

## The Ungulinidae (Bivalvia, Lucinoidea) of the Red Sea

J.J. VAN AARTSEN & J. GOUD

National Museum of Natural History *Naturalis*, P.O. Box 9517, NL 2300 RA Leiden, The Netherlands;  
vanaartsen@hetnet.nl & goud@naturalis.nl

The Ungulinidae of the Red Sea are revised. All the species are considered to belong to *Diplodonta*, but only one of these can be classified with *Diplodonta* s.s. Five species, including *D. moolenbeeki* spec. nov., are provisionally placed in *Diplodonta* s.l. and one in the subgenus *Timothyms*. The latter species, recorded on the basis of a single valve from Eilat, might not belong to the autochthonous Red Sea molluscan fauna.

Key words: Bivalvia, Lucinoidea, Ungulinidae, *Diplodonta*, taxonomy, new species, Red Sea.

### INTRODUCTION

During the past twenty years the study of marine mollusks of the northwestern Indian Ocean was intensified. Newly collected material from this, often not easily accessible region, helped much in the progress of our knowledge on the systematics and distribution of mollusks from the Red Sea, southern Arabia (Yemen and Oman), the Gulf of Oman and the Arabian Sea.

The result of this renewed interest in the malacology of the seas surrounding the Arabian Peninsula can be found in a still growing number of publications on the area, of which the books by Bosch (1982), Sharabati (1984), Oliver (1992) and Dance (ed.; 1995) are well known.

Reviews of the local Ungulinidae H. Adams & A. Adams, 1857, are given by Oliver (1992) [Red Sea], Kilburn (1996) [South Africa and Mozambique], Oliver in Dance (1995) [Eastern Arabia], Van Aartsen (2001) [Europe], Habe (1977) [Japan], Powell (1979) [New Zealand], Noonan (1991a, 1991b, 1992a, 1992b), as well as Lamprell & Healy (1998) [Australia], Dall (1899, 1901) [United States] and Coan et al. (2000) [NW. America]. For the Ungulinidae from the Red Sea, the contributions by Oliver (1992), Oliver in Dance (1995), and Kilburn (1996) are of main importance. Older works e.g. by Lamy (1916, 1921) are helpful too.

Only one genus, viz. *Diplodonta* Bronn, 1831, is usually recognized in the Red Sea. Although Chavan (1962, 1969) pretends to solve the supraspecific units of the Ungulinidae, these papers are not very useful in practice. We agree with Kilburn (1996: 267) that "Unfortunately, in practice, differences between the higher taxa are not always clear-cut ..".

Moreover, the outline of the shells, which was taken as the main discriminating factor by authors in the past seems to be variable. For instance, for *Diplodonta rotundata* (Montagu, 1803) the type species of the genus, the outline varies between perfectly elliptical and conspicuously quadrangular. Also the depth of the valves is somewhat variable.

In our view, the species with a clearly recognizable nymph (and ligament) should be considered to belong to *Diplodonta* s.s. However, most species from the Red Sea have no nymph at all.

These species are congeneric with *Ungulina scleractinica* Kilburn, 1996. From Kilburn's

figure of the hinge plate (Kilburn, 1996: 269, fig.1) we conclude that this species does not belong to the West African genus *Ungulina* de Roissy, 1805, however. The structure of the hinge plate is analog to that of *Diplodonta sericata* A. Adams & Reeve, 1850, as figured by Lamy (1921: 339, figure in text). Lamy (1921: 339) considered this type of hinge and ligament to be represented by *Mysia usta* Gould, 1861, type species of *Felaniella* Dall, 1899. We have not been able to confirm this and, therefore, use the generic name *Diplodonta* in a broad sense ('s.l. '), realizing that several of the species dealt with may in fact belong to another genus.

In the case of the South African species *Diplodonta pinnaculum* Kilburn, 1996, of which we saw only one valve from the old port of Eilat, we agree with Kilburn to use *Timothyneus* Harris & Palmer, 1946, as a subgenus.

Abbreviations for collections: BMNH, The Natural History Museum, London, United Kingdom; HD, H. Dekker, Winkel, The Netherlands; HUJ, Hebrew University, Jerusalem, Israel; MNHN, Museum National de Histoire Naturel, Paris, France; MRSN Museo Regionale di Scienze Naturali, Torino, Italy; NHMW, Naturhistorisches Museum Wien, Austria; NMW, National Museum of Wales, Cardiff, United Kingdom; RMNH, Nationaal Natuurhistorisch Museum Naturalis, Leiden, The Netherlands; TAU, Tel Aviv University, Tel Aviv, Israel; UMC, University Museum Cambridge, United Kingdom; ZMA, Zoölogisch Museum, Universiteit van Amsterdam, Amsterdam, The Netherlands.

Additional abbreviations: juv, juvenile; p, paired valves; v, valve(s).

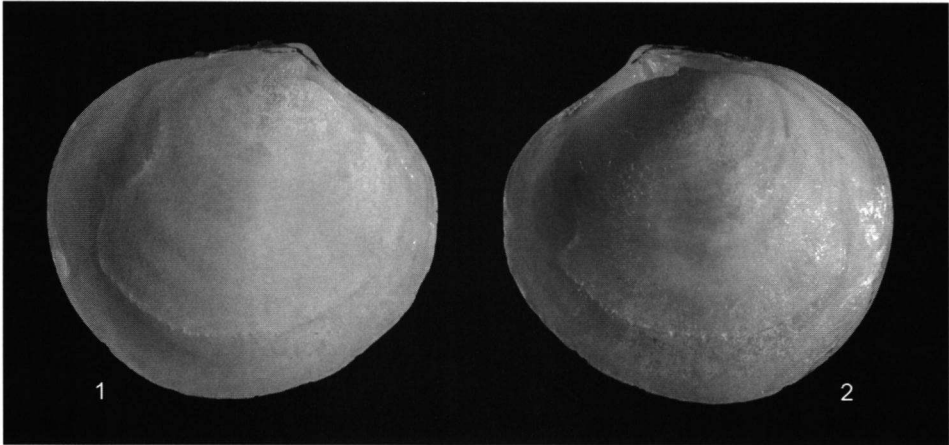
#### Key for the Ungulinidae species of the Red Sea.

- 1.a. A clearly defined nymph for the external ligament is present.....*Diplodonta (D.) subrotunda*
- 1.b. No nymph apparent .....2
- 2.a. Shells very tumid/globose .....3
- 2.b. Shells lenticular, not very tumid/globose .....5
- 3.a. The posterior cardinal in the right valve is fully split-up into two divergent separate teeth. Only one valve known from the Red Sea .....*D. (Timothyneus) pinnaculum*
- 3.b. The posterior cardinal in the right valve is clearly bifid but not separated into two independent teeth .....4
- 4. a. Hinge-plate nearly straight, outline regularly elliptical [< 35 mm] .....*D. globosa*
- 4.b. Hinge-plate nearly straight, outline more roundish and posterior side more or less straight [< 25mm] .....*D. moolenbeeki*
- 4.c. Hinge-plate curved, shells smaller [< 15 mm] .....*D. genethlia*
- 5.a. Hinge-plate nearly straight, shells rather large [< 25 mm] .....*D. moolenbeeki*
- 5.b. Hinge-plate curved, shells smaller [< 15 mm] .....6
- 6.a. Outer surface with many punctures, outline somewhat quadrangular. Only known from deep water .....*D. raveyensis*
- 6.b. Outer surface smooth with only slight growthlines .....*D. bogii*

*Diplodonta* Bronn, 1831

Type species: *Venus lupinus* Brocchi, 1814 [= *Tellina rotundata* Montagu, 1803], by subsequent designation by Herrmannsen, 1846: 392.

Other species belonging to this genus: *D. rotundata* (Montagu, 1803) [S. and W. Europe]; *D. lateralis* E.A. Smith, 1876 [S. and E. Africa]; *D. planissima* Kilburn, 1976 [S. Africa]; *D. zelandica* (Gray, 1835) [New Zealand].



Figs 1, 2. *Diplodonta subrotunda* Issel, 1869, Egypt, Great Bitter Lake, RMNH (ex coll. Beets, St. 01), actual length 16 mm; 1, left valve; 2, right valve.

*Diplodonta subrotunda* Issel, 1869 (figs 1, 2)

*Diplodonta subrotunda* Issel, 1869: 253-254, pl. 3 fig. 2.

*Diplodonta rotundata* (Montagu, 1803) [in part]; Lamy, 1916: 187-188.

? *Diplodonta lateralis* Smith; Lamy, 1938: 32.

*Diplodonta rotundata* Montagu et var. *subrotunda* Issel [in part]; Moazzo, 1939: 93, pl. 8 fig. 4 right [non fig. 4 left].

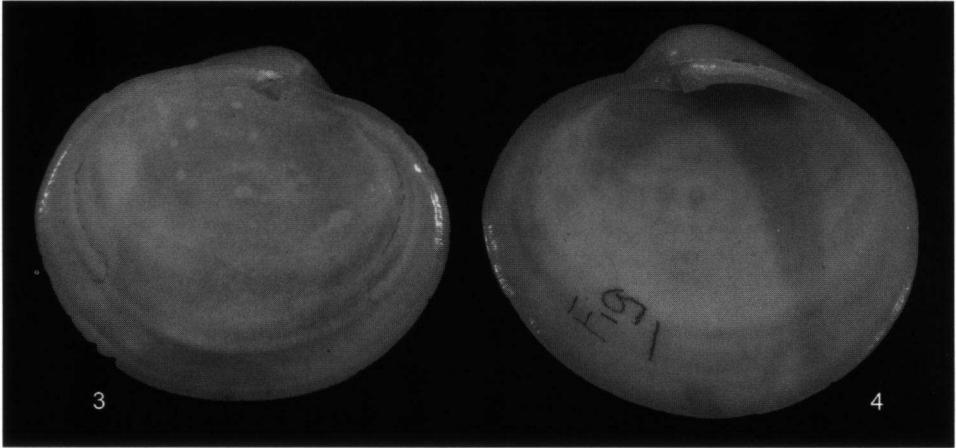
*Diplodonta subrotundata* [sic] Issel; Oliver, 1992: 102 [in part, not: 96 textfig. 24, pl. 21 fig. 2]; Oliver, 1995: 237 nr. 1039; Hoenselaar & Dekker, 1998: 205 [in part]; Zuschin & Oliver, 2003: 109, figs 26.6-10.

*Anodontia edentula* (L., 1758); Coulombel, 1994: 125, figs [non L.].

*Diplodonta subrotunda* Issel; Dekker & Orlin, 2000: 11.

Material studied. -- Holotype: Red Sea, subfossil, MRSN 1v [= Issel, 1869, pl. 3 fig. 2].

Egypt: Safaga Bay, NMW 1997.021.00060 4v, 1997.021.00071 1p, 1997.021.00091 1p & 5v, Great Bitter Lake, RMNH (ex Coll. Beets: St.1: 4p & 6v, St.4: 1p & 4v, St.6: 1v, St.7: 6v, St.21: many v, St.26: 1v, St.31: 6v, St.40: 1v and St.42: many v), HUJ 7900 2p & 1v, 7904 2p & 3v, Little Bitter Lake, HUJ 3584 1v, Ras Muhamed, HUJ 8112 1v, TAU NS12068 1p, Suez, MNHN 2p & 2v; Israel: Dahab, Gulf of Elat, TAU NS12058 1p; Sudan: Souakim, MNHN 2p; Ethiopia: Assab, HUJ 2946 1p, Dahlak Archipel, Museri TAU ex MO30012 1v, Massaouah: MNHN 4p & 1v; Saudi Arabia: Musselamiwah Bay, NMW 1992.001.00011 2 v; Yemen: Red Sea coast: al Hudaydah, Ra's al Katib, west coast, HD 1p & 13v; south coast: al-Marrah, Khaysayt, 15° 36'06" N 52°11' 02"E, HD 2v, Aden, NMW 1955.158.11310 1p, 1968.130.00034 4v,



Figs 3, 4. *Diplodonta globosa* (Forsskål in Niebuhr, 1775), Egypt, Suez, MNHN [= Oliver, 1992: pl. 21 fig. 1a, b]; 3, left valve, actual length 30.5 mm, 4, right valve, actual length 31.5 mm.

1992.023.00180 2p, MNHN 1p & 4v, Khor Rowri, NMW 1995.008.00064 1v; Oman: 1991-102, HD 15v, Arabian Sea, NMW 1993.061.01737 3v, Fehel Island, ZMA 1p, Masirah, NMW 1993.061.00488 5v, 1993.061.00507 3v, 1993.061.01736 1p; Muscat; Fujayrah, NMW 1993.061.01691 6v, Ras al Hadd, NMW 1993.061.00492 22v, 1993.061.1581 1p [= Oliver, 1995 fig. 1039], 1995.008.00063 2v; United Arab Emirates: Abu Dhabi, NMW 1993.061.01738 1v, Khor Umm, NMW 1993.061.00479 10v; Pakistan: Karachi, NMW 1955.158.11317 1p & 3v.

**Diagnosis.** — Shell of medium size, 20-25 mm. Hinge with clear nymph. Outline usually roundish, not very angular. Shape not tumid but rather lenticular.

**Notes.** — This species is the only one in the Red Sea showing a clear nymph for the external ligament. All other species of *Diplodonta* show an "internal" external ligament which is fastened in a groove on the outside of a resilium. This was already discussed by van Aartsen (2004: 74, 75 figs 1-4).

*Diplodonta subrotunda* was described at the time of the construction of the Suez-canal, from a fossil valve originating from the Red Sea coast of Egypt. Therefore we consider it most unlikely that *D. subrotunda* should be regarded as a variety of the European *D. rotundata* (Montagu, 1803) as suggested by Issel (1869: 253), Lamy (1916: 187) and Moazzo (1939: 93), although both species have several characters in common. Study of the type of *Diplodonta lateralis* Smith, 1876, convinced us that this is a different species, also showing a clear nymph as can be seen from the figures by Kilburn (1996: 273, figs 9-12).

*D. subrotunda* Issel, 1869 is not restricted to the Red Sea, but lives also in the Arabian Sea, the Gulf of Oman up to Karachi, as can be concluded from the material studied.

#### *Diplodonta* s.l.

#### *Diplodonta globosa* (Forsskål, in Niebuhr, 1775) (figs 3, 4)

*Venus globosa* Forsskål, 1775: 122, nr. 53; Yaron et al., 1986: 175, figs 9-10.

*Die Kugelvenus*; Chemnitz, 1784: 36, pl. 40 figs 430-431.

.....; Savigny, 1817: pl. 8 figs 7.1-7.5.

*Diplodonta savignyi* Vaillant, 1865: 117, 124-125; Issel, 1869: 81, 358; Bouchet & Danrigal, 1982: 15, fig. 9.

*Diplodonta bullata* Dunker, 1865: 76, pl. 26 figs 1-3.

*Diplodonta globosa* Forskål; Lyngø, 1909: 175; Lamy, 1916: 188-189; Moazzo, 1939: 92-93, pl. 8 fig. 3.

*Diplodonta globosa* (Forskål) Chemnitz; Pallary, 1926: 102, pl. 12 fig. 7.1-7.7.

*Diplodonta globosa* (F.); Oliver, 1992: 101, 96 fig. 23, pl. 21 fig. 1.

*Diplodonta globosa* (Forskål in Niebuhr); Dekker & Orlin, 2000: 11.

*Diplodonta globosa*; Zuschin & Oliver, 2003: 110, figs 26.1-2.

Material studied. — **Egypt**: Suez, MNHN 2v [= Oliver, 1992: pl. 21 fig. 1] & 1p juv & 11v, NMW 1955.158.11454 1v (ex Lamy); Great Bitter Lake, RMNH (ex Coll Beets St. 27 1v juv); **Jordan**: Aqaba, HUJ 2951 1v; **Erythraea**: Massaua HUJ 2938 1v; **Yemen**: Aden, MNHN 1p juv & 2v.

Diagnosis. — Shell large, 30-35 mm. Hinge without nymph but with long and narrow resilifer. Outline elliptical: length somewhat greater than height. Shape very tumid and globose.

Notes. — The first species of *Diplodonta* to be described from the Red Sea. Although rather rare it is at the same time the largest species and for this reason noted by authors in the early days of malacology. Specimens of *D. globosa* can reach up to 35 mm in dimension and their outline is a perfect ellipse. Young specimens have the posterior side somewhat quadrangular and as such can easily be confounded with *D. moolenbeeki* spec. nov. However, the internal ligament (resilium) in *D. globosa* is much longer and narrower compared with that of *D. moolenbeeki*.

We could study only a few specimens and valves, all of which originating from the Red Sea.

No specimens from the Persian Gulf, as reported by Melvill (1928: 114), were available.

### *Diplodonta moolenbeeki* spec. nov. (figs 5, 6)

*Diplodonta rotundata* (Montagu, 1803) [in part]; Lamy, 1916: 187-188.

*Diplodonta rotundata* Montagu et var. *subrotunda* Issel [in part]; Moazzo, 1939: 93, pl. 8 fig. 4-left [non fig. 4-right].

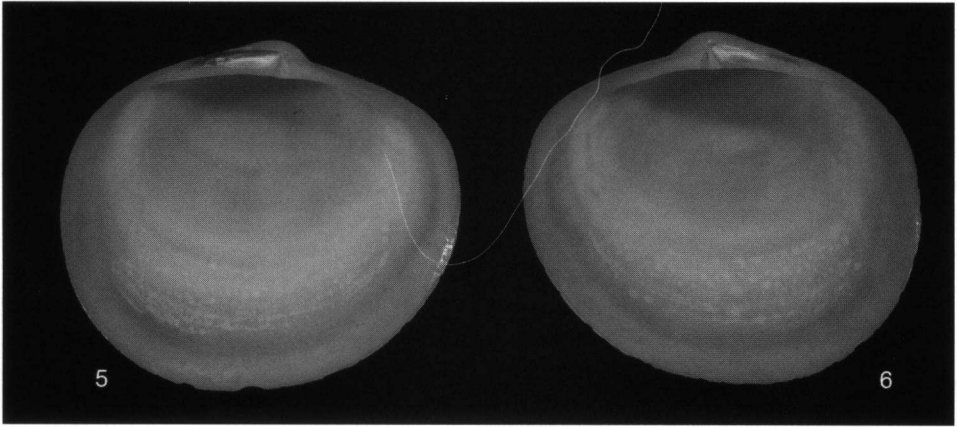
*Diplodonta subrotundata* [sic] Issel [in part]; Oliver, 1992: 102, 96 textfig. 24, pl. 21 fig. 2; Hoenselaar & Dekker, 1998: 205.

*Diplodonta* cf. *globosa* (F.); Oliver, 1995: 237 nr. 1038

*Diplodonta globosa* (F.); Hoenselaar & Dekker, 1998: 205

*Diplodonta* sp.; Dekker & Orlin, 2000: 11

Type Material. — Holotype: Egypt: Suez, MNHN [=Oliver, 1992 pl.21 fig.2]; Paratypes: **Egypt**: Suez, NMW 1955.158.11355 1p, 1992.001.00013 2v, HUJ 8109 1v, MNHN 4p & many v; Safaga Bay, NMW 1997.021.00038 many valves; Sharm el-Naga, HD 1p, HD 2v; Great Bitter Lake, RMNH (ex coll. Beets, St.18: 1v, St.32: 1v, St.46: 1v); 7 km S of Hurghada (El Samaka Village), RMNH 102213 (ex coll. J. Goud, 6p); Ras Muhamed, HUJ 8111 1p, TAU NS1422 2v; Shora-el Marquata HUJ 8110 12v; **Sudan**: Souakim: MNHN 2p; **Ethiopia**: Dahlak Archipel, TAU MO 30011, 30012 3p; **Saudi Arabia**: Dahrán, NMW 1993.061.01742 1v; **Yemen**, Red Sea coast: Midi, Oreste Point 16°22'N 42°46'E, HD 8v; Ras Hasik, NMW 1993.061.00497 1v; Aden, NMHN 1p & 11v; **Oman**: Mussadam, NMW 1995.008.00053 5v; Quriyat, ZMA



Figs 5, 6. *Diplodonta moolenbeeki* spec. nov., holotype, Egypt, Suez, MNHN [= Oliver, 1992: pl. 21 fig. 2a,b], actual length 18 mm; 5, left valve, 6, right valve.

many p & v, NMW 1993.061.01726 3p & 33v; stat. 1991-91, HD 1v; stat. 1991-102, HD 2v; Ras Suwadi, RMNH 102306 (leg. E. Bostock), 2v; Muscat: Masirah, NMW 1993.061.00484 3v, 1993.061.00496 1v, 1993.061.00501 2v, 1993.061.00503 1v, 1993.061.00505 1p & 12 v, 1993.061.00506 8v, 1993.061.01682 2v, 1995.008.00052 1p, ZMA 1v; Fujayrah, NMW 1993.061.00485 1v, 1993.061.01666 3v, 1993.061.01667 2v, 1993.061.01728 many valves; Ras al Hadd, NMW 1993.061.00498 6v, 1993.061.00502 2v, 1993.061.01508 1p [=Oliver, 1995: 237, fig. 1038], 1993.061.01727 4v, 1995.008.00063 1v; Bahrain: Outer Tubli Bay, NMW 1993.061.00508 many v; United Arab Emirates: Khor Umm, NMW 1993.061.01739 2p; Abu Dhabi, NMW 1993.061.01741 1p & 1v, 1993.061.01743 3v.

**Diagnosis.** — Shell of medium size, 20-25 mm. Hinge without nymph but with conspicuous resilifer. Outline more or less angular posteriorly. Shape varying from tumid to less swollen and lenticular.

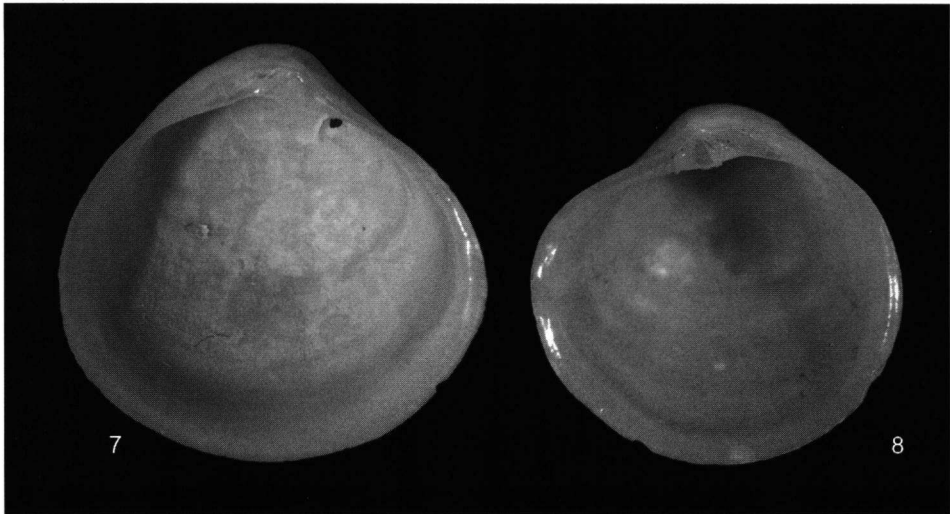
**Description.** — Shell more or less angular posteriorly and moderately tumid. The outer surface smooth, only showing slight growth-lines. The hinge consists of two cardinals, the anterior in the left valve and the posterior in the right valve are split into two equal parts. There are no laterals. The hinge-plate nearly straight and rather narrow. The resilium for the internal ligament rather short and pear-shaped. There seems to be no external ligament.

The largest specimen is 22 × 25 mm. The holotype measures 16 × 18 mm.

**Differentiation.** — This new species has been confused with *Diplodonta subrotunda* Issel, 1869, as well as with *Diplodonta globosa* (Forsskål in Niebuhr, 1775). *Diplodonta subrotunda* differs because it has a clearly recognizable external ligament and nymph as shown by van Aartsen (2004: 75, figs 1-2).

Full-grown *Diplodonta globosa* has a regularly elliptical outline which is not angulated as in *D. moolenbeeki* spec. nov. Only young specimens of both species are easily confused. However, the resilium in *D. globosa* is much longer and narrower than that in *D. moolenbeeki*.

**Ethymology.** — This species is named after Robert Moolenbeek (ZMA), well known for his work on the Mollusca of the Gulf of Oman and friend of the authors.



Figs 7, 8. *Diplodonta genethlia* (Melvill, 1898); 7, left valve, Oman, NMW 1993.061.01733, actual length 12.5 mm, 8, right valve, Yemen, Aden, NMW 1955.158.02251 (ex Lamy) [= Oliver, 1992: 102, pl. 21 figs 3a,b s.n. *Diplodonta ravayensis*], actual length 8.1 mm.

*Diplodonta genethlia* (Melvill, 1898) (figs 7, 8)

*Diplodonta genethlia* Melvill, 1898: 32-33, pl. 2 fig. 11.

*Diplodonta ravayensis*[sic] Sturany; Oliver, 1992: 102, pl. 21 fig. 3, 3a.

*Diplodonta genethlia* [sic] Melvill; Oliver, 1995: 237, fig. 1036.

Material studied. — **Egypt**: Safaga Bay, NMW 1997.021.0038 1v; Suez, MNHN 4v; **Israel**: off Elat, TAU MO 30013 1v, NS 26762 4v; **Yemen**: Aden, NMW 1955.158.02251 1v (ex Lamy) [=Oliver, 1992: 102, pl.21 figs 3a, b], MNHN 9v, Djibouti, MNHN 7v; **Iran**: Gais (=Kais) Island, BMNH 98.7.5.120-121, 1p & 2v. (syntypes); **Muscat**: NMW 1955.158.00685 1p & 1v (syntypes)[ex coll Townsend], 1955.158.11328 1p, 1955.158.11449 2p, 1955.158.11490 2p, Fujayrah, NMW 1991.102.00025 3v [=Oliver, 1995 fig. 1036], 1993.061.00481 2v, 1993.061.01729 12v, 1993.061.01730 31v, 1993.061.01731 85v, 1993.061.01732 many valves, 1993.061.01733 3p & 33v, Ras al Hadd, NMW 1993.061.00478 1v, 1993.061.00480 2v; **Bahrein**: Juffair, Grand Mosque Beach, NMW 1993.061.0494 3v; **Oman**: Arabian Sea, NMW 1003.061.01737 1v.

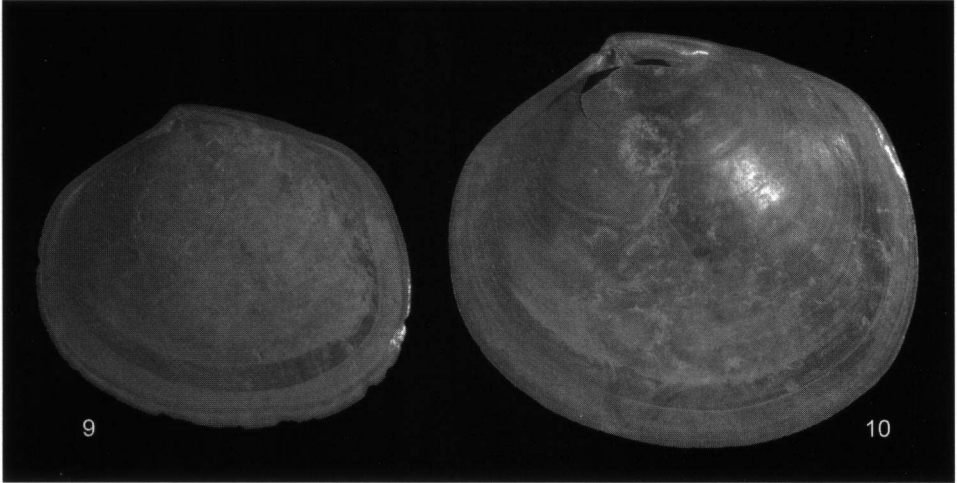
Diagnosis. — Shell small, 10-15 mm. Hinge without nymph. Shape tumid, triangular in outline.

Notes. — *D.genethlia* has never been mentioned from the Red Sea. From the MNHN-material we found that it was confounded by Lamy with *D. bogii* under the name *D. tumida* (H. Adams, 1871).

Another *Diplodonta* valve was published by Oliver (1992: 102, pl. 21 fig. 3) under the name of *D. ravayensis*[sic] Sturany, 1899. This valve originates from the Melvill-Tomlin collection.

A label stating "*Diplodonta tumida* H. Ad", probably written by Lamy, confirms the fact that Lamy considered *Diplodonta tumida* (H. Adams, 1871) in a very broad sense.

From the ample material of *D. genethlia* originating from Oman, the Arabian Sea and



Figs 9, 10. *Diplodonta raveyensis* Sturany, 1899, Gulf of Oman, -150 fms. [ex coll. Townsend]; 9, right valve, actual length 8.5 mm, 10, right valve, actual length 11.5 mm.

other localities, it is clear that *D. genethlia* is not a synonym of *D. raveyensis* Sturany, 1899 too. The original description and figures by Sturany (1899: 285, pl. 21 fig. 3a, b) are completely different from the relative thick, tumid and more or less triangular *D. genethlia* with a smooth exterior surface.

*D. genethlia* does not only occur at the southern entrance of the Red Sea (Djibouti, Aden) but is also present at Suez and Safaga bay in the northern Red Sea. The species is thicker shelled, more triangular in shape and larger than *D. bogii*.

Note that the "three to four plates" [=folds] at the anterior side, mentioned in the original description by Melvill (1898: 32) occur only in less than half the specimens as can be concluded from the abundant material in NMW, and which was mentioned already by Oliver in Dance (1995: 237, fig. 1036).

#### *Diplodonta raveyensis* Sturany, 1899 (figs 9, 10)

*Diplodonta raveyensis* Sturany, 1899: 285-286, pl. 6 figs 8-11

*Diplodonta tumida* H. Adams [in part?]; Lamy, 1916: 189-190 [non H. Adams, 1871] [*raveyensis* in synonymy]

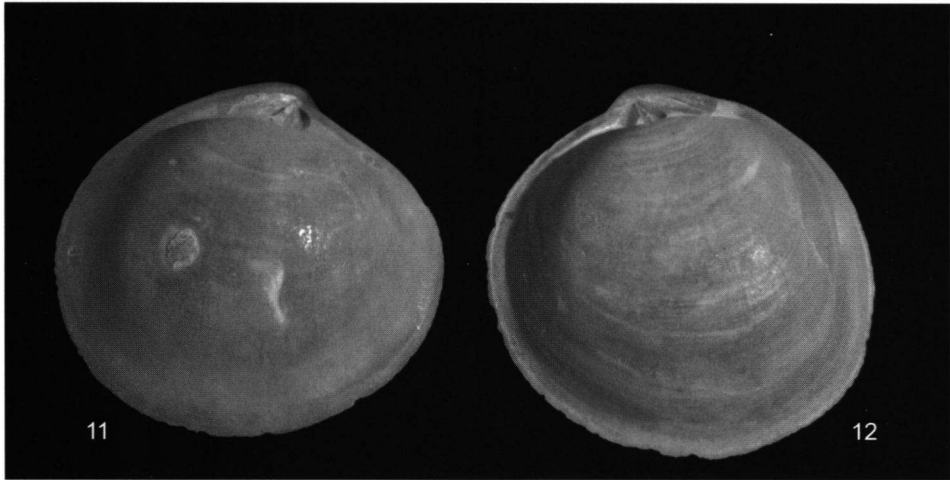
Material studied. — Gulf of Oman, 150 fms: NMW Z. 1955.158.11452[ex coll. Townsend] 2v.

Diagnosis. — Shell small, 10-15 mm. Hinge without nymph. Outline quadrangular. Shape relatively flat, lenticular. Outer surface with many punctures.

Notes. — The shells are rather thin: the characteristic punctures of the outside can be seen from the inside!

Only seen from one sample in NMW, originating from the Gulf of Oman. At the same time this is the only sample available from deeper water (~ 250 m).





Figs 11, 12. *Diplodonta bogii* van Aartsen, 2004, Egypt, Great Bitter Lake, RMNH (ex coll. Beets, St. 10), actual length 7.5 mm; 11, left valve, 12, right valve.

*Diplodonta bogii* van Aartsen, 2004 (figs 11, 12)

*Diplodonta bogii* van Aartsen; van Aartsen, 2004: 73-76, figs 3, 4.

*Diplodonta tumida* H. Adams; Lamy, 1916[in part ?]: 189-190; Moazzo, 1939: 93-94.

*Diplodonta* sp.; Oliver, 1992: 102, 96 textfig. 26, pl. 21 fig. 4; Hoenselaar & Dekker, 1998: 205.

*Diplodonta subrotunda* Issel; Bogi & Galil, 1999: 29-30, figs 1-2.

*Diplodonta tumida* (H. Adams); Dekker & Orlin, 2000: 11.

*Diplodonta subrotunda* sensu Bogi & Galil; van Aartsen, 2001: 51, 49 figs 10, 11.

*Diplodonta ravayensis* [sic] Sturany; Zuschin & Oliver, 2003: 110, figs 26.3-5.

*Diplodonta* cf. *subrotunda* Issel; Zenetos et al., 2004: 260-261, fig.

**Diagnosis.** — Shell small, 7-10 mm. Hinge without nymph. Outline roundish. Shape lenticular.

**Notes.** — Recently described by one of the authors it has been regarded as *Mysia tumida* H. Adams, 1871. Many of the samples in the MNHN show, that Lamy considered this as well as *Diplodonta genethlia* Melvill, 1898 to be Adams's species. Van Aartsen (2004: 75, 76) showed that *Diplodonta tumida* can not be recognized at present and so the name should not be used. The species discussed by Zuschin & Oliver (2003: 110, figs 26.3-5) under the name *Diplodonta ravayensis*[sic] Sturany, 1899 is in fact *Diplodonta bogii* van Aartsen, 2004.

*Diplodonta* (*Timothyus*) Harris & Palmer, 1946

Type species: *Sphaerella bulla* Conrad, 1865; by original designation (Harris & Palmer, 1946: 86.)

A synonym is *Sphaerella* Conrad, 1838 (non Sommerfelt, 1834), with type species *Sphaerella subconvexa* Conrad, 1838; by original designation.

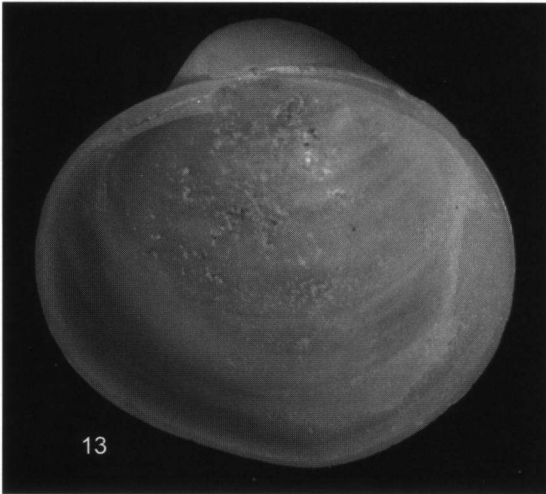


Fig. 13. *Diplodonta (Timothyus) pinnaculum* Kilburn, 1996, Israel, Elat (old port, -121m), TAU, right valve, actual length 7.5 mm.

Other species belonging in this subgenus: *D. (T.) pseudoglobosa* Kilburn, 1996, and *D. (T.) pinnaculum* Kilburn, 1996 [South Africa], *D. verrilli* Dall, 1899 [United States]

*Diplodonta (Timothyus) pinnaculum* Kilburn, 1996 (fig. 13)

*Diplodonta (Timothyus) pinnaculum* Kilburn, 1996: 279-281, figs 8, 19-21.  
*Timothyus pinnaculum* (Kilburn); Dekker & Orlin, 2000: 11.

Material studied. — Israel: Gulf of Aqaba, Elat (old port, 121 m) TAU 1v.

Diagnosis. — Shell small, 10-15 mm. Hinge without nymph, but with three cardinal teeth instead of the usual two (one of which is bifid). Shape very tumid or rather globose. Thin in material.

Notes. — This very characteristic species was present in only one valve. As it was found in an international harbour we doubt its presence in the Red Sea in general.

The species can easily be recognized by its very tumid globose form and in particular by the diploidontid bifid tooth being split completely, so as to result in the hinge consisting of three independent teeth.

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