Altenaeum nortoni nov. gen. nov. spec. (Lamellibranchia: Condylocardiidae) from the Pleistocene of the southern North Sea Basin

by

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In 1962 Dr. P.E.P. Norton, at that time investigating the fossil Mollusca of the Royal Society Borehole at Ludham, East Anglia, at the University of Cambridge, handed me two right valves of a very small bivalve shell, which he was unable to identify. I myself was not able to classify the valves with any known genus either.

Later on the Geological Survey of the Netherlands started intensive investigations of the so-called Dutch Continental Shelf of the North Sea, which investigations were also extended to the Strait of Dover. Many borings were made and many bottom samples were taken from the surface of the seabottom over the whole area investigated. A large number of these borings and bottom samples were examined for molluscs by the author and his assistants, especially Miss Nettie Deen. To my astonishment many valves of the unknown species of the Ludham borehole were found to be present in the samples investigated, many of them very fresh-looking, with vitreously transparent shells.

Finally, just before this unknown species had been described, the author was shown a right valve, found in a sample of *Pisidium* from a boring at Brielle in the Netherlands by Mr. J.G.J. Kuiper at Paris. The sample of *Pisidium* was sent to him for identification by Mr. W.J. Kuijper at The Hague, who examines the results of this boring for fossil non-marine shells.

When also left valves were found, it appeared that the species very much resembles *Glibertia prosperi* Van der Meulen, 1951. The hinge, however, is different. After sending the unknown species to several experts on molluscs, I found that it belongs to an undescribed genus in the family Condylocardiidae.

I dedicate the genus to Dr. C.O. van Regteren Altena, the retiring curator of the department of Mollusca of the Rijksmuseum van Natuurlijke Historie at Leiden. The species I dedicate to Dr. P.E.P. Norton, who found the first specimens of *Altenaeum nortoni.*

Altenaeum nov. gen.

Shell very small, egg-shaped, with a very big, distinct prodissoconch, which is placed very close to the posterior margin and which does not project over the dorsal margin. Outer surface covered by very fine, rather regular, concentric ribs. Shell integripalliate. Adductor scars situated very high in the shell. Hinge with an internal ligament in a triangular resilium pit. Both valves with two cardinal and two lateral teeth. Hinge formula according to Van der Meulen, (1951) for both valves: 101 R 101.

Type species *Altenaeum nortoni* nov. spec.

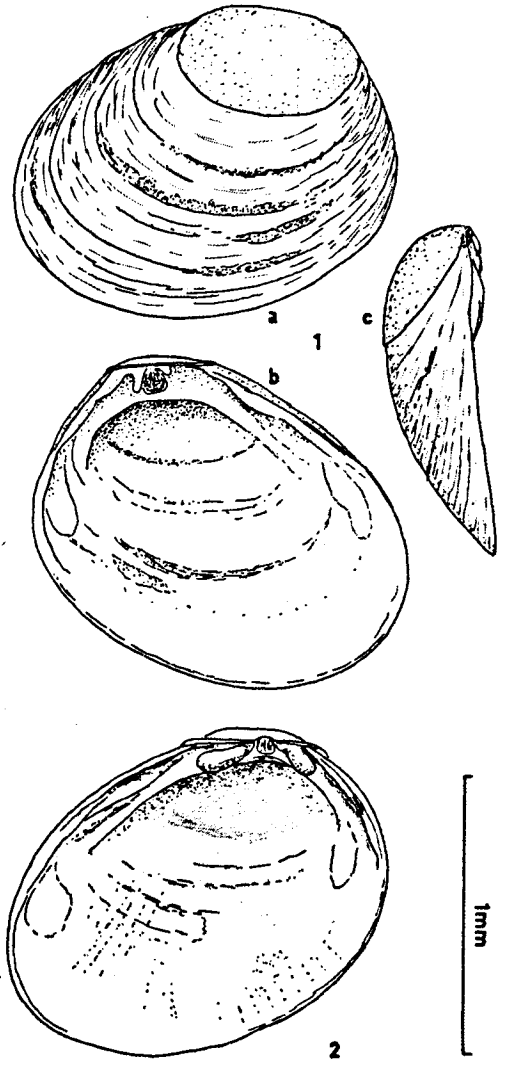
Altenaeum nortoni nov. spec.

Shell very small, rather convex, rather tumid, softly shining, egg-shaped in outline, with its beak very close to the posterior margin. Prodissoconch very large, occupying 1/3 of the total length of the shell, smooth, with a finely granulated surface, depressed to weakly convex, with a stretched dorsal margin, of which the edges protrude a little beyond the general outline of the valve. The prodissoconch is placed obliquely with respect to the direction of the imaginary line connecting the anterior with the posterior ends of the shell; this line lies in the middle of the valve. Except for the prodissoconch, the outer shell surface has very fine irregular concentric ribs and some lines of growth. The shell is integripalliate; inner surface finely granulated and vitreously transparent when fresh. Very fine, faint superficial grooves radiating from the beak may be present. The pallial line and the adductor scars lie very high on the shell, the scars even above the imaginary midline. Adductor scars and pallial line are mostly very faint or completely invisible.

In the upper part of the interior there is a strong ridge. It starts near the posterior adductor scar, runs alongs the dorsal border with a strong curve at the postero-dorsal edge. Then, after passing the cardinal teeth, the ridge leaves the upper border and the hinge and runs in the direction of the anterior adductor scar, but fades away rather suddenly before reaching it. Between this ridge and the antero-lateral tooth a broad groove is present. There is a cavity behind the ridge on the inside of the prodissoconch.

The hinge lies partly on the ridge, described above. The resilium pit is well-marked and triangular, impressed in the ridge; it does not reach the lower edge of the ridge, while its top penetrates into the straight upper edge of the central part of the hinge. In a number of valves from the North Sea remnants of the ligament are still present.

In the left valve the resilium pit is bordered by two cardinal teeth.



Figs. 1-2. *Altenaeum nortoni* nov. gen. nov. spec. 1. Holotype, left valve (a-c three different views). 2. Paratype 1, right valve (both Geological Survey of the Netherlands).

The anterior one is poorly developed, it lies very high against the straight upper edge and against the resilium pit. The posterior tooth is better developed; it is knob-like to rather long and reaches halfway down the inner ridge. The long postero-lateral tooth originates very close to this tooth. A little excavated space is present in front of the antero-cardinal tooth. On this point the inner ridge leaves the upper border and the hinge. The antero-lateral tooth is situated in front of the excavated space. Both lateral teeth are best developed near the central part of the hinge and they run out into a rather narrow straight ridge on the edge of the valve. Between these lateral teeth and the outermost border of the valve a narrow groove is present, into which the lateralia of the right valve fit. The angle of the two lateralia is about 100°.

In the right valve two very strong cardinal teeth border the resilium pit. The anterior one is comparatively massive, while the posterior one is less massive and half as long as the anterior one. However, they are often nearly equal in size. The angle between the cardinalia is about 90°. The posterior and the anterior lateral teeth both have their origin above the cardinal teeth; the lateral teeth are narrow and are situated on the outermost dorsal border of the valve. On the inside they are sharply bordered by a well-marked narrow groove, in which the lateralia of the left valve fit.

The borders of the valves are smooth, rather thick and not sharply edged. A groove as present in *Glibertia prosperi* does not occur in the new species.

When fresh the shell has broad, irregular, concentric, white colour bands on the outer surface. On the inside they are easily observed through the vitreous shell. Often small, irregular, short, radial striae are visible between the concentric bands. Scattered perforations are also present; these give the impression of fine, white dots. The prodissoconch is always colourless and transparent when the shell is fresh; this makes the prodissoconch particularly conspicuous. When worn the shell is entirely opaque and white.

Holotype, left valve, length 1.44 mm, height 1.14 mm, thickness 0.40 mm. Type locality: boring 71GD19, North Sea, Brown Bank, 95 km off the coast of North Holland, 52°36′02″N. 03°11′03″E., 7.00-8.00 metres below surface of bottom. Geological age: Eemian.

Paratype 1, right valve, length 1.44 mm, height 1.14 mm, thickness 0.36 mm. Same data.

Paratypes. North Sea, 94 valves from the sea bottom to 11 metres below the surface of the bottom. The area, in which *Altenaeum*

nortoni is found, lies between 51°17'12" and 54°10'00"N. and 01°51'14" and 03°40'00"E. Geological age: Eemian, Holocene and probably Recent. Only single valves have been found. Netherlands, boring 37D1-23 at Brielle, depth 39.00-40.00 metres. Geological age: Eemian, or a little older. This paratype, a single valve, is in the Rijksmuseum van Geologie en Mineralogie, Leiden (RGM 11941). England, Royal Society Borehole at Ludham, East Anglia, depth 129½ feet (=39,47 metres). Geological age: Ludhamian, zone L.M.2m to be correlated with the Dutch Tiglian Tc1-4b, in which also the top of the so-called Dutch "marine Icenian" lies. Both valves are in the collection of Dr. P.E.P. Norton, Department of Zoology, University of Glasgow.

Holotype, paratype 1 and most paratypes of the North Sea are in the collections of the department of macropalaeontology of the Geological Survey, Haarlem. Paratypes from the North Sea will be deposited in the following museums: Rijksmuseum van Natuurlijke Historie, Leiden; Rijksmuseum van Geologie en Mineralogie, Leiden; Zoölogisch Museum, Amsterdam; Institut Royal des Sciences Naturelles de Belgique, Brussels; British Museum (Natural History), London; Royal Scottish Museum, Edinburgh; Universitetets Zoologiske Museum Copenhagen. Each museum will receive at least two right and two left valves. Some valves are also deposited in the collection of Dr. F. Nordsieck, Haan, Germany.

I wish to express my thanks to Dr. J.D. Taylor, British Museum (Natural History), London, Dr. F. Nordsieck, Haan, Dr. C.O. van Regteren Altena, Leiden, for their help in comparing this species with material in their collections, Dr. P.E.P. Norton, Glasgow and Mr. A.W. Janssen, Leiden, for the loan of the fossil English and Dutch paratypes and Mr. J.G.J. Kuiper, Paris, for his information, miss Nettie Deen for her enthusiastic collaboration during the North Sea investigations, and Mr. J.H. Molijn for his kind linguistic assistance.

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