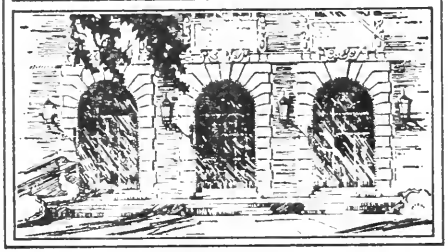

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A New *Pareumys* (Rodentia: Cylindrodontidae) from the Duchesne River Formation, Utah

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INTRODUCTION

During the summer of 1968, Dr. John Clark and Mr. Orville Gilpin of Field Museum of Natural History (FMNH) and their assistant, Mr. Tom Guensburg, collected in the Duchesne River Formation west of Vernal, Utah. Fossil mammals are quite rare in this unit (see faunal list, Black and Dawson, 1966, pp. 334–337) particularly from the middle and upper, or Halfway and La Point Members (Kay, 1934). They were quite fortunate, therefore, in finding a number of mammalian specimens in the La Point Member, including the two jaws described here as a new species of the genus *Pareumys*, a genus previously known only from the Uintan.

It has generally been recognized that there is a considerable difference between the fauna of the Randlett Member at the base of the Duchesne River Formation and that from the La Point Member at the top. The fauna from the Randlett Member bears resemblance to the Myton fauna which occurs stratigraphically below it (Black and Dawson, 1966). The fauna from the La Point Member is not as well known as that from the Randlett but it has few genera in common with the fauna from the upper part of the Uinta Formation. It should be emphasized, however, that the La Point Member fauna also shows little resemblance to faunas from the Chadron Formation in Nebraska, South Dakota, and Montana. At the present time, there is some controversy over the age of faunas from the Duchesne River Formation and the correlation of these faunas with others in Texas and California (Black and Dawson, 1966; Clark et al., 1967; Wilson et al., 1968). This confusion stems, in part, from an inadequate knowledge of the mammals from the Duchesne River Formation and the precise stratigraphic position of specimens already described.

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Family Cylindrodontidae

Genus **Pareumys** Peterson, 1919

Pareumys guensburgi[1] n. sp.

Figures 1, 2

Type.—FMNH PM 14978, left mandible with P_4–M_3.

Hypodigm.—Type and FMNH PM 14979, left mandible with M_2.

Horizon and Locality.—Duchesne River Formation, La Point Member, Late Eocene, SE ¼ sec. 23, T. 4 S., R. 19 E., SLM, Uintah Co., Utah.

Diagnosis.—Largest species of genus; jaw massive as in *Cylindrodon*: P_3–M_3 higher crowned than in *Pareumys grangeri* and *P. milleri*; P_4 reduced, smallest tooth of series; M_1 M_3 present three-lophed condition after slight wear; hypolophid joins ectolophid; posterolophid as strong as hypolophid.

Description.—There is considerable difference in size between the two mandibles here referred to *Pareumys guensburgi*. Nevertheless, they are considered to represent the same species because the M_2 in the smaller jaw is so nearly identical in size and structure to that of the type. In addition, the incisor structure is the same in each specimen although the incisor in the type is larger than that in PM 14979. Morphologically, the two mandibles are identical.

The masseteric fossa ends sharply below the posterior end of M_2 (fig. 2C) with the ventral masseteric ridge carried forward in a thick knob below the middle of M_2. There is only a single mental foramen just anterior to and below P_4 in PM 14979. In PM 14978, this area has been destroyed.

The lower cheek teeth of *P. guensburgi* are higher crowned than those of any other species of *Pareumys*. In this respect they parallel the condition seen in *Pseudocylindrodon*. This increase in crown height is mostly effected through increase in the height of the ringing enamel of the teeth without an increase in the depth of the occlusal pattern. The crown pattern is thus lost after moderate wear even though the teeth still retain a considerable height of crown. This approach to hypsodonty is carried further in *Cylindrodon* and is quite different from the hypsodonty seen in mylagaulids or beavers where the entire crown pattern shares in the increase in crown height.

[1] Named for Tom Guensburg, discoverer of the two specimens.

FIG. 1. *Pareumys guensbergi*, FMNH PM 14978, type, occlusal view of left P_4–M_3, × 10.

The fourth lower premolar is the smallest tooth of the series. It is almost circular in occlusal outline with the protoconid and metaconid appearing as a single cusp when worn. There is only the slightest indentation in the enamel on the anterior face of P_4 to indicate a separation of these cusps (fig. 1). The hypoconid buttress swings forward as it does also on M_1 and M_2 and to a lesser extent on M_3. The entoconid crest is prominent on P_4 and fuses with the posterior end of the ectolophid. The entoconid is set off from the metaconid and the posterolophid until the tooth has become extremely worn.

The crown patterns of M_1 and M_2 were probably quite similar (figs. 1, 2A), although M_1 is too heavily worn to be certain of this. M_2 displays three prominent cross crests in the type (PM 14978). The less worn M_2 in PM 14979 shows that the anterior crest is composed of the anterior cingulum (or metalophid I) plus a very short posterior protoconid arm (metalophid II) which does not reach the internal slope of the metaconid. The trigonid basin is quite shallow and opens into the central basin of the tooth on M_2 as it does also on M_3. There is no metastylid on M_2 or M_3 and it was probably absent on M_1 as well. The entoconid on M_2–M_3 is completely set off from both metaconid and posterolophid during early wear stages. The anterior entoconid slope fuses with the posterior metaconid slope with moderate wear and then with further wear the entoconid and posterolophid become joined. The posterolophid is swollen on all molars and at early wear stages a hypoconulid is clearly discernible. The posterior third of M_3 is somewhat reduced through shortening of the posterolophid.

The lower incisor is heavy and broadly triangular in cross-section. The anterior face of the incisor is slightly rounded with the enamel overlapping about one-third of its lateral face and one-fifth of its medial face.

Measurements in millimeters

	FMNH PM 14978	FMNH PM 14979
$P_4 - M_3$ occlusal	9.50	
P_4 anteroposterior	1.90	
transverse metalophid	1.50	
transverse hypolophid	1.90	
M_1 anteroposterior	2.30	
transverse metalophid	2.10	
transverse hypolophid	2.05	
M_2 anteroposterior	2.60	2.70
transverse metalophid	2.40	2.40
transverse hypolophid	2.50	2.40
M_3 anteroposterior	2.40	
transverse metalophid	2.50	
transverse hypolophid	2.40	
I anteroposterior	2.70	1.90
transverse	2.50	1.70

Relationships.—The genus *Pareumys* is quite distinct from later members of the Cylindrodontidae and certainly could not have been ancestral to them. This view has been expressed by Wilson (1940, p. 106) but was based upon somewhat different criteria. Wilson argued that the incomplete metaloph on P_4-M_2 of the California *Pareumys* material ruled out this genus as being ancestral to *Pseudocylindrodon* or *Cylindrodon*. This was true for the latter two genera as understood at that time, but additional material of *Pseudocylindrodon neglectus* from Pipestone Springs, Montana (Black, 1965), shows a few specimens with a metaconule-posterior cingulum connection such as is seen in the California specimens of *Pareumys*. In Oligocene species of *Pseudocylindrodon* the metaloph is never interrupted completely as in Wilson's material of *Pareumys*. This incomplete condition of the metaloph is seen, however, in some Uintan specimens of *Pseudocylindrodon* (Black, in press) although it appears to be an infrequent variant in that population. It would appear that variation of metaloph development is typical of the middle Eocene

FIG. 2. *Pareumys guensburgi*, A, FMNH PM 14978, type, lateral view of mandible, × 4; B, FMNH PM 14979, lateral view of mandible, × 5; C, same, occlusal view of M_2, × 10.

A

B

C

Mysops (Wilson, 1938) and of the late Eocene species of both *Pareumys* and *Pseudocylindrodon* whereas a complete metaloph had been established in the early Oligocene *Cylindrodon* and nearly established in the early Oligocene *Pseudocylindrodon*. In this character *Pareumys* appears to have diverged from the *Pseudocylindrodon–Cylindrodon* line and emphasized the metaconule-posterior cingulum attachment over the metaloph-protocone attachment.

There is an even more fundamental difference between these two lineages, however, and this involves a reduction in the size of P_4 relative to M_1 and M_2 in the *Mysops* to *Pareumys* line. Another lineage leading to *Pseudocylindrodon* and *Cylindrodon* developed from *Mysops* which maintained the size of P_4 nearly equal to that of the molars. The relative size of M_3 also varies in these two lineages, with M_3 in *Pareumys* much nearer the size of M_1–M_2 than in *Pseudocylindrodon* and *Cylindrodon*.

Pareumys differs from the Oligocene *Ardynomys* in a number of respects and was probably not ancestral to that group either. There is no closure of the central valley or elongation of the posterior metaconid slope in *Pareumys* as in *Ardynomys*, the buccal valley is wider and M_1–M_3 are more elongate than in *Ardynomys*, and the characters of P_4 already mentioned also distinguish *Pareumys* from *Ardynomys*.

Within *Pareumys* itself, *P. guensburgi* has P_4 more reduced than in *P. milleri*, *P. grangeri*, or *P. troxelli*. Also, *P. guensburgi* is much the largest species of the genus. In other details of the dentition, *P. guensburgi* is quite similar to *P. milleri* and could have evolved from the Uintan C species. As far as is known at present, *P. guensburgi* is the last representative of the genus.

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