen is a lower jaw with the three molars.

Since Marsh's species were established without adequate descriptions and without figures, the validity of the above mentioned genera remained in considerable doubt for a number of years. Cope considered *Sciuravus* to be synonymous with *Paramys*, but Leidy and Wortman mentioned characters which indicated the presence of two distinct genera. Loomis in 1907 clearly established the distinctive nature of *Sciuravus* and gave distinguishing characters. Matthew (1910) gave a generic diagnosis for *Mysops*. He considered the genera established by Marsh in 1872 as insufficiently described, although probable synonyms of *Sciuravus* except for *Tillomys parvus* which he suggested might be referable to *Mysops*.

An additional Bridger genus, *Pauromys*, was established by Edward L. Troxell in 1923 with *Pauromys perditus* as the genotype, based on a unique ramus with complete dentition. In the same year, Troxell figured and described Marsh's types

of 1871 and 1872, together with some additional material of more complete nature. At the same time he established a new subspecies of *Tillomys, T. parvus plicatus,* founded on a ramus with full dentition. A large number of specimens not mentioned in the text or figured were also assigned to the genera and species which were considered valid. Troxell's treatment of the various genera and species is shown in the synonymy appended below. Study of the specimens in the Yale Peabody Museum collections suggests regrouping as follows:

Original Description	Troxell, 1923	Wilson, 1938
*Sciuravus nitidus	Sciuravus nitidus	Sciuravus nitidus
Sciuravus undans	Sciuravus nitidus?	Sciuravus nitidus
*Mysops minimus	Mysops minimus	Mysops minimus
*Tillomys senex	Tillomys senex	Tillomys senex
Tillomys parvus	Tillomys parvus parvus	Mysops parvus parvus
*Taxymys lucaris	Tillomys lucaris	Taxymys lucaris
*Colonomys celer	Sciuravus nitidus	Sciuravus nitidus?
Sciuravus parvidens	Tillomys lucaris?	Tillomys? parvidens
Mysops fraternus	?Tillomys parvus	Mysops fraternus
*Pauromys perditus	Pauromys perditus	Pauromys perditus
Tillomys parvus plicatus	Tillomys parvus plicatus	Mysops parvus plicatus
		Sciuravus bridgeri, n. sp.
		Sciuravus? rarus, n. sp.
		Taxymys? progressus, n. sp.

* Genotype species.

Most of the specimens assigned to the genus *Tillomys* by Troxell have been re-allocated to *Mysops.* Otherwise, a new generic name would have to be established to cover these. While this may prove eventually to be necessary, more information is needed concerning the characters of *Mysops minimus. Tillomys* apparently is quite distinct from such forms as "*T.*" *parvus plicatus* although it may be considered doubtful if the type is clearly separable from *Sciuravus. Taxymys* is retained as a generic name pending a clearer understanding of its relation to *Tillomys* and *Sciuravus. Colonomys,* as Troxell has stated, is synonymous with *Sciuravus.*

Relationship of the Bridger Rodents.

The Bridger rodents appear to fall into three main groups. The first of these, the paramyids, is not discussed in this paper. A second group is represented by the genus *Mysops,* and following Troxell (1923b) and Burke (1936) may be termed the

ischyromyid group.[1] The last group includes *Sciuravus* (equals *Colonomys*), *Tillomys*, and *Taxymys*, and may be called the sciuravids.[2] *Pauromys* may combine to some extent the characters of both the paramyids and the sciuravids.

In the absence of good specimens representing *Tillomys*, difficulty is encountered in establishing characters for the genus. Apparently, *Tillomys* is closely related to *Sciuravus*, and unless the upper dentition, when definitely known, proves to be distinctive, is hardly generically separate from *Sciuravus*. If *Taxymys*, represented by upper dentitions, should be established as congeneric with *Tillomys*, the validity of the latter genus would be much strengthened. However, such a type as *Sciuravus bridgeri*, n. sp. could be associated with *Taxymys* with almost equal propriety.

The upper dentition of specimens referred to *Taxymys* exhibit characters which distinguish this genus from typical *Sciuravus*, but also indicate a relatively close relationship. It is difficult to determine the value to be attached to these characters. The dental patterns of certain specimens of *Sciuravus* and *Taxymys* at the proper stage of wear are very close to each other. However, there is some evidence that the patterns were evolved in slightly different ways. The degree of separation of the two genera depends on the proper evaluation of these characters. Troxell has referred lower cheek-teeth of *Mysops* type to *Taxymys*. This association appears less probable than the union of either *Tillomys* or *Sciuravus bridgeri* with *Taxymys*.

Burke has indicated (1935, p. 9; 1936, p. 146) that *Mysops* is ancestral to the upper Eocene *Pareumys*, and broadly so to various Oligocene forms such as *Pseudocylindrodon* and *Ardynomys*. Species of *Sciuravus* carry on into the upper Eocene (Peterson, 1919, pp. 64-65), and appear to be present also in the lower part of the Duchesne River Series (Burke, 1934, p. 391). Younger Oligocene and later Tertiary species are

[1] However, it is not certain that the genus *Ischyromys* bears as close a relation to *Mysops* as do some other Oligocene genera.

[2] The appelatives paramyid, ischyromyid, and sciuravid are not necessarily used in a family sense. Although at least two families of rodents (paramyids and ischyromyids) appear to be present in the Bridger, the dental patterns of the above groups are no more widely separated than are those of the voles and deer-mice, generally included in one living family, namely the Cricetidae. As the extinct members of the rodent order become better known, horizontal classification will yield perforce to a vertical one. Until such a time, inclusion of the Bridger rodents in even a single family has advantages.

not known. Genera which are clearly descendants of *Sciuravus* have not been recognized up to the present time. The sciuravids are probably aberrant forms of the early Tertiary, unless the myomorphs have a remote relationship with them.

Any comprehensive statement of the relationship of the Bridger rodents to each other and to Eocene and Oligocene rodents in general, must await the completion of studies of Eogene rodents now being carried on by several workers. Even then, a satisfactory report on these rodents may be dependent upon the acquisition of additional material.

Systematic Description of Genera and Species.

Sciuravus Marsh, 1871.

Synonymy:

Sciuravus Marsh, 1871. This Journal, 3d ser., Vol. 2, No. 8, p. 122. Separate issued June 21, 1871 (*fide* T. S. Palmer).

Colonomys Marsh, 1872.

Type Species: *Sciuravus nitidus* Marsh, 1871. Type specimen: Fragment of left maxillary with M^1-M^3, Yale Peabody Museum No. 13333.

Age: Middle and upper Eocene.

Generic Characters: Dentition 1/1, 0/0, 2/1, 3/3; cheek-teeth brachydont with partial conversion of cusps to crests. P^4 without hypocone, but incipient in some specimens; metaconule usually distinct; metaloph union with protocone weak or absent. Upper molars with well-developed hypocone, subequal to protocone, in M^1 and M^2; protoconule and metaconule? present but fused to inner cusps; spurs thus formed more or less alternating with outer cusps to form incomplete transverse crests. Trigonids not especially elevated. Entoconid of molars large, rather pyriform in outline, extending into central basin, generally forming a weak connection with hypoconid which with wear develops into more or less of a hypolophid. Posterolophid[3] of variable length, not particularly raised, separated from entoconid by a valley of inconstant proportions. Ectolophid variable but generally more or less cuspate. Protolophulid II relatively long, directed slightly posteriorly, union with metaconid rather low on flank of that cusp. Anterior basin of molars, formed by anterior cusps, protolophulid II, and anterior

[3] For explanation of the tooth nomenclature used, see Wood and Wilson, 1936.

cingulum, rather weakly developed, more or less oblique in position. Mandibular incisor relatively compressed transversely with somewhat rounded enamel face.

Skull and skeleton (from Matthew, 1910, p. 60): "The skull is very like that of *Paramys* except for a longer muzzle, more slender proportions, and absence of sagittal crest. In size and general proportions it compares with the rat (*Mus decumanus*). The tympanic bulla is incompletely ossified and loosely attached to the skull; it has no tubular meatus, the ossification comprising little besides the tympanic ring. What is known of the skeleton agrees with *Paramys* except for the lesser width of the distal end of the humerus. The carpals and the number of digits are unknown."

Less noteworthy or more purely descriptive characters are briefly mentioned below.

REMARKS.

The crown of P^3 consists of a single, conical cusp with a cingulum developed on the postero-internal side. P^4 has the protoconule more or less completely fused into the protoloph, although some specimens show a slight separation of the protoconule from the paracone similar to the condition found in the molars. The metaloph of this tooth is much less complete than the protoloph. With wear, the hypocones of the molars develop crescentic outlines. In general, the paracone, metacone, and protocone are more cuspate. Mesostyles are present between the outer cusps of the superior molars. The upper molars possess strong anterior cingula, weaker posterior ones.

The fourth lower premolar is rather variable as regard to size. The entoconid of P_4 is small and marginal. Protoconids of the molars are not as crescentic as the comparable cusps in the genus *Mysops*. The anterior cingula are perhaps more cuspate than those of *Mysops*. M_3, in respect to the anterior molars, is somewhat modified with less development of the hypolophid, and usually a heavier posterior cingulum. A small metastylid near the base of the postero-internal surface of the metaconid is a rather constant feature of the molar teeth. The point of anterior termination of the masseteric fossa usually occurs beneath the anterior part of M_2.

Sciuravus was the first rodent genus to be described from the North American Eocene. Troxell (1923b) concluded that

Colonomys Marsh is synonymous with *Sciuravus* as was suggested by Matthew in 1910. In addition to Bridger species of the genus, *Sciuravus altidens* Peterson has been described from the Uinta upper Eocene, and *Sciuravus depressus* Loomis from the Wind River. According to Troxell, *S. depressus* probably is not to be referred to *Sciuravus* but to a separate genus.

Fig. 1.

Sciuravus nitidus Marsh.

Figures 1-2.

Synonymy:

(1) *Sciuravus nitidus* Marsh, 1871, This Journal, 3d ser., Vol. 2, No. 8, p. 122. Leidy, 1873, p. 113. Loomis, 1907, p. 125. Matthew, 1909, p. 300. Matthew, 1910, pp. 59-60, figs. 13-15. Peterson, 1919, p. 64. Troxell, 1923b, pp. 384-387, figs. 1, 6. Hay, 1930, p. 909.[4]

(2) *Sciuravus undans*, Marsh, 1871, p. 122. Leidy, 1873, p. 113. Matthew, 1909, p. 300. Troxell, 1923b, pp. 384, 386, 394, fig. 2 [indicated as a possible synonym of *S. nitidus*]. Hay, 1930, p. 909. Wood, A. E., 1936, p. 393, fig. 2.

(3) [?]*Colonomys celer* Marsh, 1872, pp. 220-221. Matthew, 1899, p. 39. Hay, 1902, p. 725. Matthew, 1909, p. 300.

(4) *Paramys undans* (Marsh). Cope, 1873, p. 610. Matthew, 1899, p. 39. Hay, 1902, p. 724.

(5) *Sciuravus*, sp. (?) Leidy, 1873, pp. 113-114, 335, pl. 6, fig. 30. Troxell, 1923b, pp. 386-387, figs. 3-5.

(6) *Plesiarctomys undans* (Marsh). Cope, 1883, p. 47.

(7) *Paramys nitidus* (Marsh). Matthew, 1899, p. 39. Hay, 1902, p. 724.

Type Specimen: Fragment of left maxillary with M^1-M^3, Y.P.M. No. 13333. Collected by O. C. Marsh, 1870.

[4] For additional citations of this and other rodent species discussed in the present paper, consult Hay 1902 and 1929-30.

Locality and Age of Type: Grizzly Buttes; Bridger Basin, Wyoming: lower Bridger. Age of species: middle Eocene. *Specific Characters*: P_4 never extremely reduced. M_1 generally relatively broad. Size much larger than *S. bridgeri*, n. sp. or *S.* ? *rarus*, n. sp.

REMARKS.

This species cannot be well-defined. Apparently, considerable variation exists among individuals of *Sciuravus nitidus*. If variants are separated as distinct types, few specimens can be assigned to *S. nitidus*. However, the present arrangement includes practically all specimens of *Sciuravus* in the Yale collections under the one species. *S. undans* is synonymized with *S. nitidus*. Even if a finer definition were proposed, it would be highly probable that these two species are identical. The types are specimens which are comparable in size, and both are from the same horizon and locality, namely, Grizzly Buttes, lower Bridger. Since the type of *S. nitidus* is an incomplete upper dentition, of *S. undans*, an incomplete lower dentition, it is difficult to determine the exact relation of the two species. Troxell (1923b, p. 384) has expressed the opinion that these two species are probably synonymous.

As Troxell (1923b, p. 384) has pointed out, *Colonomys* (Marsh, 1872, pp. 220-221; separate issued Aug. 17, 1872) is a synonym of *Sciuravus*. Strangely enough, Marsh in his description of the genus says that this form, "differs widely from the corresponding teeth in any genus of this group from the Green River Tertiary deposits." In the original description, the type was associated with several other isolated molars. At present, these additional specimens cannot be located in the collections. Perhaps these teeth were the basis for Marsh's statement, although the specimen considered to be the type was referred to as typical by Marsh. *Sciuravus celer* and *S. nitidus* are very likely identical. Certainly under the present broad definition of *S. nitidus*, the two species should be treated as one. However, if a more restricted view of *S. nitidus* is adopted, it is possible that *S. celer* is valid. The type molar (Y.P.M. No. 11831; M^1 or M^2, probably the latter) differs from those in the type of *S. nitidus* in relatively narrow transverse measurement; the hypocone and protocone are separated by a rather deep valley, partially blocked externally. Moreover, *S. celer* is from stratigraphically higher beds (Henry's Fork, upper

Bridger). Troxell considered *Colonomys celer* to be a synonym of *Sciuravus nitidus*.

It is probably not correct to refer so many of the Yale specimens representing *Sciuravus* to *S. nitidus*. Several specimens, if considered by themselves, apparently warrant the establishment of as many new species. Some others also might be used to erect distinct species. Additional material could be assigned to most of these hypothetical types. On the other hand, the allocation of many *Sciuravus* specimens would be arbitrary. Certain specimens resemble individuals of a suppositional group in one character, and individuals of other groups in other characters. Each particular character exhibits considerable variation. Moreover, an attempt to restrict any of the species which might be proposed to either the Black's Fork or Twin Buttes members (Wood, H. E. 2d, 1934, pp. 241-242) is unsuccessful; although several characters, which may be assumed to be progressive, appear to be more pronounced in the upper division of the Bridger. Perhaps if the exact level of all specimens were known, this might be more evident. The establishment of species when no sharp and easily definable limits can be ascertained, and when the new species do not serve to amplify the distinctive character of consecutive levels, may be justified in many cases. However, in the present instance, a careful study of the Yale material convinces the author that little if anything would be gained by splitting *S. nitidus* into several distinct types. Consequently, an extremely conservative taxonomy has been adopted.

Assuming that most of the specimens of *Sciuravus* pertain to the species *S. nitidus*, certain tooth characters show wide individual variation. Thus, the anterior cingulum varies from a more or less cuspate element to a strong ridge. Protolophulid II is variable as to length, direction and position on the flank of the metaconid. Occasionally, the union of that spur to the metaconid is high on the cusp (approaching *Mysops*) and sometimes very low. The ectolophid ranges from cuspate to almost linear. Direction of the ectolophid also changes somewhat from one specimen to another. A spur from the ectolophid, directed toward the metastylid, is sometimes present. In at least one specimen, there is a well-developed mesolophid. The metastylids, also, are of variable development. Basal cuspules (ectostylids) are infrequently present between the protoconid and hypoconid. The entoconid is sometimes a rela-

tively isolated cusp. In other instances a rather pronounced hypolophid is present, uniting entoconid and hypoconid. The position of the point of attachment also varies. The posterolophid or hypoconulid ridge ranges from short to long, occasionally extending to the entoconid and enclosing the posterior valley. Most of the specimens with short posterolophids are large. Those with well-developed posterolophids vary in size from small to large. P_4 exhibits divers stages of reduction. This tooth may be long and narrow, or short and broad. Molars M_1 and M_2 range from relatively long to broad. Specimens with broad M_2 are generally large. M_3 is variable

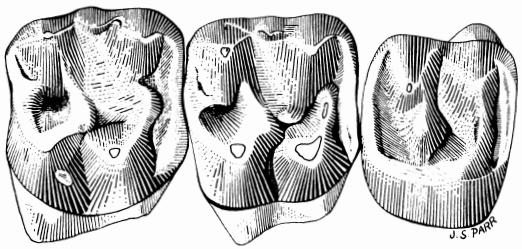

Fig. 2.

as to size and width. Fossils from the Twin Buttes member may possess somewhat better-developed hypolophids on the average than those from the Black Fork. In the superior molars, strength of union of the metacone to the hypocone, via an angulate crest, is quite variable. In some specimens the resultant metaloph is moderately strong; in others the term metaloph hardly can be applied. The external cingulum in P^4 exhibits wide variation. It may be practically absent, or as in at least one specimen, distinctly developed around the entire buccal margin of the tooth. Although large and small specimens are found in both members, the smaller are generally from the Black Fork. The largest *Sciuravus* specimen in the Yale collection, No. 13460, is from the younger member. Consequently, Twin Buttes specimens probably average somewhat larger in respect to size. In general, those characters which appear to be progressive, and to depart farthest from the primitive paramyid condition, are more common in specimens from the Twin Buttes member than in those from the Black Fork.

Since dimensions of the cheek-teeth of *Sciuravus nitidus* show a fairly wide range, the following measurements cannot be taken as too characteristic of the species. A series of lower cheek-tooth dentitions vary from 9.2 to 10.0 millimeters.

Measurements (in millimeters)

	No. 13333 *S. nitidus* Type spec.	No. 13454 *S. nitidus*	No. 13578-3 *S. nitidus*
P^3-M^3, alveolar length	..	..	10.5
P^4-M^3, antero-posterior length	..	..	8.85
P^4-M^2, antero-posterior length	..	6.6	6.6
M^1-M^3, antero-posterior length	6.8	..	7.0
P^4, antero-posterior diameter	..	1.95	1.95
P^4, greatest transverse diameter	..	2.5	2.45
M^1, antero-posterior diameter	2.2	2.3	2.3
M^1, greatest transverse diameter	2.4	2.5	2.5
M^2, antero-posterior diameter	2.2	2.35	2.4
M^2, greatest transverse diameter	2.5+	2.7	2.7
M^3, antero-posterior diameter	2.3+	..	2.35
M^3, greatest transverse diameter	2.5	..	2.6

	No. 13349 *S. "undans"* Type spec.	No. 13596 *S. nitidus*
P_4-M_3, antero-posterior length	..	10.0
P_4-M_2, antero-posterior length	7.0	..
P_4, antero-posterior diameter	2.1+	2.1
P_4, greatest transverse diameter	1.95	1.85
M_1, antero-posterior diameter	2.15	2.35
M_1, greatest transverse diameter	2.1	2.2
M_2, antero-posterior diameter	2.2	2.5
M_2, greatest transverse diameter	2.2	2.45
M_3, antero-posterior diameter	..	2.7
M_3, greatest transverse diameter	..	2.3

SCIURAVUS BRIDGERI, new species.

Figure 3.

Type Specimen: Incomplete left ramus with P_4-M_2, No. 12141 United States National Museum.

Locality of Type Specimen: Miller's Ranch? (or Millersville), Bridger Basin, Wyoming. Collected by J. L. Wortman, 1902.

Age of Species: Lower Bridger, middle Eocene.

Referred Specimens: Fragmentary right ramus with M_1-M_2, No. 12550, American Museum of Natural History; and several isolated lower cheek-teeth in the Yale Peabody Museum collections, Nos. 10728, 13465, 13463 and 13464.

Specific Characters: This species is distinguished from average specimens of *Sciuravus nitidus* by relatively slightly higher

trigonids with more angulate metaconids, and perhaps weaker protolophulid II; more sharply V-shaped metaconid-entoconid notches; metastylids absent (perhaps incipient in M_3); smaller, more marginal entoconids; and more concave occlusal surfaces. P_4 and M_1 are sub-equal. Size distinctly smaller than *S. nitidus* or *S.? rarus*, n. sp.

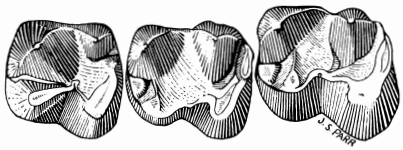

Fig. 3.

DESCRIPTION.

P_4 is sub-equal to M_1 in size, but of more quadrate aspect. The trigonid is relatively high and massive in appearance, and occupies most of the occlusal surface of the tooth. Compared to the metaconid, the protoconid is much smaller, and is separated from the former cusp by a narrow groove that runs antero-posteriorly across the trigonid. A small cingular cuspule or ledge projecting from the antero-external wall of the metaconid is situated at the anterior exit of this groove. The entoconid is distinct and isolated from the posterolophid. There is no hypolophid. A rather well-marked hypoconulid(?) cusp appears to be present, but this structure may be due mostly to oblique wear of the hypoconid.

The posterior wall of the trigonid of M_1 is relatively steeply inclined. This surface is flattened, and the resulting plane is transverse in orientation. The protoconid is quite cuspate, and the slight ridge running from the posterior part of the cusp to the angulate metaconid can hardly be termed a protolophulid. A small cingular cusp is present at the anterior border of the tooth. The ectolophid is very poorly defined. No metastylid cusp is to be observed. Instead, the postero-internal border of the metaconid is angulate and the internal exit of the basin of the tooth quite acutely V-shaped. Hypoconid and posterolophid form an attenuated and sloping crest, marking the posterior border of the tooth. The median portion of the posterolophid is raised slightly but abruptly above the external portion. Perhaps this is due to the presence of the hypoconulid(?), or simply due to wear. The entoconid appears to be more mar-

ginal and smaller than in *S. nitidus*. If a connection is present uniting the entoconid to the hypoconid-ectolophid portion of the tooth, it is exceedingly weak.

M_2 is similar to M_1 except that the trigonid is lower, perhaps less steeply inclined; the anterior cusps more widely separate and ectolophid, hypolophid, and possibly protolophulid II are better defined. The slight step in the posterolophid of M_1 is not present in M_2, and the posterior valley may be wider antero-posteriorly than in the former tooth.

The mandibular incisor is compressed transversely, and has a rounded enamel face.

REMARKS.

Referred specimen A.M.N.H. No. 12550 agrees essentially with the type specimen except that the protolophulid II is more developed; the ectolophid and hypolophid are better defined; and a slight spur passes internally from the ectolophid. Wear of the central basins in the cheek-teeth of the type may be the chief factor in these latter apparent differences.

Two third lower molars, Y.P.M. Nos. 10728 and 13463, represent small sciuravids. These may be referable to *Sciuravus bridgeri*. They do not appear to possess any noteworthy characters.

A detailed comparison of U.S.N.M. No. 12141 with Y.P.M. No. 13349, the type specimen of *Sciuravus "undans,"* suggests the following differences: (1) much smaller size; (2) perhaps slightly more elongate molars; (3) occlusal surfaces more concave; (4) trigonids relatively somewhat higher; (5) metaconids relatively higher, more angulate; (6) protolophulid II less well-developed; (7) ectolophid more subdued; (8) entoconids of M_1 and M_2 perhaps less robust, more marginal; (9) hypolophid weaker; and (10) metaconid-entoconid notch more V-shaped.

Comparison of *Tillomys senex* to *Sciuravus bridgeri* is made difficult because of difference in stage of wear of the types, and general lack of material. *T. senex* is larger; the ectolophid more compressed antero-posteriorly; the entoconid relatively larger; and the orientation of the hypolophid is different.

All known specimens of *Sciuravus bridgeri* are apparently from lower Bridger beds. Perhaps it should be noted that the label accompanying the type specimen reads Miller's Ranch, whereas the locality Millersville is printed on the cork of the vial carrying the specimen. I can find no record of a Miller's

Ranch in the literature. Unless Miller's Ranch is some distance from Millersville, the age of the type specimen is certainly lower Bridger.

Possibility of a close relationship between *Taxymys* and *Sciuravus bridgeri* will be discussed in the section on the former genus.

Measurements (in millimeters)

	Sciuravus bridgeri, n. sp. U.S.N.M. No. 12141 Type specimen
P_4-M_2, antero-posterior length	5.1
P_4, antero-posterior length	1.5
P_4, transverse width across talonid	1.5
M_1, antero-posterior length	1.6
M_1, greatest transverse width	1.5
M_2, antero-posterior length	1.85
M_2, greatest transverse width	1.7—

Fig. 4.

SCIURAVUS? RARUS, new species.

Figure 4.

Type Specimen: Fragment of right ramus with P_4-M_1, No. 10729, Yale Peabody Museum.

Locality and Age of Type Specimen: Bridger Basin, Wyoming; exact locality not known: Age probably upper Bridger. Collected by LaMothe and Chew, August, 1874.

Specific Characters: P_4 extremely reduced. M_1 relatively long and narrow. Size relatively small, intermediate between *S. nitidus* and *S. bridgeri*.

DESCRIPTION.

The fourth lower premolar is reduced both in regard to relative size, and to elements of the talonid. It is composed of two prominent anterior cusps, and a posterior cingulum[5] somewhat

[5] Strictly speaking, this element is hardly a cingulum since it probably represents the extreme reduction of the hypoconid and entoconid, but it is best described as such.

divided medianly and, less conspicuously, postero-externally. The cingulum or talonid is narrower transversely than the trigonid, and the mid-point is somewhat external to the median line of the tooth. This latter character gives a rather obliquely-compressed appearance to the premolar. M_1 is relatively long and narrow. An anterior cingulum is not evident. The protoconid is crescentic, and both arms of the crescent are short. There is no metastylid. The ectolophid is relatively linear. The entoconid is large and rather strongly attached to the hypoconid, but a definite hypolophid is not developed. The main part of the posterolophid is rather short and directed postero-internally. However, a raised cingulum continues around to the internal side of the tooth and more or less encloses the posterior valley, which is present as a saucer-shaped depression.

This new species is evidently a sciuravid, but whether it should be included in the genus *Sciuravus* may be questioned. In view of the scanty material, the species has been referred to that genus. The chief character of the new form lies in its much-reduced P_4. The reduced state of this tooth is a step toward a myomorph type. Probably, it is merely a parallelism by the sciuravids. No other specimen in the Yale collections can be referred to the species.

Measurements (in millimeters)

	Sciuravus? *rarus*, n. sp. No. 10729 Type specimen
P_4-M_1, antero-posterior length	3.5
P_4, antero-posterior length	1.3
P_4, width measured transversely to tooth-row	1.4
M_1, antero-posterior length	2.2
M_1, greatest transverse width	1.75

Los Angeles,
California.

ERRATUM.

For February issue of the Journal, 1938.

Legends for Part I of the paper entitled, "Review of Some Rodent Genera from Bridger Eocene"; by Robert W. Wilson:

Fig. 1. *Sciuravus nitidus* Marsh. Holotype. No. 13333 YPM. Left M^1-M^3, x 10.

Fig. 2. *Sciuravus nitidus* Marsh. No. 13454 YPM. Right P^4-M^2, x 10.

Fig. 3. *Sciuravus bridgeri*, sp. nov. Holotype. No. 12141 U. S. Nat. Mus. Left P_4-M_1, x 10.

Fig. 4. *Sciuravus? rarus*, sp. nov. Holotype. No. 10729 YPM. Right P_4-M_1, x 10.