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Notes on some Nuculacea and Arcacea from the Neogene and Lower Pleistocene of the Netherlands

by

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The following notes result from the study of specimens from well borings earlier recorded by HEERING and of material from shell beds in the bottom of the Westerschelde worked by a sand-dredger for lime factories. The stratigraphic horizon from which the latter fossils have been derived is uncertain. Hitherto Eocene (Lutetian), Oligocene (Rupelian), Upper Miocene to Lower Pleistocene (Anversian-Icenian), Upper Pleistocene (Eemian) and Recent species have been found in this material. The bulk of the fossil species, however, come from the Anversian to Icenian.

In the synonymies an asterisk indicates what I consider the valid name of the species.

To all the persons who helped by giving access to collections, sending specimens on loan, and providing useful information, I wish to express my gratitude in this place.

Portlandia intermedia (M. Sars)

- 1859 *Yoldia intermedia* Sars, Forh. Videnskabs-Selsk. Christiania, Aar 1858, p. 57 (nom. nud., Varangerfjord near Vadsö, 100 fathoms).
*1865 *Yoldia intermedia* Sars, Om de i Norge forekommende fossile Dyrelvninger fra Kvartaerperioden, p. 38, pl. 3 figs. 92-96 († Trondhjem; Recent Vadsö, 100 fathoms).
1950 *Portlandia arctica* [non] (Gray), Heering, Meded. Geol. Sticht. (C), IV-1-no. 9, p. 22, pl. 8 figs. 24, 25; pl. 9 figs. 7, 8 (references excluded, Icenian, the Netherlands).

The specimens identified as *Portlandia arctica* by HEERING proved to belong to this species. Compared with young *P. arctica* (Gray) of the same size they appear to be relatively less high, more convex, and less truncate and carinate posteriorly. G. O. SARS (1878, Moll.

Reg. Arctic. Norv., p. 38) gives a maximum length of 12 mm for Norwegian specimens, but OCKELMANN (1958, Medd. Grönland, vol. 122 no. 4, p. 28) found the shells of East Greenland specimens to have lengths of up to 16.1 mm. Our largest fossil valve is 14.1 mm long (HEERING, pl. 9 figs. 7, 8). The identification was checked by comparison with Recent shells of both mentioned species in the DAUTZENBERG collection of the Brussels Museum.

Bathyarca philippiana (Nyst)

- 1844 *Arca obliqua* Philippi, Enum. Moll. Sicil., vol. 2, p. 43, pl. 15 fig. 2 ("Fossilis in valle fl. Lamati Calabr.", nec *A. obliqua* Reeve).
- *1848 *Arca philippiana* Nyst, Mém. Ac. R. Belgique, vol. 22, Tabl. Synopt. Synon. Arches, p. 54 (nom. nov. pro *A. obliqua* Phil., non Portlock nec Reeve).
- 1891 *Arca koreni* [non] Danielssen, Kobelt, in: Martini & Chemnitz, Syst. Conch. Cab. (2), vol. 8 pars 2, p. 214, pl. 49 fig. 10.
- 1927 *Arca obliquatula* Dautzenberg, Rés. Camp. Scientif. Prince Monaco, vol. 72, p. 281 (nom. nov. pro *A. obliqua* Phil., non Reeve, with list of references)
- 1950 *Arca lactea* [non] L., Heering, Meded. Geol. Stichting (C), IV-1-no. 9, p. 28, pl. 8 figs. 28, 29 (references excluded, ? Pliocene, Clinge, province of Zeeland, the Netherlands).
- 1960 *Arca* cf. *koreni*, Van Straaten, Geologie & Mijnbouw, vol. 39, p. 113 (Rhône delta).

The two valves recorded by HEERING proved to be conspecific with the shells I identified (in VAN STRAATEN, 1960) as "*Arca* cf. *koreni*". They do not agree, however, with DANIELSSEN's original description of *Arca koreni* (1859, Nyt Mag. Naturv., vol. 11, p. 21), in which six anterior and seven posterior teeth are stated to occur, while in our shells the number of posterior teeth is about twice that of the anterior ones. Dr. SOOT-RYEN kindly informed me that after having studied DANIELSSEN's type specimens he is convinced that *A. koreni* is a synonym of *Bathyarca glacialis* (Gray). NYST's name, which apparently is the oldest available for the species, has been overlooked by most authors. I found it referred to, but unfortunately not adopted, by LAMY (1907, J. de Conchyl. vol. 55, p. 288) only.

Striarca lactea scaldensis nov. subsp.

This new subspecies of *Arca lactea* Linnaeus, 1758, differs from the typical subspecies in reaching larger dimensions, by the more rounded outline of the valves, and by their finer sculpture. In most specimens, including the holotype, there are slightly more prominent ribs interposed in the graded series, the number of normal ribs in between being small and variable.

Holotype (a left valve) and 65 paratypes (42 left and 23 right valves) from the shell beds in the bottom of the Westerschelde, in the Rijksmuseum van Natuurlijke Historie, Leiden.

Nine paratypes, all of them odd valves, from the same locality, in the Zoölogisch Museum, Amsterdam.

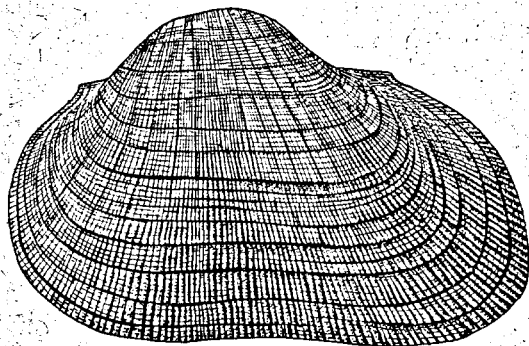


Fig. 1. *Striarca lactea scaldensis*, holotype, $\times 3$.

Sixty-two paratypes, 36 left and 26 right valves, from the same locality, in the Natuurhistorisch Museum, Rotterdam.

Measurements (in mm):

	Length	Height	Semidiameter	Left/Right	Collection
Holotype	22½	16½	6½	L	Leiden
Paratype	23½	15	6	L	Leiden
Paratype	20	13½	5	R	Leiden
Paratype	16½	12	5	R	Leiden
Paratype	26	18	7	R	Rotterdam

My first impression was that this might be *Arca lactanea* Wood (1842, Ann. Mag. Nat. Hist., vol. 4 N. S., p. 232, pl. 13 fig. 3) which WOOD later (1851, Mon. Crag. Moll., part 2, p. 78) considered to be a synonym of *A. lactea* L. Mr. CASTELL kindly informed me that there are no shells labelled *A. lactanea* in the WOOD collection in the

Department of Palaeontology of the British Museum (Natural History). So WOOD's type must be among his series of *A. lactea*. Mr. CASTELL compared some of my shells with the Crag specimens of *A. lactea* in the British Museum, including those of the WOOD collection, and reports on this comparison as follows:

"Your specimens differ markedly in the finer ribbing, especially in the intercalation of several fine riblets among the major ones. They also differ in the much larger ligamental area which, in our Crag specimens, appears to be always smaller than in the Recent *A. lactea*, as was noticed by WOOD. I can see no difference between the ribbing of our Crag specimens and that of the Recent species.

So I think you will be justified in separating your species from both *lactea* and *lactanea*".

Neither in Belgium nor in the Netherlands the genus *Striarca* has been recorded from Pliocene or Early Pleistocene deposits, since HEERING's record of "*Arca lactea*" has proved to refer to *Bathyarca philippiana* (Nyst) (vide supra).

There is, however, a striking resemblance of this new subspecies with the specimens of "*Arca (Fossularca) lactea*" figured by DOLLFUS & DAUTZENBERG (1913, Mém. Soc. Géol. France, vol. 20, pl. 29 fig. 33-46) from the Miocene of the Loire Basin. Dr. GLIBERT kindly compared some of my valves with those figured by DOLLFUS & DAUTZENBERG and found them to agree almost fully. The number of ribs per cm of the posterior margin is on the average slightly smaller in the French shells, but both fossil lots differ in this respect from the typical form. It follows that *Striarca lactea scaldensis* probably is of Miocene age. The valve of "*Arca (Arcopsis) lactea*" from the Anversian of Antwerp figured by GLIBERT (1945, Mém. Inst. R. Sciences Nat. Belg., no. 103, pl. 1 fig. 10) might be a young of this subspecies.

COSSMANN & PEYROT (1912, Actes Soc. Linn. Bordeaux, vol. 66, p. 195, pl. 10 figs. 37-40) described "*Fossularca (Galactella) miocaenica*" from the Burdigalian of Saucats, Dax, Mérignac, etc. Of this form Mr. A. MAGNE kindly sent me a series from the Peyrot collection for comparison. These valves came from la Peloua in the municipality of Saucats. After having studied them I believe that DOLLFUS & DAUTZENBERG were probably right when putting *F. miocaenica* in the synonymy of *Striarca lactea* (L.). At any rate *miocaenica* is quite different from the new subspecies here described.