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## On a Notostylopid from the Paleocene of Itaborai, Brazil

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### INTRODUCTION

The present paper is the fifth preliminary report on fossil mammals from the Paleocene of São José de Itaborai, Brazil. The first four reports, dealing with the Marsupialia and the ungulates of the orders Notoungulata, Condylarthra, Litopterna, Xenungulata, and Astrapotheria, were published by the American Museum of Natural History in 1952 (see Paula Couto, 1952a, 1952b, 1952c, and 1952d).

Later field work and research on the material of the first collections showed that at least one group more, that of the Notoungulata Notostylopidae, is represented in the faunule.

Members of the family Notostylopidae are extremely rare or perhaps absent in the known Paleocene (Riochican) faunas of Patagonia. According to Simpson (1948, p. 171), "even in the latest Rio Chico faunule, where most of the genera and perhaps some species are the same as in the immediately following Casamayor, neither *Notostylops* nor a fore-runner has yet been found." Two specimens, one called *Seudenius cteronc* Simpson, from the Rio Chico of Cañadón Hondo, Patagonia, were referred with doubt to this family.

According to Simpson (1948) the definitely known members of the group are the following genera: *Notostylops* Ameghino, 1901; *Homalostylops* Ameghino, 1901; *Edvardo-trouessartia* Ameghino, 1901; and *Otronia* Roth, 1901. The first three genera are from the Casamayoran

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(lower Eocene), and the last one is from the Mustersan (upper Eocene) of Patagonia.

Among the materials from Itaborai, a fragment of right mandibular ramus, with the three molars, and six isolated upper molars are referable to a species of *Homalostylops*. This is thus the first surely known notostylopid in a pre-Casamayoran stage, namely, in the late Paleocene (Itaboraian, equivalent to the Riochican) of South America. The study of this form is the subject of this paper.

The following abbreviations are used to indicate the collections mentioned in the text:

M.A.C.N., Museo Argentino de Ciencias Naturales "Bernardino Rivadavia,"  
Buenos Aires

M.N.R.J., Museu Nacional do Rio de Janeiro

#### ACKNOWLEDGEMENTS

To Dr. Noemi Cattoi, in the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia," I want to acknowledge the opportunity which was given me to compare the material from Itaborai with the specimens of *Homalostylops parvus* in the collection of that museum (M.A.C.N. No. 10527, right  $P^2-M^3$  and left  $P^3-M^3$ ; M.A.C.N. No. 10534, left  $P_3-M_3$ ; M.A.C.N. No. 10468, incomplete mandible with the right  $I_3$ ,  $P_1-M_3$ , and the left  $I_2$ ,  $P_{3-4}$ ).

The Conselho Nacional de Pesquisas, Rio de Janeiro, deserves very special thanks for the valuable support given me in order to make possible full-time application to this research. The assistance received from the Conselho allowed me to increase considerably my production, and to illustrate my papers with good drawings which are the work of Mr. Ulisses Bastos Freitas, whom I also want to thank for his fine work.

ORDER NOTOUNGULATA ROTH, 1903

SUBORDER NOTIOPROGONIA SIMPSON, 1934

FAMILY NOTOSTYLOPIDAE AMEGHINO, 1897

*HOMALOSTYLOPS* AMEGHINO, 1901

*Homalostylops atavus*, new species

HOLOTYPE: M.N.R.J. No. 1992-V, posterior fragment of a right mandibular ramus with  $M_{1-3}$  preserved. Collected by Carlos de Paula Couto, 1949.

PARATYPES: M.N.R.J. No. 1990-V, two right upper molars. M.N.R.J. No. 2245-V, one right and three left upper molars. Same collector, 1949 and 1953, respectively.

HYPODIGM: The type and paratypes.

HORIZON AND LOCALITY: Upper Paleocene (Itaboraian=Riochican) from São José de Itaboraí, state of Rio de Janeiro, Brazil, about 14 miles northeast of Niterói, the capital of the state, and on approximately the same latitude as the city of Rio de Janeiro.

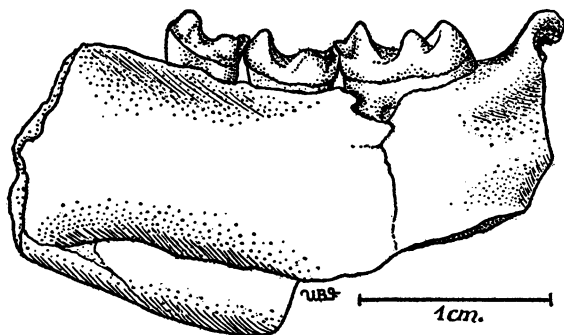


FIG. 1. *Homalostylops atavus*, new species. Partial right lower jaw with  $M_{1-3}$ , type (M.N.R.J. No. 1992-V). Internal side view.  $\times 5/2$ .

DIAGNOSIS: About one-third smaller than *Homalostylops parvus*. Lower molars similar in structure and proportions to those of the type species but trigonid relatively narrower and a little shorter. Upper molars as in the family but crochet from metaloph running forward and turning approximately at a right angle to the ectoloph and strongly denticulated when unworn.

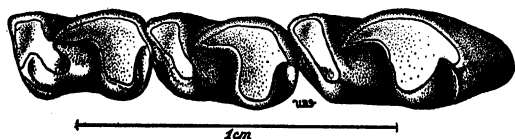


FIG. 2. *Homalostylops atavus*, new species. Right  $M_{1-3}$ , type (M.N.R.J. No. 1992-V). Crown view. Approximately  $\times 4$ .

*Homalostylops atavus* resembles in all its known characters, especially in its lower molars, the Casamayoran species of the same genus. It is the smallest species of the group and the earliest but is about as specialized as the Eocene species. *Homalostylops* is now the only notostylopid surely known from a pre-Eocene age in South America, and may be considered as an upper Paleocene ancestor of the later genera of the family, all known from the Eocene of Patagonia.

DESCRIPTION AND MEASUREMENTS: The only part of the right mandibular ramus preserved is the portion extending from the anterior alveolus

for  $P_4$  to the anterior part of the base of the coronoid process, just behind  $M_3$ . The lower border of the fragment is broken posteriorly to the middle part of  $M_2$ , and the articular portion is lacking completely.

$M_{1-3}$  are well preserved and in a median stage of wear.  $M_{1-2}$  are structurally similar and of about the same size. The trigonid is high and

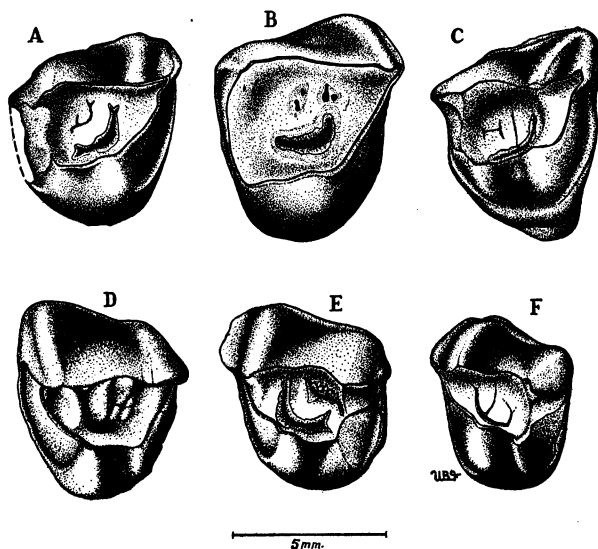


FIG. 3. *Homalostylops atavus*, new species. Three right (A, B, C) and three left (D, E, F) upper molars ( $M^1$  or  $2$ ), paratypes (M.N.R.J. No. 1990-V: A and B; M.N.R.J. No. 2245-V: C-F). Crown view. Approximately  $\times 4$ .

apparently a little more compressed anteroposteriorly than in *H. parvus*.  $M_3$  is the longest of the three lower molars, as a result of the greater lengthening of its talonid. The stage of wear of the molars does not permit observation of the presence or absence of the peculiar notostyloid median cuspule on the oblique transverse crest of the trigonid.  $M_{1-3}$  are all much longer than wide, as is the general rule for the group. They are relatively more compressed transversely than in the other groups of Eocene notoungulates.

The three right and the three left isolated upper molars attributed to this same species are clearly notostyloid in shape and structure. They are quadrangular, wider than long, with the ectoloph and the inner face strongly inclined inward and outward, respectively, the central area of the crown being shortened between the two walls. All the cuspidate structure is shallow, little salient, the crown being low and anteroposteriorly depressed in its central part which, when unworn, shows a group of small denticles. The denticles are particularly present on the crochet running

from the metaloph forward, the larger one constituting the part of the crochet which turns at a right angle to the middle part of the ectoloph. The protocone is slightly higher than the hypocone (or the postero-internal cusp) and is separated from it by a more or less sharp vertical sulcus. The paracone is the most developed of the cusps and is separated from the lower parastyle by a vertical depression. The outer wall (ectoloph) is high and flattened, with a very shallow depression between the paracone and the low metacone, which is about as high as the protocone. All the right upper molars make relatively good occlusion with the lower molars of the holotype. All the upper molars bear well-defined anterior and posterior cingula running from the tip of the parastyle and metastyle down to the antero- and postero-internal angles of the crown, respectively. A short and somewhat weak cingulum is commonly present on the base of the ectoloph, between the paracone and the metacone.

Measurements (in millimeters) of the type molars of *Homalostylops atavus*, new species, are:

|  | LENGTH        | WIDTH         |
|--|---------------|---------------|
| Holotype, M.N.R.J. No. 1992-V, incomplete right lower jaw with $M_{1-3}$ |               |               |
| $M_{1-3}$ . . . . .  | 16            | —             |
| $M_1$ . . . . .  | 4.4           | 3             |
| $M_2$ . . . . .  | 5             | 3             |
| $M_3$ . . . . .  | 6.3           | 3.1           |
| Paratypes, M.N.R.J. No. 1990-V, two right upper molars . . . . .         | 5, 5          | 5.1, 5.5      |
| Paratypes, M.N.R.J. No. 2245-V, one right and three left upper molars    |               |               |
| Right upper molar . . . . .  | 5 1           | 5.2           |
| Left upper molars . . . . .  | 5.2, 4.9, 4.5 | 5.1, 5.6, 5.8 |

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