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A HOLOCENE MOLLUSC FAUNULE FROM A TEMPORARY EXCAVATION NEAR STANDDAARBUITEN (THE NETHERLANDS, PROVINCE OF NOORD BRABANT)

by

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A lithological description of sediments of Holocene and Pleistocene age (Duinkerke III Deposits, Holland Peat and Twente Formation) is given and a small mollusc fauna from the Duinkerke III Deposits is evaluated. The common occurrence of the gastropod *Odostomia (O.)* aff. *plicata* (Montagu, 1803) is surprising. It is the first time that this species is reported from the Dutch Holocene deposits.

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Contents:

INTRODUCTION

In May 1977 participants of a W.T.K.G.-fieldtrip happened to find a small temporary excavation near the village of Standdaarbuiten in the Dutch province of Noord Brabant. This excavation was made for the construction of a cycle tunnel below the river Dintel. I am grateful to Mr J. G. M. Raven (Leidschendam) who informed me about the existance of this interesting outcrop.

LOCATION

The construction-pit was located about 1 km WSW of the village of Standdaarbuiten, municipality of Oud- en Nieuw-Gastel, coordinates X = 93.600 Y = 402.700, about 100 m W of the A 17 motorway, close to the 'Stampersgat' exit, on the left bank of the river Dintel; map-sheet 43H.

DESCRIPTION OF SEDIMENTS

On 15 May 1977 the following section was measured (Janssen, 1977):

0.00 - 1.00 m dark brownish clay, with brick fragments at its base.

1.00 - 1.45 m alternating horizontal sand and clay streaks, dark greyish brown; in its middle part a 5cm thick level of very soapy, crumbling, light yellowish brown clay.

1.45 - 2.90 m (locally considerably thicker, where the peat layer below is reduced as a result of erosion) very clayey sand, dark grey; in its lower part with vague, higher with obvious horizontal lamination; in the basal 0.75 m many mollusc remains (double-valved shells of Bivalvia: *Scrobicularia, Cerastoderma*). Upper 0.50 m with very much black humus in streaks.

2.90 - 3.85 m dark brown to black, compact peat, especially in the lower part many coarse, horizontally embedded roots. Locally very thin sand streaks and pockets. In the upper 0.30 m lumps of very sandy clay, with obvious non-horizontal structures (reworked). The peat layer is strongly attacked by erosion.

3.85 - 4.35 m rather fine, only very little clayey quartz sand, with a rather high to high content of humus, causing alternating light to dark brown horizontal banding; many roots.

4.35 - 4.55 m fine to rather fine, light greyish brown quartz sand with a few lumps of clay derived from the level below; many roots.

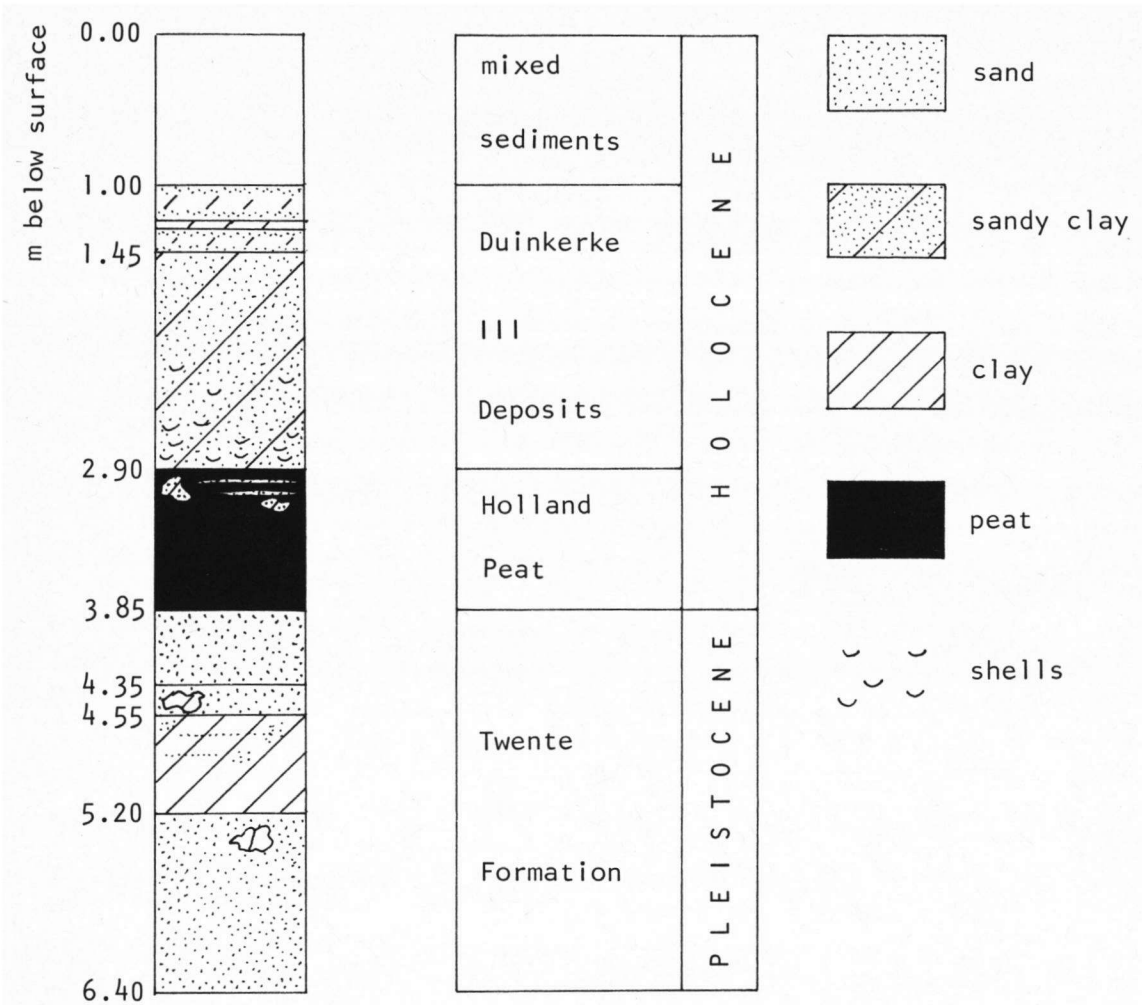
4.55 - 5.20 m dark bluish green clay, rather sandy, with many roots, upwards lighter in colour to light greenish grey in the uppermost parts; with pockets and lenses of sand, consisting of light brownish grey, fine to rather fine quartz sand.

5.20 - 6.40 m rather fine, greyish green sand, laminated and cross-bedded with pure white quartz sand. Near the top the structures are less obvious and irregular lumps of dark bluish green clay are present.

6.40 m base of section about 1 m above deepest part of excavation.

Interpretation - 0.00 - 1.00 m Holocene, mixed sediments
1.00 - 2.90 m Holocene, Duinkerke III Deposits
2.90 - 3.85 m Holocene, Holland Peat
3.85 - 6.40 m Pleistocene, Twente Formation.

This stratigraphical interpretation is largely after the explication to mapsheet 43 East (Willemstad) of the Geological Map of the Netherlands (Verbraeck & Bisschops, 1971). According to this map the present section belongs to the profile type FO.3b (Duinkerke III Deposits on Hol-



Text-fig. 1. Lithology and stratigraphical interpretation of sediments exposed in a temporary excavation near Standdaarbuiten, municipality of Oud- en Nieuw-Gastel.

land Peat on Pleistocene). Judging from their section LL' the Pleistocene deposits belong to the Twente Formation. The clay present in the section between 4.55 and 5.20 m below surface might be the 'loam-layer' mentioned on p. 44. This layer, however, should separate finer and coarser sediments which seems not to be the case in the present section. A schematical representation of the section is given in text-fig. 1.

THE MOLLUSC FAUNA FROM THE DUINKERKE III DEPOSITS

A sediment sample of about 40 kg from the basal, shell-bearing part of the Duinkerke III Deposits (2.15 - 2.90 m below surface) was collected and washed for an inspection of the fossil content.

The sediment was dried and subsequently desintegrated in hot water. Washing was done on a 0.4 mm mesh. The residue was dried and sieved in fractions. Each fraction was analyzed qualitatively.

The following fossils were present:

Mollusca:	
Mytilus (Mytilus) edulis Linné, 1758 (pl. 1, fig. 1)	- 20/2 very juvenile
Mysella (Mysella) bidentata (Montagu, 1803)	- 3/2
Cerastoderma glaucum (Poiret, 1789)	- rather many
Macoma (Macoma) balthica (Linné, 1758)	- 2/1, 13/2
Scrobicularia plana (Da Costa, 1778) (pl. 1, fig. 2)	- 7/1, 18/2
Abra (Abra) tenuis (Montagu, 1803) (pl. 1, fig. 3)	- many
Littorina (Algaroda) littorea (Linné, 1758) (pl. 1, fig. 4)	- 1 def., 3 juv.
Littorina (Littorinivaga) saxatilis (Olivi, 1792) (pl. 1, fig. 5-6)	- many
Peringia ulvae (Pennant, 1777) (pl. 1, fig. 8)	- many
Hydrobia ventrosa (Montagu, 1803) (pl. 1, fig. 7)	- rather many
Rissoa (Rissostomia) membranacea (Adams, 1800) (pl. 1, fig. 9)	- 14
Odostomia (Odostomia) aff. *plicata* (Montagu, 1803) (text-fig. 2)	- rather many
Retusa (Retusa) obtusa (Montagu, 1803) (pl. 1, fig. 10)	- rather many
Bryozoa:	
encrusting species	- 2 fragments
Crustacea, Decapoda:	
crab (pincers)	- 2 fragments

In the finer fractions many foraminifers and ostracodes are present. All fractions contain many plant remains.

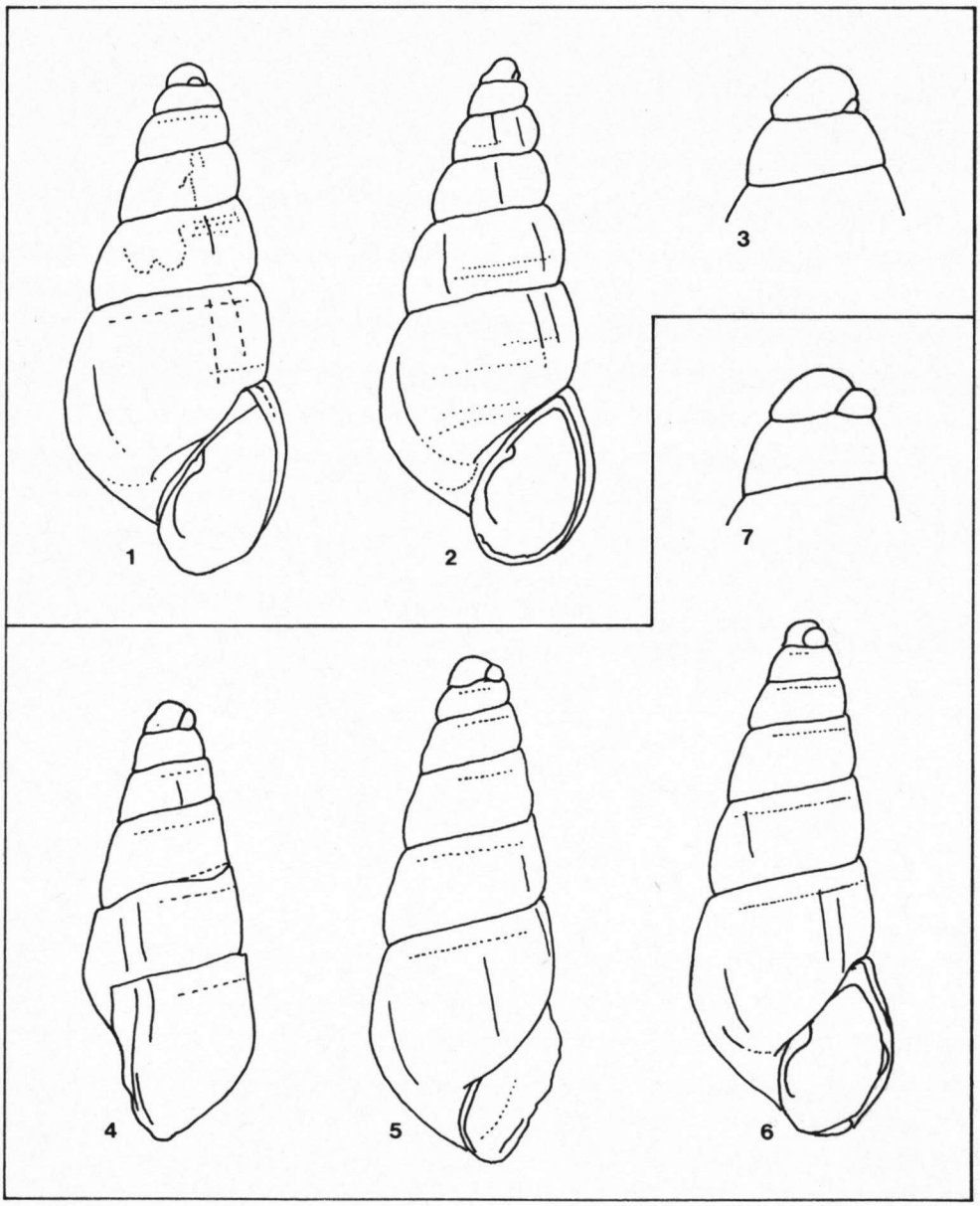
All specimens are kept in the collections of the Rijksmuseum van Geologie en Mineralogie, Leiden (RGM 221 324 - 221 344).

ECOLOGY

Reworking of fossils from older deposits can not be demonstrated. Still, the thanatocoenosis has to be regarded as composite, as there are obvious differences in shell preservation. The material of *Scrobicularia plana*, for instance, can easily be separated in two preservation types: one of these with slightly bluish and excellently preserved shells, and the other with dull-white, calcareous shells. Also among the second type, however, double-valved specimens are present. In some gastropods, especially in *Peringia ulvae*, the shells were attacked by some chemical corrosion. May be the material was partly subjected to horizontal transportation.

The common species in this sample clearly indicate a muddy, low-energetic, intertidal environment. Presumably some vegetation will have been present (*Zostera* ?).

The occurrence of *Cerastoderma glaucum* is somewhat unexpected. In the Recent fauna this species avoids open marine environments (it is absent for instance in the Dutch Wadden Sea!) and distinctly prefers sheltered areas. It seems that its distribution pattern is more influenced by the degree of water movement than by the clorinity. The present specimens did not live in very favourable conditions, as the largest specimens reach only 18 mm in length. Still, their presence indicates very quiet water. The chlorinity may have been slightly reduced, as is also indicated by the presence of small, rather thin-shelled specimens of *Littorina 'saxatilis'*.



Text-fig. 2. *Odostomia (Odostomia)* aff. *plicata* (Montagu, 1803). Holocene, Duinkerke III Deposits, Standdaarbuiten, 2.15-2.90 m below surface (figs. 1-3), RGM 221 339.
Odostomia (Odostomia) plicata (Montagu, 1803). Recent, Torquay (England, Devon), leg./don. J. J. van Aartsen (figs. 4-7, 5 and 6 different views of same specimen), RGM 224 941.
Magnifications: figs. 3 and 7 x50, other figs. x25.

The juvenile specimens of *Mytilus edulis* and may be also the specimens of *Mysella bidentata* are probably allochthonous faunal components. The former were probably brought in by currents as planktonic larvae.

continued on p. 36

EXPLANATION OF PLATE 1

All specimens from a temporary excavation near Standdaarbuiten, municipality of Oud- en Nieuw-Gastel. Holocene, Duinkerke III Deposits, 2.15-2.90 m below surface.

1. *Mytilus (Mytilus) edulis* Linné, 1758
   Left valve, juvenile, x 25.

2. *Scrobicularia plana* (Da Costa, 1778)
   Left valve, juvenile, x 6.

3. *Abra (Abra) tenuis* (Montagu, 1803)
   Left valve, x 6.

4. *Littorina (Algaroda) littorea* (Linné, 1758)
   Juvenile, x 25.

5. *Littorina (Littorinivaga) saxatilis* (Olivi, 1792)
   Juvenile, x 25.

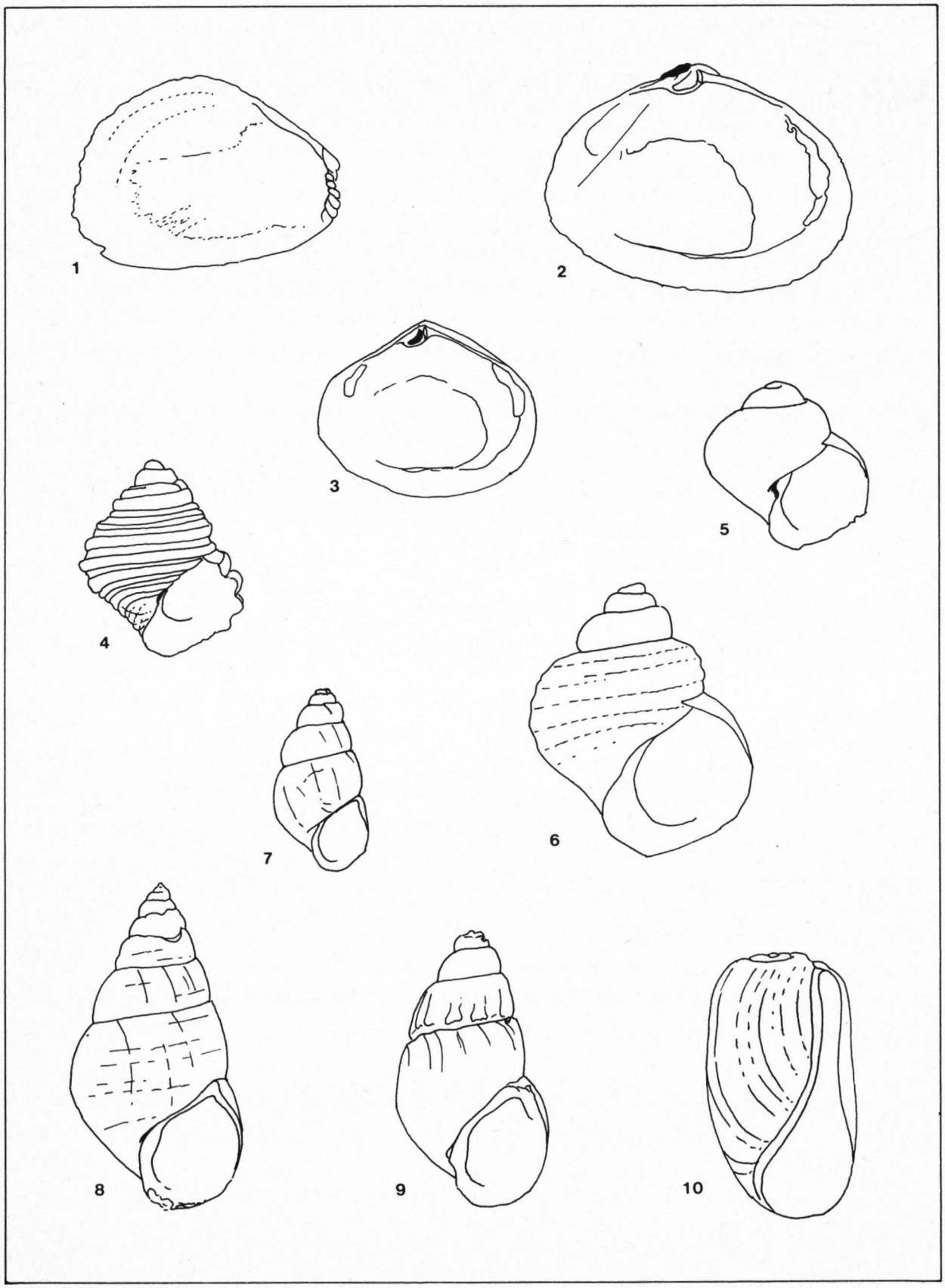
6. dto, x 12.

7. *Hydrobia ventrosa* (Montagu, 1803)
   x 12.

8. *Peringia ulvae* (Pennant, 1777)
   x 12.

9. *Rissoa (Rissostomia) membranacea* (Adams, 1800)
   x 12.

10. *Retusa (Retusa) obtusa* (Montagu, 1803)
    x 12.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SOME REMARKS ON *ODOSTOMIA (ODOSTOMIA)* AFF. *PLICATA*

Disregarding the fact that identification of *Odostomia* species usually offers quite a lot of difficulties it must be admitted that the representatives of this genus in the present sample succeeded in concealing their real identity up to now.

Supposing these specimens belong to *O. plicata* I asked Mr J. J. van Aartsen (Dieren), who specialises on the Recent Entomotaeniata, for comments. He drew my attention to several differences between the shells under concern and Recent western European specimens of *plicata*. The latter show obvious differences in their embryonic whorls (compare text-fig. 2), have less convex whorls and a narrower umbilicus. Still, in spite of these differences, the material cannot be linked up with any other Recent odostomiid species. Therefore it is mentioned in open nomenclature here.

Recent *O. plicata* is known to occur together with the annelid worm *Pomatoceros* (Turk, 1973, p. 36). Calcareous tubes of this species were absent in the residues, so it is very likely that the specimens from Standdaarbuiten were associated with some other species, which might have been an annelid as well, but not having calcareous tubes.

As far as I know *O. plicata* has never been reported from the Dutch Holocene deposits.

ACKNOWLEDGEMENTS

I am grateful to Mrs E. Janssen-Kruit for her assistance during the field work. Furthermore I thank Mr J. J. van Aartsen for his remarks on the *Odostomia*-material and for Recent specimens of *O. plicata*. Mr T. Meijer (Rijks Geologische Dienst, Haarlem) gave his opinion on the *Hydrobia*-specimens. Finally, thanks are due to Mr J. G. M. Raven for his information about the existance of the excavation.

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