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TYPE LOCALITY OF THE GIANT RODENT *MANITSHA* *TANKA* SIMPSON (PROTROGOMORPHA, PARAMYIDAE)

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In May of 1941, George Gaylord Simpson announced, named, and briefly described a giant paramyid rodent discovered in the Slim Buttes area of Harding County, northwestern South Dakota (1941*a*). The brief notice was soon followed by an extensive study of this unusual animal (1941*b*).

The sole specimen of the species, named *Manitsha tanka* by Simpson, was found by Mr. Kenneth Briggs of Baker, Montana, and generously donated to The American Museum of Natural History. At the time of discovery, Mr. Briggs was cooperating with an American Museum field party including Walter Granger, Albert Thomson, and Junius Bird. On the authority of Thomson, Simpson assigned the specimen to the Brule Formation and considered it of Orellan age (roughly middle Oligocene *sensu* Wood *et al.*, 1941).

The beds from which the specimen was excavated are, however, considerably disturbed by early Miocene faulting and by superimposed Quaternary slumping. The latter is prominently displayed along the western side of the Buttes. Because of deformation, and for other reasons, doubt has been cast on the Orellan age of *Manitsha tanka*. The mammalian fauna of the lower Brule is exceptionally well known over a wide area of several states, but nothing like *Manitsha* has ever been recovered. On the other hand, paramyids have been found in recent years in the underlying Chadron Formation (or Chadronian time equivalents) at several locations such as the Porvenir local fauna of the Vieja Group of Texas (Wood, 1974). It should be stressed that the Chadron Formation of the Slim Buttes area has

proved so far to be barren of mammalian fossils, except for a few fragments of large mammals. Nonetheless, Lillegraven (1970) has suggested that *Manitsha* might well have come from the Chadron, partly at least on the basis of reports by eyewitnesses of the collecting of the specimen. John H. Wahlert has been even more convinced of the Chadron age and stated (1974:384) that "The American Museum catalogue incorrectly gives the horizon and locality for this specimen as Lower Brule, North Point of Slim Buttes, and this misinformation has been perpetuated in the literature. The correct data, supplied by M. F. Skinner (personal communication), are as follows: Chadron Formation, west side of Reva Pass, Harding County, South Dakota." Skinner and Loren Toohey had visited the site with local people familiar with the discovery, photographed the locality, and determined what they thought to be its stratigraphic position. Simpson's published locality record is "near highway (as of 1940) on western side of Reva Pass, in northern part of Slim Buttes, Harding County, South Dakota." This seems to us to be nearly as accurate as the correction. Although only the part of Slim Buttes north of Reva Gap (not "pass") can be spoken of strictly as the "northern Slim Buttes," Reva Gap is well north of the midpoint of the total north-south extent of the general Slim Buttes area. We suspect that "North Point" may be a transcription error for "north part". The locality, which is no longer in geographic doubt, is just south of the state highway (originally number 8, now number 20) running through the Gap and on the west side of the Buttes, immediately west of the picnic grounds maintained by the U.S. Forest Service. More specifically, the locality is in the NW 1/4 NE 1/4 NE 1/4 Sec. 18, T. 18 N., R. 8 E. (P. R. Bojork, personal communication).

More debatable than the geographic locality is the stratigraphic level from which the type of *Manitsha tanka* comes. Researchers at the South Dakota School of Mines and Technology conducted an extensive collecting program at Slim Buttes during the period 1962 to 1965. Knowing this, Skinner kindly sent to us a photographic record of the site as shown by the original eyewitnesses. Morton Green and Wilson relocated the site from these photographs and again photographed the locality from the same point of view (compare Figs. 1 and 2). At that time, it seemed to us that the rock exposures from which the type specimen was obtained were indeed representative of the Brule Formation (Orellan) as indicated by Thomson to Simpson. However, because of the uncertainty of the age of *Manitsha tanka*, Lillegraven and Wilson visited the locality once more in June 1975. We collected what we could find on the knob from which the



FIG. 1.—View looking south at the type and only known locality of *Manishtankia*. Photograph taken by R. W. Wilson.



FIG. 2.—Same view with M. F. Skinner standing at spot from which *Manishtankia* was excavated. Photograph taken by Loren Toohey (see text).

specimen came and concluded that, in terms of Lillegraven's stratigraphic arrangement of 1970, the type specimen came from the upper part of Unit A or the lower part of Unit B. The lower part of Unit A in the Reva Gap area so far has proved barren; the upper part has yielded a few specimens apparently of Orellan age. Unit A includes strata transitional in character between rocks typical of the local Chadron and Brule formations—these two formations seem not to be marked by any physical unconformity or sharp break in sedimentary character in the Slim Buttes area. Unit B is at least moderately fossiliferous and its main body carries a typical Orellan fauna.

Unfortunately, the additional fossils from the site obtained by us in 1975 were not in themselves diagnostic of age. Identifications are as follows: Leporidae (probably *Palaeolagus* sp.), *Ischyromys*? sp., Eomyidae, *Mesohippus* sp., *Merycoidodon*? sp., hackberry seeds (*Celtis occidentalis*). Although the absence of *Eumys* suggests (through negative evidence) a possible Chadronian age, the fact that fossils occurred in some abundance suggests an Orellan age; experience in collecting from the Chadron Formation throughout the Slim Buttes area has shown its nearly ubiquitous barren nature.

The strata in the area from which *Manitsha* was found is highly disturbed by Quaternary slumping, giving rise to a chaotic arrangement of small slivers of section. In the same area, the underlying and definitely Chadron and pre-Chadron part of the section is faulted by early Miocene movement but is not much affected by slumping. Thus, the jumble investing the type locality suggests a higher position than the Chadron Formation. On the other hand, *Manitsha tanka* can not have come from beds higher than Unit B at this locality; there is no indication of the presence of Unit C through H of the Brule Formation at that part of Slim Buttes.

In summary, *Manitsha tanka* is no older than latest Chadronian and more probably is early Orellan. If of Orellan age, *Manitsha tanka* would seem to be the latest surviving paramyid on record, excluding typical prosciurines that are perhaps better referred to the Aplodontidae (Rensberger, 1975). This unexpected occurrence may be comparable to the situation regarding the record of North American Oligocene alligators. South of Slim Buttes, in the typical Big Badlands of South Dakota, alligator specimens have long been known from the Chadron Formation, especially along the Indian Creek drainage. For years no Orellan alligators were found. In 1965, a beautiful skull with most of the postcranial skeleton was discovered in rocks of undoubted Orellan age

by a party from the South Dakota School of Mines and Technology (Wilson and Tucholke, 1966). Only a fragment or two of this reptile has since been found elsewhere in the Lower Brule.

LITERATURE CITED

- LILLEGRAVEN, J. A. 1970. Stratigraphy, structure, and vertebrate fossils of the Oligocene Brule Formation, Slim Buttes, northwestern South Dakota. *Bull. Geol. Soc. Amer.*, 81:831-850.
- RENSBERGER, J. M. 1975. *Haplomys* and its bearing on the origin of aplodontoid rodents. *J. Mamm.*, 56:1-14.
- SIMPSON, G. G. 1941a. A giant rodent from the Oligocene. *Science*, 93: 474-475.
- 1941b. A giant rodent from the Oligocene of South Dakota. *Amer. Mus. Novit.*, 1149:1-16.
- WAHLERT, J. H. 1974. The cranial foramina of protrogamorphous rodents: an anatomical and phylogenetic study. *Bull. Mus. Comp. Zool.*, 146:363-410.
- WILSON, R. W., AND B. E. TUCHOLKE. 1966. A first record of an alligator from the middle Oligocene of the Big Badlands of South Dakota. *Proc. South Dakota Acad. Sci.*, 45:287-288 (Abstract).
- WOOD, A. E. 1974. Early Tertiary vertebrate faunas, Vieja Group, Trans-Pecos Texas: Rodentia. *Bull. Texas Mem. Mus.*, 21:1-112.
- WOOD, H. E., R. W. CHANEY, J. CLARK, E. H. COLBERT, G. L. JEPSEN, J. B. REESITE, JR., AND C. STOCK. 1941. Nomenclature and correlation of the North American continental Tertiary. *Bull. Geol. Soc. Amer.*, 52:1-48.

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