

CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

THE UNIVERSITY OF MICHIGAN

Vol. XVIII, No. 16, pp. 245-250 (1 pl., 2 figs.)

NOVEMBER 22, 1963

A PORCUPINE FROM THE PLEISTOCENE OF
AGUASCALIENTES, MEXICO

BY

CLAUDE W. HIBBARD and OSWALDO MOOSER

FROM THE

EDWARD PULTENEY WRIGHT MEMORIAL VOLUME



Publication of this paper is made possible by the
Federal-Mogul-Bower Bearings, Inc.
Paleontology Research Fund

MUSEUM OF PALEONTOLOGY
THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

Director: LEWIS B. KELLUM

The series of contributions from the Museum of Paleontology is a medium for the publication of papers based chiefly upon the collection in the Museum. When the number of pages issued is sufficient to make a volume, a title page and a table of contents will be sent to libraries on the mailing list, and to individuals upon request. A list of the separate papers may also be obtained. Correspondence should be directed to the Museum of Paleontology, The University of Michigan, Ann Arbor, Michigan.

VOLS. II–XVII. Parts of volumes may be obtained if available.

VOLUME XVIII

1. Morphology and Taxonomy of the Cystoid *Cheirocrinus anatifformis* (Hall), by Robert V. Kesling. Pages 1–21, with 4 plates.
2. Ordovician Streptelasmid Rugose Corals from Michigan, by Erwin C. Stumm. Pages 23–31, with 2 plates.
3. *Paracomularia newberryi* (Winchell) and other Lower Mississippian Conulariids from Michigan, Ohio, Indiana, and Iowa, by Egbert G. Driscoll. Pages 33–46, with 3 plates.
4. Two New Genera of Stricklandid Brachiopods, by A. J. Boucot and G. M. Ehlers. Pages 47–66, with 5 plates.
5. Species of the Crinoid *Dolatocrinus* from the Middle Devonian Dock Street Clay of Michigan, by Robert V. Kesling and Leigh W. Mintz. Pages 67–100, with 7 plates.
6. Key for Classification of Cystoids, by Robert V. Kesling. Pages 101–116.
7. The Middle Devonian Ipperwash Limestone of Southwestern Ontario and Two New Brachiopods Therefrom, by Jean D. Wright and Edward P. Wright. Pages 117–134, with 3 plates.
8. Corals of the Traverse Group of Michigan, Part XI, *Tortophyllum*, *Bethanyphyllum*, *Aulacophyllum*, and *Hallia*, by Erwin C. Stumm. Pages 135–155, with 10 plates.
9. Morphology and Relationships of *Cyclocystoides*, by Robert V. Kesling. Pages 137–176.
10. The Crinoid *Opsiocrinus mariae* Kier in the Bell Shale of Michigan, by Robert V. Kesling and David L. Meyer. Pages 177–184, with 1 plate.
11. The Crinoid *Synbathocrinus* in the Middle Devonian Traverse Group of Michigan, by Robert V. Kesling and Raymond N. Smith. Pages 185–196, with 1 plate.
12. *Cyrtina hamiltonensis* (Hall) and a New Species of this Brachiopod Genus from New York, by George M. Ehlers, Pages 197–204, with 1 plate.
13. The Fern Genus *Acrostichum* in the Eocene Clarno Formation of Oregon, by Chester A. Arnold and Lyman H. Daugherty. Pages 205–227, with 6 plates.
14. *Dolatocrinus* and *Stereocrinus*, its Junior Synonym, by Robert V. Kesling and Leigh W. Mintz. Pages 229–237, with 2 plates.
15. Occurrence and Variations of *Botryocrinus Thomasi* Laudon in the Thunder Bay Limestone of Michigan, by Robert V. Kesling. Pages 231–244, with 3 plates.
16. A Porcupine from the Pleistocene of Aguascalientes, Mexico, by Claude W. Hibbard and Oswald Mooser. Pages 245–250, with plate.

A PORCUPINE FROM THE PLEISTOCENE OF
AGUASCALIENTES, MEXICO

BY

CLAUDE W. HIBBARD and OSWALDO MOOSER

The University of Michigan, Museum of Paleontology, and Laboratorie
de Examenos Clinicos, Aguascalientes, Ags., Mexico

CONTENTS

Introduction 245
 Description of specimen 246
 Age of the Cedazo local fauna 248
 Acknowledgements 249
 Literature cited 249
 Plate (after) 249

INTRODUCTION

OVER A NUMBER of years Mooser has collected vertebrate fossils occurring in the exposures of Pleistocene beds along the banks of Arroyo del Cedazo and its tributaries southeast of the city of Aguascalientes (Fig. 1). He (1959) named the vertebrates recovered from these Pleistocene deposits the Cedazo local fauna, and described in detail the horse remains recovered. At that time he commented upon the other vertebrates found in association with the horses. After the report was in press the right lower jaw of a porcupine was recovered July 17, 1958, from the right bank of the arroyo, up stream from the earthen dam which is south of Cerrito de la Cruz (Pl. 1, Fig. 4).

This is the second specimen of a porcupine to be recovered from the earlier Pleistocene deposits in North America. Numerous records of the Recent species of porcupine have been reported from caves and other late Pleistocene deposits. The porcupine is a South American rodent that made its way into North America after the two continents became connected during the Pliocene.

Wilson (1935) described a new species (*Erethizon bathygnathum*) based upon part of a left lower jaw with P_4 - M_2 from early Pleistocene deposits of Owyhee County, Idaho. The Idaho specimen is distinct from the Mexican lower jaw. The specimen from Mexico is the earliest record that can be referred to the living species *Erethizon dorsatum* (Linnaeus).

DESCRIPTION OF SPECIMEN

The right lower jaw with incisor, P_4-M_3 , No. 47106 (UMMP), The University of Michigan, Museum of Paleontology, is nearly complete (Fig. 2, and Pl. 1, Figs. 1 and 3). The coronoid process and most of the angle are missing. Most of the condyle has been lost. The dentition is that of an adult animal.

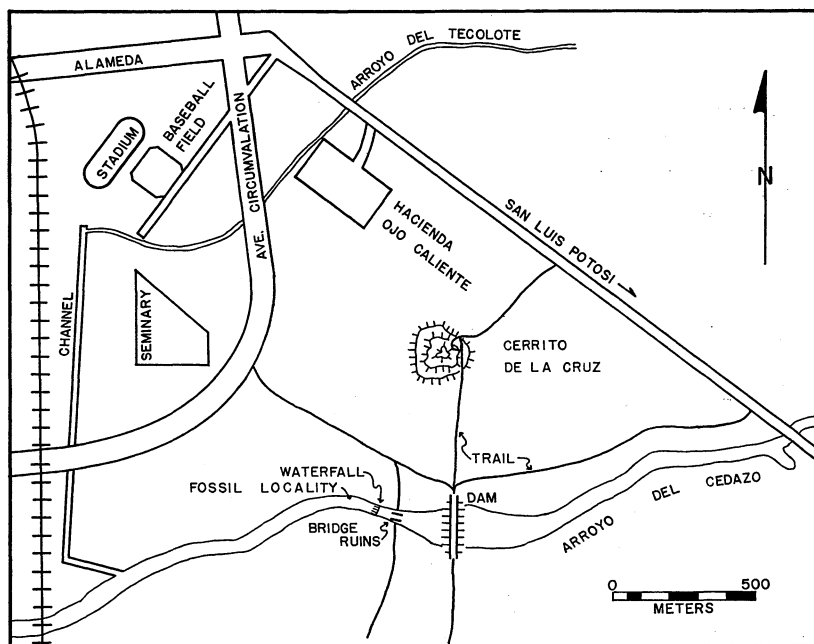


FIG. 1. Index map showing Arroyo del Cedazo region southeast of Aguascalientes, Mexico.

The lower jaw differs from that of *Erethizon bathygnathum* in that the ramus is not as deep and massive. The symphysis does not extend as far posteriorly as in *E. bathygnathum*. In the examination of 37 Recent adult specimens we did not find one with the symphyseal region as well developed as in the above species. Furthermore the P_4 of *E. bathygnathum* is noticeably wider. (See Table I for comparative measurements.) This character is most variable in Recent specimens.

We are convinced, after a study of the 37 pairs of Recent lower jaws and dentitions of *Erethizon dorsatum* which represent young adults (completely erupted P_4 , but not worn), adults, and old adults, that this species is probably one of the most variable rodents in North America. Only two

TABLE I

COMPARATIVE MEASUREMENTS (in millimeters) OF *Erethizon bathygnathum* WILSON, No. 13684, UNITED STATES NATIONAL MUSEUM AND *E. dorsatum*, No. 47106, THE UNIVERSITY OF MICHIGAN, MUSEUM OF PALEONTOLOGY

	USNM*	UMMP
	13684	47106
	(mm)	(mm)
Alveolar length of tooth row, P ₄ -M ₃	33.6(a)	30.8
Crown length of tooth row, P ₄ -M ₃	31.0
Crown length of tooth row, P ₄ -M ₂	22.5	23.5
P ₄ , anteroposterior length of crown	8.5	9.0
P ₄ , transverse width of crown	7.7	7.0
M ₁ , anteroposterior length of crown	7.2	7.0
M ₁ , transverse width of crown	7.1	6.8
M ₂ , anteroposterior length of crown	6.8	7.1
M ₂ , transverse width of crown	7.3	7.2
M ₃ , anteroposterior length of crown	7.0
M ₃ , transverse width of crown	6.9
Depth of jaw below M ₂ , labial side	19.5	15.6
Depth of jaw below anterior end of P ₄	24.3	23.0

* After Wilson (1935).

(a) Approximate.

minor characters of the fossil were observed that we could not duplicate in the Recent specimens. The fossa on the lateral surface and posterior border of the coronoid process for the insertion of *M. masseter medialis, pars posterior* is slightly deeper than observed in the Recent specimens. In the Recent specimens examined, it was found that the fossa was missing on immature and some very old adults. It varies from a shallow depression to one almost as deep as the fossa on the fossil jaw.

The base of the coronoid process of the fossil does not ascend as vertically as in the Recent specimens and therefore makes it possible to see the

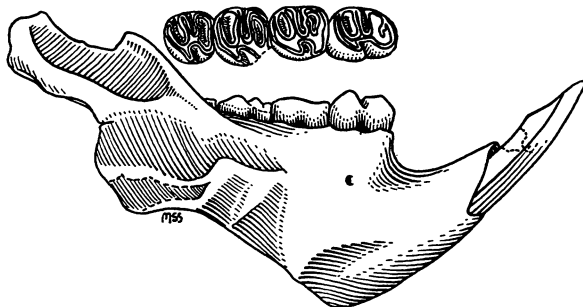


FIG. 2. *Erithizon dorsatum* (Linnaeus), No. 47106 UMMP, occlusal and lateral views of the right lower jaw, with incisor and P₄-M₃. × 1.

crowns of the teeth in lateral view. This condition does not show in Figure 2, since the jaw was rotated to bring the symphysis into view.

The tooth row is proportionally longer for the length of the jaw than observed in the adult and old adult Recent specimens. Because the tip of the condyle is missing, the length of the tooth row was compared with the distance from the posterior edge of the incisor alveolus to the dental foramen, which was 51.7 mm in the fossil specimen. Two young adults were found with shorter jaws in proportion to the length of the tooth row than in the fossil. In the majority of Recent specimens the jaw was found to increase with age, but because of the great individual variation observed, we believe a greater number of Recent specimens should be examined before this character would be considered as characteristic of the Mexican specimen.

It was found that the dental pattern of P_4 is most variable. On the P_4 of the fossil there is an enamel column extending upward from the anterofossettid (Black and Wood, 1956). The column (anteroconulid) is joined in part to the anterior wall of the anterofossettid, with wear and in the old adult pattern the anteroconulid will form a small re-entrant fold as observed in the dental pattern of *Erethizon bathygnathum*. This fold was observed on a number of the P_4 s of *E. dorsatum*.

There is no re-entrant valley on the lingual side opening into the metaflexid of P_4 . In Recent specimens there is generally a rather deep re-entrant lingual valley opening into the metaflexid. Only 4 of the 37 Recent specimens examined were found to have closed metaflexids and this condition was observed in young adult P_4 s.

Other variations worthy of note in the Recent P_4 pattern were, the presence of a styloid or cusplet in the hypoflexid of specimens Nos. 77933 and 815501 (UMMZ), The University of Michigan, Museum of Zoology, and the presence of a distinct enamel basin on the anterior lingual border of the anterofossettid of specimens Nos. 75917 and 105430 UMMZ. This parallels the development observed on the P_4 of *Cynomys* and *Marmota*.

The specimen from Mexico seems referable to the Recent species *Erethizon dorsatum* (for present distribution see Burt, 1964, p. 209). The slight differences observed are considered as individual variations within a most variable species.

AGE OF THE CEDAZO LOCAL FAUNA

The fauna is considered as Irvingtonian in age (Savage, 1951, p. 289). Irvingtonian faunas are those faunas that are post-*Plesippus* and *Nannippus* and characterized by the absence of *Bison*. From a detailed study of faunas

in North America we determine this time interval to include late Kansan and Yarmouth time. For an account of the associated vertebrates of the Cedazo local fauna one is referred to Mooser, 1959.

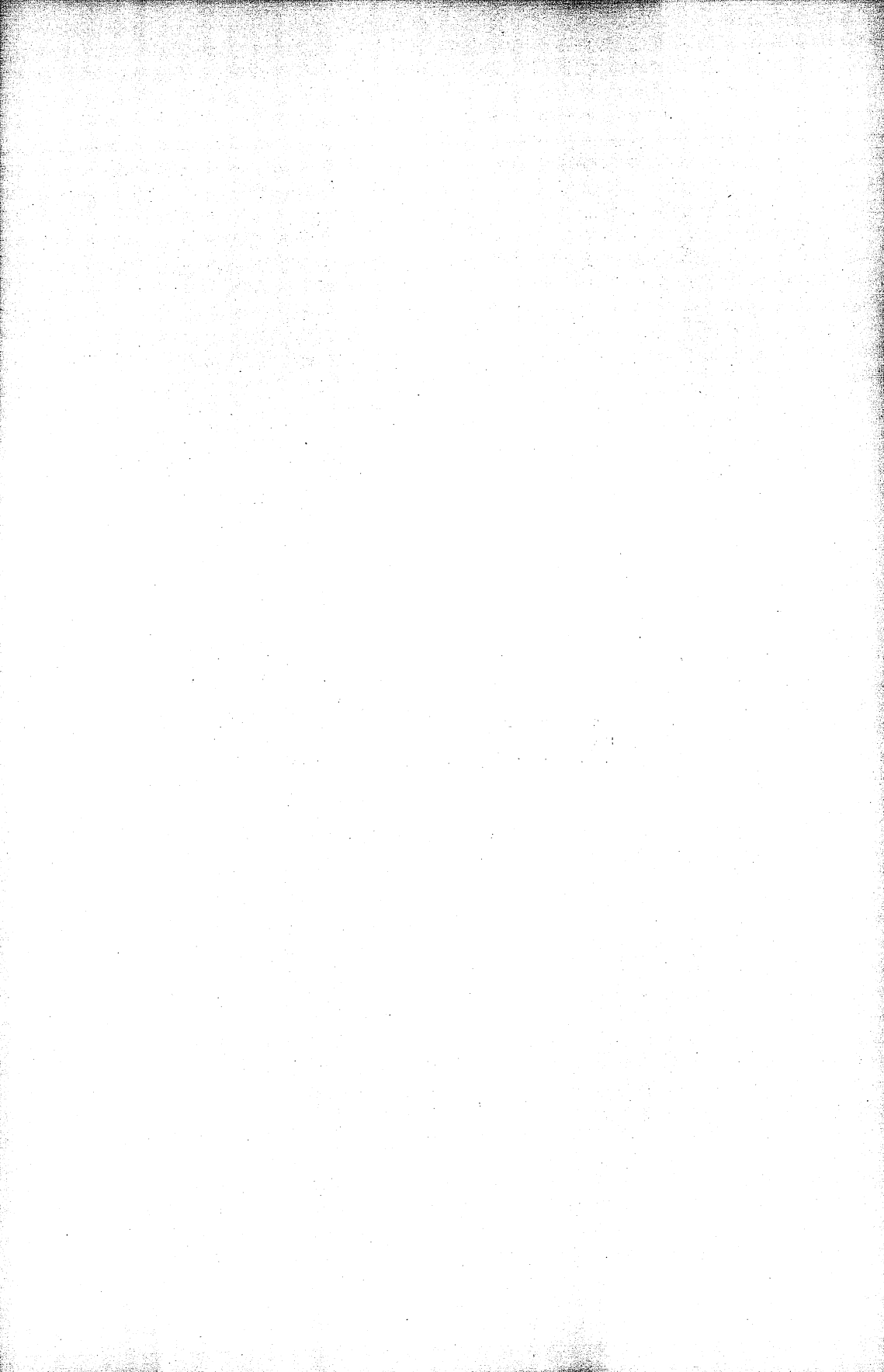
ACKNOWLEDGEMENTS

We wish to thank W. H. Burt and Emmet T. Hooper, The University of Michigan, Museum of Zoology for permission to study specimens under their care. The photographs of the lower jaw were made by Karoly Kutasi, preparator, Museum of Paleontology. Financial support for Holmes Semken, research assistant, and Margaret Skeels Stevens, artist, who worked on this project, was provided by the National Science Foundation (Project G-19458).

LITERATURE CITED

- BLACK, CRAIG C., and A. E. WOOD. 1956. Variation and Tooth-Replacement in a Miocene Mylagaulid Rodent. *Journ. Paleontol.*, Vol. 30, No. 3, pp. 672-84, 8 figs.
- BURT, W. H. 1964. *A Field Guide to the Mammals*. Boston: Houghton Mifflin Company.
- MOOSER, OSWALDO. 1959. La Fauna "Cedazo" Del Pleistoceno En Aguascalientes. *An. Inst. Biol. Mex.*, Vol. 29, Nos. 1 and 2, pp. 409-52, 29 figs.
- SAVAGE, DONALD E. 1951. Late Cenozoic Vertebrates of the San Francisco Bay Region. *Univ. Calif. Publ. Bull. Geol. Sci.*, Vol. 28, No. 10, pp. 215-314, 51 figs.
- WILSON, ROBERT W. 1935. A New Species of Porcupine from the Later Cenozoic of Idaho. *Journ. Mammal.*, Vol. 16, No. 3, pp. 220-21, 1 fig.

Manuscript Received June 14, 1963



PLATE

EXPLANATION OF PLATE I

- FIG. 1. *Erithizon dorsatum* (Linnaeus), No. 47106 UMMP, right lower jaw with incisor and P_4-M_3 , tooth-crown view. $\times 1$.
- FIG. 2. P_4-M_3 , No. 47106 UMMP, occlusal view. $\times 2$.
- FIG. 3. Right lower jaw. No. 47106 UMMP, labial view. $\times 1$.
- FIG. 4. Looking north at the right bank of Arroyo del Cedazo. Arrow shows the place where the fossil jaw was collected by Oswaldo Mooser.

PLATE I

