

PLIO/PLEISTOCENE ELEPHANTID, EQUID AND
RHINOCEROTID REMAINS FROM DREDGING OPERATIONS
AT LINDEN AND MAREN-KESSEL (NOORD-BRABANT,
THE NETHERLANDS)

by

D. A. HOOIJER

Introduction

The specimens dealt with below belong to a private collection of Mr. J. de Wit at Grave, and were dredged over the past few years at Linden, N.E. of 's-Hertogenbosch along the river Meuse. I have also included an unworn molar fragment of *Mammuthus meridionalis* (Nesti) from a collection made at Linden in 1982 by Mr. A.J.C.E. Verhagen, amateur archaeologist at Empel, who passed it on to Mr. D.J. Mol, amateur palaeontologist at 's-Heerenberg. To Mr. Mol I also owe a metatarsal of *Equus hemionus* Pallas dredged at Maren-Kessel, N. of 's-Hertogenbosch also along the Meuse, from the collection made by Mr. Verhagen. Maren-Kessel dredged fossils have been reported upon by Erdbrink (1983a, b), viz., otters and a cat, and a hemimandible of *Panthera spelaea* (Goldfuss). The latter is evidently older than *Felis catus* L., which as a domestic animal could not be older than a few thousand years. The cannon bone of *Equus hemionus*, according to information received from Mr. Mol, came from a depth of 35 m, whereas the bones of otter, cat and cave lion described by Erdbrink were dredged at only 25 m below the local water table at Maren-Kessel. It is clear that the fossil specimens dredged at Linden and Maren-Kessel are of various ages, ranging from Pliocene to Late Pleistocene or even later. We lack stratigraphic control on this material, as we do on that from the North Sea bottom (Hooijer, 1984a, b, 1985). However, none of the species reported below is very common in The Netherlands, with the exception of the woolly rhinoceros dealt with last, and the material may, therefore, be placed on record. I am very grateful to the gentlemen listed above for allowing me to describe this material, and to Mr. H.J. Snaterse who made the photographs.

Mammuthus meridionalis (Nesti)

A very good specimen of *Mammuthus meridionalis* dredged at Linden in 1982 consists of two plates, unworn and hardly damaged, of an M^2 or M^3 (fig. 1). The full crown height is 96 mm, and the width 77 mm, giving a height/width index of 125. This is the index of the M^3 of the Montevarchi stage of *M. meridionalis* (Maglio, 1973: 57). The laminar frequency is 5, which is likewise typical of the Montevarchi stage but also of the Bacton stage in which the height/width index is, however, higher than that in the



Fig. 1. *Mammuthus meridionalis* (Nesti), M^2 or M^3 , Linden, Moll Collection, anterior view, $\times 1.0$.

Linden molar. This specimen is in the Mol Collection. There is also a large portion of an M_1 sin. of *M. meridionalis* from Linden in the De Wit Collection (fig. 2); it holds eight plates and the front talonid. The bases of the plates are there but their apices are incomplete although showing the median conelets (from two to four) flanked by lamellar lateral portions. The width, at the third plate from the front, is 59 mm; the more posteriorly placed plates are wider but cannot be exactly measured. The third plate from the back is 65 mm wide at least. The laminar frequency halfway up the height of the crown is 7 lingually and 8 buccally; 7½ for the molar as a whole. The present specimen is fully within the variation limits of the first lower molar of *M. meridionalis* as given by Maglio (1973: 58). Specimens such as these two from Linden may be safely dated at 2 to 1 million years, representing the Montevarchi and Bacton stages of *M. meridionalis*.

Elephas namadicus Falconer & Cautley

A molar portion in the De Wit Collection from Linden identified by Mr. A.M. Wouters, amateur archaeologist at Lent, represents *Elephas namadicus*. This species is younger than *M. meridionalis*, being Middle to Late Pleistocene whereas *M. meridionalis*

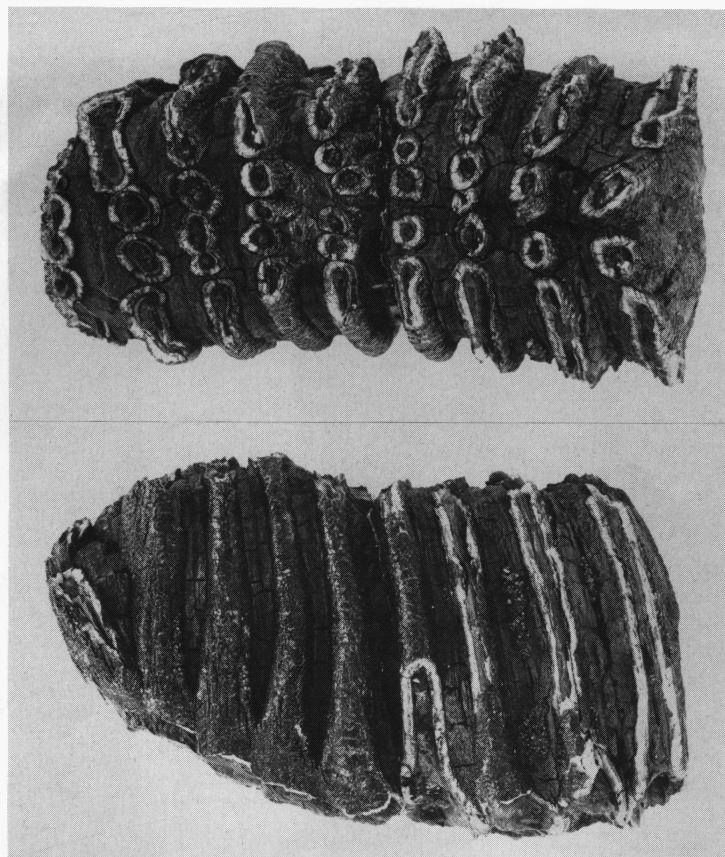


Fig. 2. *Mammuthus meridionalis* (Nesti), M₁ sin., Linden, De Wit Collection, crown view (above), buccal view (below), x ¾.

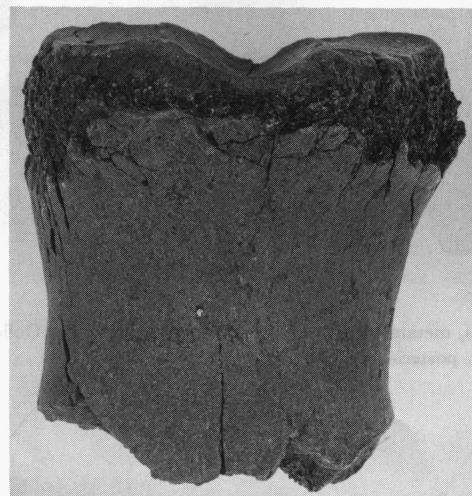


Fig. 3. *Equus bressanus* Viret, phalanx I, Linden, De Wit Collection, anterior view, x 1.0.



Fig. 4. *Equus hemionus* Pallas, metatarsal III sin., Maren-Kessel, Verhagen Collection, anterior view (left), lateral view (centre), posterior view (right), $\times 2/3$.

is Late Pliocene to Early Pleistocene (Maglio, 1973: 40, 56). The beginning of the Pleistocene is currently set at about 1.6 million years (Haq, Berggren & Van Couvering, 1977), and the boundaries for the Middle Pleistocene are set at about 700,000 years and 125,000 years (Butzer & Isaac, 1975).

Equus bressanus Viret

An incomplete first phalanx (fig. 3) from Linden has a proximal width of ca. 68 mm and a least shaft width of 47 mm. In these dimensions it agrees well and only with the first phalanges of *Equus bressanus* from Chagny (69 and 47.2 mm: Viret, 1954: 149, 150), Late Pliocene, coeval with the Montevarchi stage of *M. meridionalis*.

Equus hemionus Pallas

A left metatarsal from Maren-Kessel (fig. 4) is shorter than that of *Equus hydruntinus* Regalia, the "European ass" widespread in continental Europe and recently reported from the Brown Ridge area in the North Sea (Hooijer, 1984b, 1985). It is one of the few records of *Equus hemionus* from the Pleistocene of Europe (Dietrich, 1959; Hooijer, 1984b), within the limits of *Equus hemionus* as given by Eisenmann (1979: 881) although of minimum length for that species (see table 1).

	Maren-Kessel	After Eisenmann (1979)
Greatest length	230	230-272
Proximal width	40.5	37-43
Proximal ant. post. diameter	36	33-39
Mid-shaft width	26	23-27
Ant. post. diam., same level	23.5	24-27
Distal epicondyle width	35.5	35.5-41
Distal trochlea width	38	35-41.5
Distal keel, ant. post. diam.	29	27-33
Ratio length/mid-width	8.8	-

Table 1. Measurements of metatarsal III of *Equus hemionus* Pallas (in mm).

Dicerorhinus jeanvireti Guérin c.q. *Dicerorhinus etruscus* (Falconer)

An M² dext. wanting the internal portion, with thoroughly black enamel, has an ectoloph length of 56 mm, which is within the limits of both *D. jeanvireti* and *D. etruscus* (51.5-55.5 mm and 45.5-56 mm: Guérin, 1972: 67). The medifossette is not closed, the crista barely indicated, the crochet well developed (fig. 5). An equally black, very slightly worn M₂ dext., length 44 mm, width 28 mm, is within the limits of this element in both species (Guérin, 1972: 70). *D. jeanvireti* is a Pliocene species reported from Viallette and other Early Villafranchian sites in France that probably also occurs in the "black bones" fauna of the Schelde estuary (Hooijer, 1981). The slightly later *D. etruscus* is Early Pleistocene.



Fig. 5. *Dicerorhinus jeanvireti* Guérin c.q. *D. etruscus* (Falconer), M^2 dext., Linden, De Wit Collection, crown view, $\times 1.0$.



Fig. 6. *Coelodonta antiquitatis* (Blumenbach), metacarpal IV dext., Linden, De Wit Collection, anterior view, $\times \frac{3}{4}$.

Coelodonta antiquitatis (Blumenbach)

This, the woolly rhinoceros, of the Middle and Late Pleistocene, is represented by an entire metacarpal IV dext. with a length of 130 mm, too short for either *D. jeanvireti* or *D. etruscus* but agreeing with the fourth metacarpal of *C. antiquitatis* (length 126.5-176.5 mm: Guérin, 1980: 709, cf. 556). The specimen is shown in fig. 6.

SUMMARY

Specimens obtained from dredging operations at Linden and Maren-Kessel in Noord-Brabant, The Netherlands, are of various ages, from Pliocene to Late Pleistocene, and represent *Mammuthus meridionalis*, *Elephas namadicus*, *Equus bressanus*, *Equus hemionus*, *Dicerorhinus jeanvireti* c.q. *etruscus*, and *Coelodonta antiquitatis*.

SAMENVATTING

Plio/Pleistocene olifanten-, paarden- en neushoornresten, opgedregd te Linden en Maren-Kessel in Noord-Brabant

Kiezen en beenderen van bovengenoemde vindplaatsen bleken tot de volgende soorten te behoren: *Mammuthus meridionalis*, *Elephas namadicus*, *Equus bressanus*, *Equus hemionus*, *Dicerorhinus jeanvireti* c.q. *etruscus* en *Coelodonta antiquitatis*.

REFERENCES

BUTZER, K.W. & G.L. ISAAC, 1975. Delimitation of the geological term "Middle Pleistocene": 901-903. In: K.W. BUTZER & G.L. ISAAC (editors). After the Australopithecines. Mouton, The Hague.

DIETRICH, W.O., 1959. Hemionus Pallas im Pleistozän von Berlin. — Vertebrata Palasiatica, 3: 13-22.

EISENMANN, V., 1979. Les métapodes d'*Equus* sensu lato (Mammalia, Perissodactyla). — Géobios, 12: 863-886.

ERDBRINK, D.P. BOSSCHA, 1983a. Fossil otters and a fossil cat from flatlands of the Lower Meuse. — Lutra, 26: 46-53.

ERDBRINK, D.P. BOSSCHA, 1983b. Still more cave lion remains. — Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen, B86: 113-123.

GUÉRIN, C., 1972. Une nouvelle espèce de rhinocéros (Mammalia, Perissodactyla) à Viallette (Haute-Loire, France) et dans d'autres gisements du Villafranchien inférieur européen: *Dicerorhinus jeanvireti* n. sp. — Documents des Laboratoires de Géologie de la Faculté des Sciences de Lyon, 49: 53-150.

GUÉRIN, C., 1980. Les rhinocéros (Mammalia, Perissodactyla) du Miocène Terminal au Pléistocène Supérieur en Europe occidentale. Comparaison avec les espèces actuelles. — Documents des Laboratoires de Géologie Lyon, 79 (2): 423-783.

HAQ, B.U., W.A. BERGGREN & J.A. VAN COUVERING, 1977. Corrected age of the Pliocene/ Pleistocene boundary. — Nature, 269: 483-488.

HOOIJER, D.A., 1981. The first rhinocerotid of the Pretiglian "black bones" fauna from The Netherlands. — Netherlands Journal of Zoology, 31: 472-475.

HOOIJER, D.A., 1984a. *Mammuthus meridionalis* (Nesti) and *M. armeniacus* (Falconer) from the North Sea. — Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen, B87: 335-359.

HOOIJER, D.A., 1984b. A Pleistocene ass *Equus asinus* L. subsp. from the North Sea between Britain and The Netherlands. — Lutra, 27: 193-202.

HOOIJER, D.A., 1985. A further note on the fossil Anglo-Dutch ass from the North Sea. — Lutra, 28: 26-30.

MAGLIO, V.J., 1973. Origin and evolution of the Elephantidae. — Transactions of the American Philosophical Society, N.S., 63 (3): 1-149.

VIRET, J., 1954. Le loess à bancs durcis de Saint-Vallier (Drôme) et sa faune de mammifères villafrançais. — Nouvelles Archives du Muséum d'Histoire Naturelle de Lyon, 4: 1-200.