Notes on South-African marine Mollusca

by
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1. Philobrya angulata (Sow.), an interesting species of the family Limopsidae

In 1892 G. B. SOWERBY gave a description of a new species from Port Elizabeth: *Neocardia angulata,* for which he created a new monotypic genus *Neocardia* (p. 63). In his book he ranged this genus between *Carditella* and *Mytilus,* therefore in the family Carditidae (KOBELT, 1878; LAMY, 1922), according to the interpretations of those days. He figured his shells on Plate III fig. 66, though on a very small scale.

BARTSCH (1915, p. 184, Pl. 39 figs. 6, 7) described *Hochstetteria alfredensis,* but THIELE & JAECKEL (1931, p. 190) were the first to see that BARTSCH' species was exactly the same as SOWERBY'S [1]). Ten years earlier THIELE (1922) had classed this species with the genus *Philobrya* Carpenter, 1872, in the family Limopsidae, and suggested: „*Verticipronus, Neocardia* und *Philippiella* können vielleicht als Sektionen angeordnet werden." LAMY (1922) ranged the present species under the genus *Venericardia* Lamarck, 1801. TURTON (1932) recorded both names as different species (*Hochstetteria alfredensis* Bartsch, p. 219; *Neocardia angulata* Sowerby, p. 233). THIELE at last in his Manual (1934) made *Neocardia* a sectio of *Philobrya.*

The little shell is submytiliform and rather flat. It is very difficult to see at first sight that *P. angulata* is a taxodontous shell [2]). The taxodontous teeth are completely reduced and invisible; at the edge of the shell there are two lateral teeth. The ligament is very thin. The anterior muscular scar is also reduced, one of the most important

[1]) BARNARD (1951) records on page 197 *H. alfredensis;* apparently he was not aware of the synonymy of the present species.

[2]) THIELE (1922, 1931) argues that *Philobrya* forms the last link of the chain of evolution of the order Taxodonta, particularly of the Arcacea. Via the families Arcidae and Glycymeridae to the Limopsidae we see a reduction of the taxodontous teeth, which is going so far in the last family, that those teeth can be totally lost. The principal characters of the family Limopsidae are the short ligament (fig. 1), the reduction of the foremost adductor muscle and the prolongation of the byssus. In this family *Philobrya* itself again is the last link of a chain of evolution.

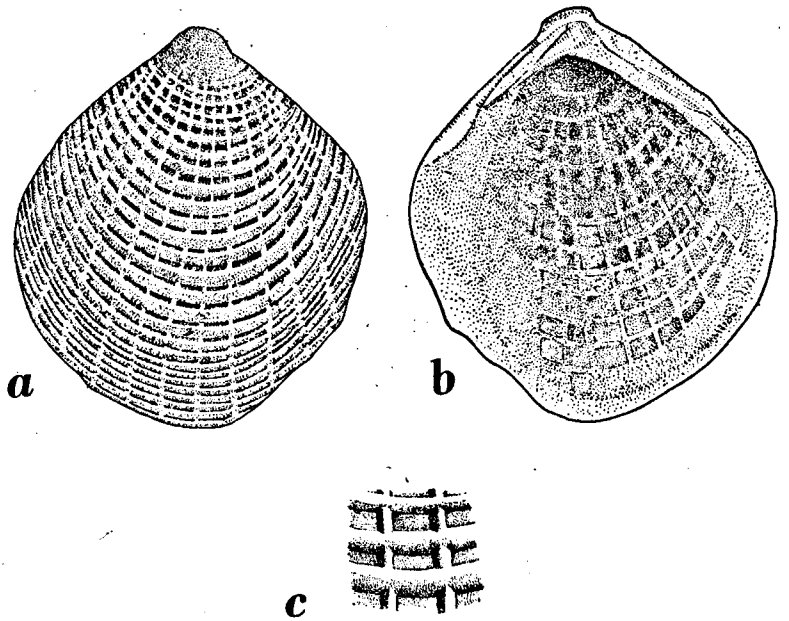

Fig. 1. *Philobrya angulata* (Sow.), Port Alfred, Museum Amsterdam. a. Outer view of shell. b. Inner view of shell. c. Detail of outer surface structure (highly enlarged).

characters of the genus *Philobrya*. The surface is radiately ribbed (fig. 1a, 1c), of a white and pale-brown colour (average number of ribs: 15). I do not think THIELE & JAECKEL (1931) were right in thinking that the brown colour is a secundary one: „... die von SOWERBY hervorgehobene braune Färbung ist wahrscheinlich nur eine Folge des mangelhaften Erhaltungszustandes." In all the material I examined the brown valves were definitely not worn and all the worn valves were white. The animal has not yet been discovered and the shell has never been found in fossil state. In literature and in the material put at my disposal I found the following localities (fig. 2):

Port Alfred (BARTSCH, 1915; LAMY, 1922; TURTON, 1932; Amsterdam Museum; Leiden Museum); Algoa Bay (THIELE & JAECKEL, 1931); Port Elizabeth, type-locality (SOWERBY, 1892), Francis Bay; Great Fish Bay; Cape Agulhas, depth 80 m; Agulhas Bank, depth 155 and 102 m (all THIELE & JAECKEL, 1931).

I examined two sets:

Museum Amsterdam: Port Alfred, don. J. R. le B. Tomlin, 1938, 16/2 valves. [1])

Museum Leiden: Port Alfred, H. B. Preston, 1909, 2/2 valves; *Neocardia* no. 1a.

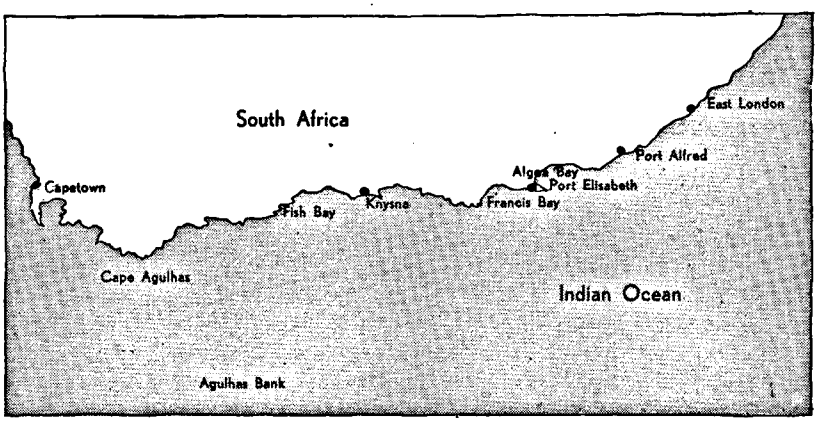

Fig. 2. Map of the east coast of South Africa, showing the localities where *Philobrya angulata* was found.

The sizes of these specimens are:

Museum Amsterdam:	5,0 × 4,1 mm	3,4 × 3,0 mm	
	4,1 × 3,9 mm	3,4 × 3,0 mm	
	4,1 × 3,3 mm	3,0 × 2,7 mm	
	3,9 × 3,3 mm	2,9 × 2,6 mm	
	3,9 × 3,3 mm	2,9 × 2,4 mm	
	3,7 × 3,1 mm	2,8 × 2,5 mm	
	3,6 × 3,3 mm	3,3 × 2,8 mm	(figured specimen)
Author's collection:	3,6 × 3,2 mm	2,8 × 2,6 mm	
Museum Leiden:	4,0 × 3,7 mm	4,0 × 3,4 mm	
Sowerby, 1892:	4,25 × 4,0 mm	(types)	
Bartsch, 1915:	3,6 × 3,0 mm		
Average size:	3,6 × 3,2 mm		

[1]) I received for my private collection two valves, Reg. no. 1316.

The synonymy of the present species runs as follows:

Philobrya (Neocardia) angulata (Sowerby, 1892)

Neocardia angulata	Sowerby, 1892
Venericardia (Neocardia) angulata	Dall, 1903a, 1903b
Hochstetteria alfredensis	Bartsch, 1915
Venericardia ? (Neocardia) angulata	Lamy, 1922
Philobrya (Neocardia) angulata	Thiele, 1922
Philobrya (Neocardia) angulata	Thiele & Jaeckel, 1931
Hochstetteria alfredensis	Turton, 1932
Neocardia angulata	Turton, 1932
Philobrya (Neocardia) angulata	Thiele, 1934
Hochstetteria alfredensis	Barnard, 1951

I have to express my sincere gratitude to Mrs W. S. S. VAN DER FEEN-née VAN BENTHEM JUTTING (Municipal Zoological Museum, Amsterdam) and to Dr. Ch. BAYER (State Museum of Natural History, Leiden) for putting their material at my disposal; I also have to thank Prof. Dr H. BOSCHMA for the hospitality I enjoyed at the State Museum, and I am very much obliged to Mr G. W. M. KURPERSHOEK for his beautiful figures (fig. 1a, 1b, 1c).

LITERATURE

In the following list I compiled all the literature on the above mentioned species. I saw all publications personally.

BARNARD, K. H., 1951. A. beginner's guide to South African shells. Capetown.

BARTSCH, P., 1915. Report on the Turtoncollection of South-African marine mollusks with additional notes on other South-African shells, contained in the United States National Museum. Bull. 91, U. S. Nat. Mus.

CARPENTER, P. P., 1864. Diagnoses of new forms of mollusks collected at Cape St Lucas by Mr J. Xantus. Ann. Mag. Nat. Hist. (3), Vol. 13 [1]).

[1]) *Bryophila* Carpenter, 1864 was preoccupied by *Bryophila* Treitschke, 1825 (a genus of Lepidoptera). In the Index (p. 21, 1872) of Smith. Miscell. Coll., vol. 10, no. 252 (1873), in which Carpenter's paper of 1864 was reprinted, that author proposed a new name: „*Bryophila* (= *Philobrya*)". At that time there were no nomenclatorial rules!

DALL, W. H. 1903a. Contributions to the Tertiary fauna of Florida, part 4. Trans. Wagner Free Inst. Science Philadelphia, Vol. 3.
DALL, W. H., 1903b. Synopsis of the Carditacea and of the American species. Proc. Ac. Nat. Sc. Philad., Vol. 44.
FISCHER, P., 1887. Manuel de Conchyliologie et de Paléontologie conchyliologique ou Histoire Naturelle des Mollusques vivants et fossiles. Paris.
KOBELT, W., 1878. Illustrirtes Conchylienbuch, Vol. 2. Nürnberg.
LAMY, E., 1922. Révision des Carditacea vivants du Muséum National d'Histoire Naturelle de Paris. Journ. de Conch., Vol. 66.
SOWERBY, G. B., 1892. Marine shells of South-Africa. London.
THIELE, J., 1922. Ueber die Gattung Philobrya und das sogenannte Buccalnervensystem von Muscheln. Zool. Anz., Vol. 55.
THIELE, J., 1934. Handbuch der systematischen Weichtierkunde, Part 3. Jena.
THIELE, J., & S. JAECKEL, 1931. Muscheln der Deutschen Tiefsee-Expedition. Wiss. Ergebn. Deutsche Tiefsee-Exp., Vol. 21, part 1.
TURTON, W. H., 1932. The marine shells of Port Alfred, South-Africa. London.

2. A collection from Jeffrey's Bay

(Lamellibranchia, Loricata, Gastropoda Pulmonata et Opisthobranchia)

Introduction

In the course of the year 1949 through the courtesy of Mrs. G. J. FIJN VAN DRAAT-née VAN ZIJLL DE JONG I received a collection of marine shells of South-Africa. These shells were collected by Mrs. T. J. GIBBS on the beach of Jeffrey's Bay in the neighbourhood of Humansdorp (south from Port Elizabeth, Cape Province). Later on, in 1951, I got another collection from the same locality; the first collection was dated „September 1947", the second was not dated. During critical examination and working in the abundant literature on this subject, I met many problems and it seemed to be worth while writing down some notes on this little collection. At the moment I am reviewing the South-African marine mollusca of the

Zoological Museum at Amsterdam [1]); I also consulted the collections of the State Museum of Natural History at Leiden [2]).

The systematic list gives an account of the species of this Jeffrey's Bay collection with notes on nomenclature, systematic position, occurrence in South-Africa, literature, etc. I followed the nomenclature of THIELE'S Manual (THIELE, 1929—1934), with the following alteration: according to RANSON (1949, 1951) I considered *Gryphaea* as a genus (cf. THIELE part 3). In the second place I recorded whether SOWERBY (1892, with Appendix, 1897), BARTSCH (1915), and TURTON (1932), the three most important works on this subject, mentioned specimens of the species in question and which name they used. One of the first works on South-African mollusca is KRAUSS' excellent book (1848); however he only studied a very little part of this abundant fauna. After that I record my specimens, with (1) from the first, with (2) from the second collection. In the second part of these investigations, which will be published later on, the Gastropoda Prosobranchia of this collection will be discussed.

Acknowledgements

In the first place I am indebted to Mrs. W. S. S. VAN DER FEEN-née VAN BENTHEM JUTTING and Dr. C. G. F. H. BAYER, who gave me a free access to the collections respectively of the Zoological Museum at Amsterdam and the State Museum of Natural History at Leiden. The following persons sent me material, identified shells for me or provided me with literature: Dr. C. O. VAN REGTEREN ALTENA (Leiden), Dr. G. RANSON (Paris), L. DE PRIESTER (Zoutelande), W. H. GRAVESTEIN (Amsterdam) and Mrs. T. J. GIBBS (Rustenburg, South-Africa). Mrs. A. M. SCHADE VAN WESTRUM-née VAN 'T OEVER was so kind as to correct the English translation. I wish to express my sincere gratitude to all above-mentioned persons. I have to thank Prof. Dr. H. BOSCHMA (Leiden) especially for the hospitality I have enjoyed at the Museum.

Systematic list with annotations

Classis LAMELLIBRANCHIA, Ordo Taxodonta
Familia Arcidae

Arca (*Arca*) *imbricata* Bruguière
SOWERBY: *Arca imbricata* Brug., p. 65.

[1]) BENTHEM JUTTING, W. S. S. VAN, 1950. Journ. de Conch., vol. 90.
[2]) BAYER, CH., 1950. Journ. de Conch., vol. 90.

BARTSCH: *Arca imbricata* Bruguière, p. 230, spec. dub. [1])
Arca kraussii Philippi, p. 230, spec. dub.
TURTON: *Barbatia kraussi* Philippi, p. 216.

1 Specimen, Reg. no. 1580 (2), length 29,8 mm.

My specimen belongs to the var. *kraussii* Philippi; original description KRAUSS (1848, p. 14). The status of this variety is not yet known exactly. LAMY (1907) and DAUTZENBERG (1929) bring it under *A. imbricata* var. *arabica* Phil. whilst SOWERBY (1892) and ODHNER (1919, p. 26) make it a synonym of *A. imbricata.* The present author holds the view that *A. kraussii* is a valid variety of *A. imbricata.*

Arca (*Barbatia*) *obliquata* Gray

SOWERBY: *Arca (Barbatia) obliquata* Gray, p. 65.
BARTSCH: *Arca obliquata* Gray, p. 230, spec. dub.
Barbatia alfredensis new species, p. 182.
TURTON: *Barbatia alfredensis* Bartsch, p. 216.

½ specimen, Reg. no. 1046 (1), length 20,5 mm.

After ample consideration and after studying the material of this species in the Amsterdam and the Leiden Musea I conclude *Arca* (*Barbatia*) *alfredensis* (Bartsch), described by BARTSCH (1915) on page 182 under the name of *Barbatia alfredensis* new species, to be a synonym of *Arca* (*Barbatia*) *obliquata* Gray. This *Arca* is widespread in the Indian Ocean and occurs frequently on the east coast of South Africa. The habitus varies a good deal. I attach a photograph (Plate 1 fig. 1) of my specimen. 1½ specimens from Hermansfontein (Amsterdam Museum) are much longer, 5 specimens from Durban (idem) are shorter and higher.

Familia Glycymeridae

Glycymeris conollyi Tomlin

SOWERBY: *Pectunculus inaequalis* Sowerby, p. 66.
BARTSCH: *Pectunculus bicolor* Reeve, p. 247, spec. dub.
Pectunculus inaequalis Sowerby, p. 247, spec. dub.
TURTON: *Glycymeris connollyi* Tomlin, p. 215.

4/2 specimens, Reg. no. 969 (1).

Four valves, not yet fullgrown. They are worn, but I could compare my specimens with numerous specimens in the Amsterdam Museum. I think that TURTON'S *Glycymeris multistriata* (p. 215) is nothing but a very fine valve of *G. connollyi.* This species varies not much,

[1]) At the end of his book BARTSCH gives a list of doubtful species and species, which he did not find in his Museum collections. I cite this list as the list of „species dubiae", the doubtful species.

but comparing TOMLIN'S figure (TOMLIN, 1926, Plate XVI fig. 12) with TURTON'S (TURTON, 1932, Plate LV fig. 1495) it is evident TURTON had an extremely flat shell. Personally I would name it *G. connollyi*, but others could possibly prefer to name it *G. connollyi* var. *multistriata* Turton.

Classis LAMELLIBRANCHIA, Ordo Anisomyaria
Familia Mytilidae

Brachyodontes (*Septifer*) *bilocularis* (Linnaeus)
SOWERBY: not mentioned.
BARTSCH: *Tichogonia krausii* Kuster, p. 253, spec. dub.
TURTON: *Septifer kraussi* Kuster, p. 227.

½ specimen, Reg. no. 728 (1); ½ specimen, Reg. no. 1650 (2).

The problem whether *Septifer bilocularis* and *S. kraussi* are synonyms is not yet solved. KRAUSS himself (KRAUSS, 1848, p. 26) gives many details and SMITH (1903) only suggests that *Septifer kraussi* is „Perhaps the same as *S. bilocularis*". The present author holds the view, that, since *Septifer bilocularis* (L.) is a widespread Indopacific species (for instance cf. MARTINI-CHEMNITZ, vol. 8: „Aufenthalt: im Indischen Meer und an Neuholland.") it will probably appear that *S. kraussi* (Küster) is only a geographical variety of the Linnean species. DAUTZENBERG (1929) has the same hypothesis. BARNARD'S recent work (1951) records the name *S. bilocularis* only.

Colour of my specimens: orange (probably a secondary colour), inside white.

Familia Pectinidae

Pecten (*Chlamys*) *tinctus* Reeve
SOWERBY: *Pecten pusio* Linn., p. 66.
BARTSCH: *Pecten tinctus* Reeve, p. 247, spec. dub.
TURTON: *Pecten tinctus* Reeve, p. 222.

2/2 specimens, Reg. no. 726 (1); ½ specimen, Reg. no. 1530 (2).

SMITH (1906) says on p. 59, *Chlamys tinctus* (Reeve): „I am inclined to believe that this South-African shell is distinct from the European *P. pusio* (*multistriatus* Poli)." SOWERBY (1889a & b, 1892) records *P. pusio* Reeve, KRAUSS (1848) too. *Pecten pusio* Reeve nec Linnaeus is a synonym of *P. distortus* (Da C.), which is a European species. *P. multistriatus* Poli is Mediterranean. I think that all records of *P. pusio* Rve. in South-Africa are due to a wrong identification of specimens of *P. tinctus* Rve. I attach two figures (figs. 3a en b) of the

structure of a very fine valve (length 10,8 mm) in the Amsterdam Museum (Gordon's Bay, N. E. corner False Bay, leg. Prof. Dr. P. BATTAERD, received 1938). This *Pecten* occurs abundantly along the South-African coast.

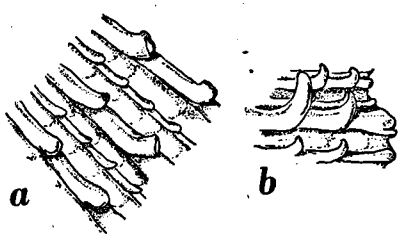

Fig. 3. *Pecten tinctus* Rve., Gordon's Bay, Amsterdam Museum. a. Structure of the surface. b. The same at the edge of the shell. Both highly enlarged.

Pecten (*Pecten*) *sulcicostatus* Sowerby

SOWERBY: *Pecten (Vola) sulcicostatus* Sowerby, p. 89.
BARTSCH: *Pecten sulcicostatus* Sowerby, p. 186.
TURTON: *Pecten sulcicostatus* Sowerby, p. 222.

2/2 specimens, Reg. no. 970 (1).

Pecten capensis Gray is only a M. S. name, cf. SOWERBY (1892, p. 89). Two convex valves. Measurements and colour:

length	diam.	ribs	colour
58,5 mm	59 mm	14	white with a red line at the base
67 mm	72,5 mm	16	dark blue with a faint red line

Occurs not very frequently.

Familia Limidae

Lima (*Mantellum*) *rotundata* Sowerby

SOWERBY: *Lima rotundata* Sowerby, p. 66.
BARTSCH: *Lima rotundata* Sowerby, p. 186.
TURTON: *Lima rotundata* Sowerby, p. 223.

2/2 specimens, Reg. no. 727 (1).

Familia Ostreidae

Gryphaea margaritacea (Lamarck)

SOWERBY: *Ostrea prismatica* Gray, p. 66.
BARTSCH: *Ostrea prismatica* Gray, p. 246, spec. dub.
TURTON: *Ostrea prismatica* Gray, p. 221.

½ specimen, Reg. no. 900 (1).

I am obliged to Dr. G. RANSON (Muséum National d'Hist. Nat., Paris) for the identification of this specimen [1]).

According to RANSON (1949, 1951) this species is common in South-Africa. In his publications he remarks that this oyster is often referred to as *Ostrea prismatica* Gray (= *O. iridiscens* Gray). SOWERBY, BARTSCH and TURTON evidently did so. My specimen has the umbo-cavity well developed, but not so extremely as RANSON (1951) figures at page 6, fig. 3.

Classis LAMELLIBRANCHIA, Ordo Eulamellibranchia
Familia Carditidae

Thecalia concamerata (Bruguière)

SOWERBY: *Cardita concamerata* Bruguière, p. 62.
BARTSCH: *Thecalia concamerata* Bruguière, p. 192.
TURTON: *Cardita concamerata* Bruguière, p. 232.

1 specimen, Reg. no. 736 (1); 1½ specimens, Reg. no. 1531 (2).

I wonder why on page 232 BARTSCH records *Cardita concamerata* Brug. as a species dubia, with locality „America". Evidently he doubted whether the names *Cardita c.* and *Thecalia c.* are synonyms. This species is „apparently endemic to South-Africa", cf. STEPHENSON, 1948, p. 267. „It has been quoted (I believe erroneously) [2]) as West-Indian", cf. SOWERBY, 1889a, p. 14.

Familia Lucinidae

Loripes roseus (Angas)

SOWERBY: not mentioned.
BARTSCH: not mentioned.
TURTON: not mentioned.

3/2 specimens, Reg. no. 735 (1).

This species seems to be rather rare, for SMITH (1910) speaks about „the unique type" in the British Museum (Natural History). BARNARD (1951) doet not discuss the frequency of this species in South-Africa. In the Leiden Museum I found two samples: Port Elizabeth, 6/2 spec., J. L. STAID, 1925 (*Lucina* no. 13a); Port Elizabeth, 4/2 spec., L. DE PRIESTER (*Lucina* no. 13b). In the Amsterdam Museum there is a sample from Jeffrey's Bay, 2/2 spec., don. J. R. LE B. TOMLIN. All these specimens agree very well with the original description (ANGAS, 1878).

[1]) Dr. C. O. VAN REGTEREN ALTENA was so kind as to discuss this specimen for me with Dr. RANSON in Paris.

[2]) Note of the reviewer. For instance KOBELT (1878, vol. 2, p. 355) speaks about „eine einzige Art aus Westindien".

Familia Cardiidae

Cardium (*Cerastoderma*) *turtoni* Sowerby

SOWERBY: *Cardium fasciatum* Montagu, p. 61.
Cardium Turtoni Sowerby, p. 25 Appendix.
BARTSCH: *Cardium turtoni* Sowerby, p. 202.
TURTON: *Cardium turtoni* Sowerby, p. 243.
3/2 specimens, Reg. no. 971 (1); ribs 27, 26, 26.

The original description (SOWERBY, 1894, p. 377) says: „costis 26" [1]). In the Leiden Museum there are two valves from Port Alfred (*Cardium* no. 77a), both with 26 ribs. The variation in number of ribs therefore seems to be very little.

Laevicardium (*Trachycardium*) *assimile* (Reeve)

SOWERBY: not mentioned.
BARTSCH: not mentioned.
TURTON: not mentioned.
3/2 specimens, Reg. no. 1630 (2).

This species, distributed in the Indian Ocean and along the east coast of Africa, has not yet been recorded for the South-African coast. In the Museum at Leiden there are 2/2 specimens originating from Durban, Nov. 1916, leg. P. BUITENDIJK (*Cardium* no. 24e). In the Amsterdam Museum I found no specimens from South-African localities. So this species is apparently new to the South-African list.

Familia Veneridae

Tivela compressa (Sowerby)

SOWERBY: *Cytherea (Tivela) compressa* Sowerby, p. 58.
BARTSCH: *Tivela compressa* Sowerby, p. 203.
TURTON: *Tivela compressa* Sowerby, p. 243.
½ specimen, Reg. no. 731 (1), length 29,5 mm.
SMITH (1914) gives excellent figures.

Tivela natalensis Dunker

SOWERBY: *Cytherea (Tivela) alucinans* Sowerby n. sp., p. 24 Appendix.
BARTSCH: *Tivela natalensis* Dunker, p. 253, spec. dub.
Tivela alucinans Sowerby, p. 203.
TURTON: *Tivela natalensis* Dunker, p. 243.
1 specimen, Reg. no. 1632 (2).

[1]) In the Appendix on p. 25 SOWERBY records: „Journal of Conchology, vol. 7, p. 14". This must be: vol. 7, p. 377.

Original description DUNKER, 1864. SOWERBY (1897, Appendix) gives very beautiful figures on Plate VII figs. 5 & 6. My specimen is very typical; it was collected shortly after death, for there were remnants of the flesh in the shell.

Measurements:

63 × 55 mm (SOWERBY, 1897)
26,5 × 23,2 mm (author's collection)

DUNKER (1864) gives only proportions. This species is more triangular than *Tivela compressa* (Sow.).

Dosinia (*Dosinia*) *hepatica* Lamarck

SOWERBY: *Dosinia hepatica* Lamarck, p. 60.
BARTSCH: *Dosinia hepatica* Lamarck, p. 202.
TURTON: *Dosinia hepatica* Lamarck, p. 243.
½ specimen, Reg. no. 1630 (2).

A common species, widespread along the eastern coast of the continent of Africa; in the Museum at Leiden there is a sample from the Red Sea. My valve is warm brown coloured on the surface. Length 17,4 mm (not yet fullgrown).

Venus (*Venus*) *verrucosa* Linnaeus

SOWERBY: *Venus (Chione) verrucosa* Linn., p. 60.
BARTSCH: *Antigona verrucosa* Linnaeus, p. 204.
TURTON: *Antigona verrucosa capensis* Sowerby, p. 244.
1 specimen, Reg. no. 780 (1).

It does not belong to the variety *capensis* Sow. I doubt whether this is a valid variety at all; I think it belongs to the typical form of the species.

Familia Mactridae

Standella (*Eastonia*) *solanderi* (Gray)

GRAY, 1837: *Spisula Soländeri*, p. 373.
REEVE, 1843—1878: *Mactra Solandri* Gray, vol. 8 (1854), Plate XX, species 113.
SOWERBY, 1892: *Standella Solandri* Gray, p. 56.
BARTSCH, 1915: *Eastonia africana* new species, p. 209.
LAMY, 1917: *Standella (Eastonia) Solanderi* Gray, p. 391.
ODHNER, 1919: *Eastonia africana* Bartsch, p. 10.
DAUTZENBERG, 1929: *Standella (Eastonia) solanderi* Gray, p. 411 (= 617).
TURTON, 1932: *Eastonia africana* Bartsch, p. 256.
HAAS, 1936: *Standella (Eastonia) solanderi* (Gray), p. 147.
½ specimen, Reg. no. 729 (1).

This species, reported from the Moluccas, occurs in the Red Sea and on the east coast of South-Africa. There are no specimens in the Leiden Museum and only one single valve in the Amsterdam Museum: Durban beach, 10—17 Nov. 1938, leg. Dr. H. ENGEL. This *Standella* definitely does not occur in the Moluccas; both the Leiden and the Amsterdam Musea have extensive collections from Malaysia, but there is no material of the species in question. GRAY (1837) did not mention the habitat. Later conchologists recorded „Moluccas" as the habitat (cf. REEVE, vol. 8, 1854) [1]). BARTSCH (1915) described this species as *Eastonia africana* and says: „This is probably what has been reported as *Standella solandri* Gray, a species occurring in the Moluccas. It differs from that species in being shorter and higher and in having many more ribs." This description and his beautiful figures on Plate 43 figs. 5, 6 leave no doubt, that he had a specimen of *Standella solanderi* (Gray) before him. ODHNER (1919) says, that his valves are very much alike BARTSCH' species and he writes that *S. africana* and *S. solanderi* are perhaps identical [2]). I wonder why LAMY (1917) does not record the name *Standella africana*. The distribution, according to the literature and the material I examined, is as follows: Red Sea (HAAS); Aden (LAMY); Musha islands (LAMY); Djibouti (LAMY); Majunga, Madagascar (ODHNER); Tamatave, Madagascar (DAUTZENBERG); Port Alfred (BARTSCH, TURTON); Durban (Amsterdam Museum); Jeffrey's Bay (Author's collection); Cape of Good Hope (SOWERBY).

Measurements:

length 36	mm;	height 30	mm	(BARTSCH)
26	mm;	19	mm	(Amsterdam Museum)
20,8	mm;	15,5	mm	(Author's coll.)
10	mm;	—	mm	(ODHNER, max. length)

GRAY, 1837, gives no measurements. This species seems to be rather rare (cf. HAAS, 1936). I attach a photograph of the two specimens I got in my hands (Plate 1 figs. 2, 3). The misleading locality Moluccas for *S. solanderi* inspired BARTSCH to give the South-African shell a new name, although he himself was aware of the similarity of *solanderi* and *africana*. Mr. J. R. LE B. TOMLIN (St Leonards-on-Sea, Great Britain) used the name *S. solanderi* for the valve in the Amsterdam Museum, admitting that this name and *S. africana* are synonyms. Independently and long before I saw the shell belonging to that Museum, I arrived at the same conclusion.

[1]) MARTINI—CHEMNITZ (1868—1895) does not mention this species.

[2]) Moreover he suggests *S. africana* to be a juvenile form of *S. nicobarica* (Gmel.) = *S. aegyptiaca* (Rve.). I do not agree with him in that view, i.a. since *S. solanderi* can grow as large as *S. nicobarica*.

Familia Donacidae

Donax serra Röding

SOWERBY: *Donax serra* Chemnitz, p. 58.
BARTSCH: *Donax serra* Chemnitz, p. 207.
TURTON: *Donax serra* Chemnitz, p. 253.
1 specimen, Reg. no. 733 (1).
Length 61,5 mm; TURTON (1932) records: „up to 60 mm."

Donax sordidus Reeve

SOWERBY: *Donax sordidus* Reeve, pag. 58.
BARTSCH: *Donax sordidus* Hanley, pag. 208
TURTON: *Donax sordidus* Hanley, pag. 253.
1,5/2 specimens, Reg. no. 734 (1).
A very common species.

Familia Tellinidae

Tellina rosea Spengler

SOWERBY: *Tellina rosea* Spengler, p. 57.
BARTSCH: *Tellina rosea* Spengler, p. 252, spec. dub.
Tellina albinella alfredensis new subspecies, p. 205.
TURTON: *Tellina albinella alfredensis* Bartsch, p. 246.
½ specimen, Reg. no. 732 (1), length 46,5 mm; height 25,6 mm.
TURTON remarks that there is a very slight difference between *T. rosea* and *T. albinella alfredensis* and he thought SMITH identified, what TURTON calls *T. albinella alfredensis* as *T. rosea.* After due consideration of both species and after reading BARTSCH' description of *T. albinella alfredensis* with the excellent figures I concluded:

1) BARTSCH evidently had a specimen of *Tellina rosea* Spgl. before him (cf. his figures and his description, viz. „being much heavier", etc.).
2) TURTON was right in thinking that SMITH identified his specimens of *„Tellina albinella alfredensis"* as *T. rosea.*
3) *Tellina rosea* Spgl. really is a South-African species and *Tellina albinella* Lam. is an Australian species. These two species are very much alike, but differ inter alia in heaviness: *rosea* is rather thick, whilst *albinella* is very thin. How closely the two species are allied is still an unsolved question.

Summary:
Tellina rosea Spengler
syn. *T. albinella alfredensis* Bartsch
Habitat: South-Africa, Indian Ocean (the latter according to older literature, viz. REEVE and SOWERBY's Thesaurus Conch.)

Tellina albinella Lamarck
Habitat: Australia

I examined the following South-African material of *T. rosea:* Muizenberg, 2/2 specimens, J. L. STAID, 1925 (*Tellina* no. 15b, Leiden Museum); South-Africa, 1 specimen, Geol. Museum Wageningen (*Tellina* no. 15d, ibidem); Muizenberg, ½ specimen, coll. Jo KOKER, 1925, det. TOMLIN (Amsterdam Museum); Gordon's Bay, N. E. corner False Bay, 4/2 specimens leg. Prof. Dr. P. BATTAERD, received 1938 (Amsterdam Museum).

Classis LORICATA, Ordo Chitonida
Familia Ischnochitonidae

Dinoplax gigas (Gmelin)

SOWERBY: *Chiton gigas* Chemnitz, p. 50. [1])
BARTSCH: *Dinoplax gigas* Gmelin, p. 179.
TURTON: *Dinoplax gigas* Gmelin, p. 210.

2 specimens and 2 odd plates, Reg. no. 737 (1); 4 odd plates, Reg. no. 1678 (2).

One of the plates of the first collection is very large. The dorsal length is 27 mm, the length of the wings 36 mm; the angle between the wings approximately 90 degrees. The entire animal must have had a length of about 110 mm!

Classis GASTROPODA, Subclassis Pulmonata, Ordo Basommatophora
Familia Siphonariidae

Siphonaria (*Siphonaria*) *variabilis* Krauss

SOWERBY: *Siphonaria variabilis* Krauss, p. 54.
BARTSCH: *Siphonaria variabilis* Krauss, p. 250, spec. dub.
Siphonaria concinna Sowerby, p. 10.
TURTON: *Siphonaria variabilis* Krauss, p. 10.
Siphonaria concinna Sowerby, p. 9.

2 specimens, Reg. no. 757 (1).

My specimens belong to the variety *concinna* Sowerby, which is considered a different species by some authors (BARTSCH, 1915; TURTON, 1932). HUBENDICK (1947) considers the two names to be synonyms.

[1]) See Emendations in the Appendix (1897), pag. 32: „The Polyplacophora or Chitons are divided into the following sub-genera: -*Dinoplax* for *Chiton gigas,*" etc.

Classis GASTROPODA, Subclassis Opisthobranchia, Ordo Pleurocoela
Familia Bullariidae

Bullaria ampulla (Linnaeus)
SOWERBY: *Bulla ampulla* Linn., p. 52.
BARTSCH: *Bullaria ampulla* Linnaeus, p. 6.
TURTON: *Bullaria ampulla* Linnaeus, p. 5.

2 specimens, Reg. no. 958 (1); 1 specimen, Reg. no. 1532 (2).

TURTON follows TRYON & PILSBRY (Man. of Conch., vol. 15) and reports two varieties from South-Africa: *Bullaria ampulla bifasciata* Menke and *B. a. trifasciata* Sowerby. PILSBRY, however, doubted whether these varieties are valid. The present author thinks he is right in doing so. SOWERBY (1892) remarks: „The South-African specimens I have seen are small." The measurements of my specimens agree with this remark:

length	20 mm;	max. diam. 12,5 mm
	17,5 mm;	11,3 mm
	16 mm;	10,4 mm

Conclusions

The conclusions from these notes are: *Arca alfredensis* (Bartsch) is a synonym of *Arca obliquata* Gray; *Standella africana* (Bartsch) is a synonym of *Standella solanderi* (Gray); *Tellina albinella alfredensis* (Bartsch) is a synonym of *Tellina rosea* Spengler. The list contains 22 species, from which 13 are endemic to South-Africa. These endemic species are: *Glycymeris connollyi, Pecten tinctus, Pecten sulcicostatus, Lima rotundata, Thecalia concamerata, Loripes roseus, Cardium turtoni, Tivela compressa, Tivela natalensis, Donax serra, Donax sordidus, Dinoplax gigas, Siphonaria variabilis.* Most of the other species are widespread in the Indian Ocean (*Arca obliquata, Brachyodontes bilocularis, Tellina rosea* and *Bullaria ampulla*), one has a wide distribution in the Atlantic Ocean (*Venus verrucosa*), one lives along the coasts of South-Africa and Madagascar (*Gryphaea margaritacea*) and three are living along the east and south coast of the African continent (*Arca imbricata, Laevicardium assimile* and *Dosinia hepatica*).

The last species, *Standella solanderi*, is a problematic one. The distribution according to literature and material is discontinuous. As far as I can judge this subject I hold the view that this species occurs along the whole east and south coast of Africa. Since it is a rare species and the coast of Africa between Djibouti and Mozambique is not much explored, there is a possibility that it will be found there. There are no conchological differences between the shells from

the Red Sea and the South-African coast (cf. e.g. the photographs in HAAS, 1936) and there is no obvious reason why there should be discontinuity in distribution. There is no barrier, nor has there ever been, between the Red Sea and the southwestern part of the Indian Ocean. So I expect this *Standella* to be found along the whole east coast of Africa.

LITERATURE

ANGAS, G. F., 1878. Description of six species of bivalve shells in the collection of Mr. Sylvanus Hanley F.L.S., and of a Helix from the Solomon Islands. Proc. Zool. Soc., 1878.

BARNARD, K. H., 1951. A beginner's guide to South-African shells. Capetown.

BARTSCH, P., 1915. Report on the Turtoncollection of South-African Marine Mollusks, with additional notes on other South-African shells, contained in the United States National Museum. Bull. 91, U. S. Nat. Mus.

DAUTZENBERG, Ph., 1929. Mollusques testacés marins de Madagascar. Faune Col. Franç., vol. 3.

DUNKER, W., 1864. Fünf neue Mollusken. Malakozool. Blätt., vol. 11.

EYRE, J. and T. A. STEPHENSON, 1938. The South-African intertidal zone and its relation to ocean currents, Part 5. A subtropical Indian Ocean shore. Ann. Natal Mus., vol. 9.

EYRE, J., G. J. BROEKHUYSEN and M. I. CRICHTON, 1938. The South-African intertidal zone and its relation to ocean currents, Part 6. The East London district. Ann. Natal Mus., vol. 9.

FISCHER, Dr. P., 1887. Manuel de Conchyliologie et de Paléontologie conchyliologique ou Histoire Naturelle des Mollusques vivants et fossiles. Paris.

GRAY, J. E., 1837. A synoptical catalogue of the species of certain tribes or genera of shells contained in the collection of the British Museum and the author's cabinet; with descriptions of the new species, Family Mactradae, Gray. Mag. Nat. Hist. (N.S.), vol. 1.

HAAS, F., 1936. Malakologische Bemerkungen und Neubeschreibungen. Senckenbergiana, vol. 18.

HUBENDICK, B., 1947. On South-African Siphonariidae. Ann. Natal Mus., vol. 11.

KOBELT, Dr. W., 1878. Illustrirtes Conchylienbuch, 2 vols. Nürnberg.

KRAUSS, Prof. Dr. F., 1848. Die Südafrikanischen Mollusken. Stuttgart.

KÜSTER, H. C., e.a., 1838—1920. Systematisches Conchylien-Cabinet von MARTINI und CHEMNITZ (N.S.), 11 vol. Nürnberg.
LAMY, E., 1907. Révision des Arca vivants du Muséum d'Histoire Naturelle de Paris. Journ. de Conch., vol. 55.
—, 1911. Révision des Pectunculus vivants du Muséum d'Histoire Naturelle de Paris. Journ. de Conch., vol. 59.
—, 1917. Révision des Mactridae vivants du Muséum d'Histoire Naturelle de Paris. Journ. de Conch., vol. 63.
—, 1920. Révision des Lucinacea vivants du Muséum d'Histoire Naturelle de Paris. Journ. de Conch., vol. 65.
—, 1922. Révision des Carditacea vivants du Muséum d'Histoire Naturelle de Paris. Journ. de Conch., vol. 66.
ODHNER, N. H., 1919. Contribution à la faune malacologique de Madagascar. Ark. Zool., vol. 12, no. 6.
PAETEL, F., 1890. Catalog der Conchyliensammlung, 4te Neubearbeitung, 3te Abtheilung. Berlin.
RANSON, G., 1949. Note sur trois espèces Lamarckiennes d'Ostréidés. Bull. du Mus. (2), vol. 21.
—, 1951. Observations morphologiques, biologiques, biogéographiques, géologiques et systématiques sur une espèce d'huître de Madagascar et d'Afrique du Sud: Gryphaea margaritacea (Lmk). Bull. Inst. Océanogr., vol. 48, no. 983.
REEVE, L. A., 1843—1878. Conchologica Iconica, 20 vols. London.
SMITH, E. A., 1899. Descriptions of new species of South-African marine shells. Journ. of Conch., vol. 9.
—, 1903. List of species of mollusca from South-Africa. Proc. Malac. Soc., vol. 5.
—, 1906. On South-African marine mollusca, with descriptions of new species. Ann. Natal Mus., vol. 1.
—, 1910. On South-African marine mollusca, with descriptions of new species. Ann. Natal Mus., vol. 2.
—, 1914. Descriptions of some South-African marine shells. Ann. Natal Mus., vol. 3.
SOWERBY, G. B., 1889a. Some further notes on marine shells of South-Africa, with descriptions of new species. Journ. of Conch., vol. 6.
—, 1889b. Further notes on marine shells of South-Africa, with descriptions of new species. Journ. of Conch., vol. 6.
—, 1892. Marine shells of South-Africa. London.
—, 1894. Marine shells of South-Africa. Journ. of Conch., vol. 7.
—, 1897. Appendix to Marine shells of South-Africa. London.
STEPHENSON, T. A., A. STEPHENSON and K. M. F. BRIGHT, 1938. The South-African intertidal zone and its relation to ocean currents, Part. 4. The Port Elizabeth district. Ann. Natal Mus., vol. 9.

STEPHENSON, T. A., 1948. The constitution of the intertidal fauna and flora of South-Africa, Part. 3. Ann. Natal Mus., vol. 11.
THIELE, J., 1929—1935. Handbuch der systematischen Weichtierkunde, 4 parts. Jena.
THIELE, J., and S. JAECKEL, 1931. Muscheln der Deutschen Tiefsee-Expedition. Wiss. Erg. Deutsch. Tiefs. Exp., vol. 21, part 1.
TOMLIN, J. R. LE B., 1923. On South-African marine mollusca with descriptions of several new species. Journ. of Conch., vol. 17.
—, 1926. On South-African marine mollusca with descriptions of new species. Ann. Natal Mus., vol. 5.
—, 1931. On South-African marine mollusca with descriptions of new genera and species. Ann. Natal Mus., vol. 6.
TURTON, W. H., 1932. The marine shells of Port Alfred, South-Africa. London.
TRYON, G. W., and H. A. PILSBRY, 1879—1898. Manual of Conchology, 17 vols. Philadelphia.
WOOD, W., 1828. Index Testaceologicus or a Catalogue of shells, British and foreign, arranged according to the Linnean system, 2nd ed. London.

Samenvatting in het Nederlands

Drie-en-twintig soorten Lamellibranchia, Loricata, Ophisthobranchiate en Pulmonate Gastropoden van Jeffrey's Bay ten Zuiden van Port Elizabeth worden critisch besproken. De voornaamste conclusies zijn: *Arca alfredensis* (Bartsch) is synoniem met *Arca obliquata* Gray, *Standella africana* (Bartsch) is synoniem met *Standella solanderi* (Gray), *Tellina albinella alfredensis* Bartsch is synoniem met *Tellina rosea* Spengler. Verder werd één soort nieuw voor Zuid-Afrika gevonden, n.l. *Laevicardium assimile* (Reeve). Van de 22 soorten zijn er 13 endemisch voor Zuid-Afrika. De meest karakteristieke daaronder is *Thecalia concamerata* (Brug.), een soort uit de familie der Carditidae. De resterende soorten hebben merendeels een groot verspreidingsgebied in de Indische Oceaan.

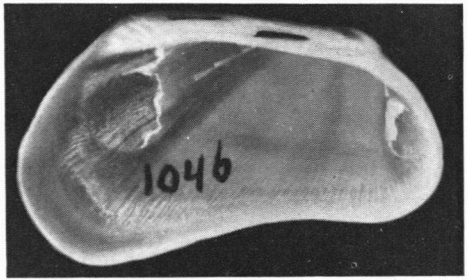

Fig. 1. *Arca obliquata* Gray, Jeffrey's Bay, enlarged.

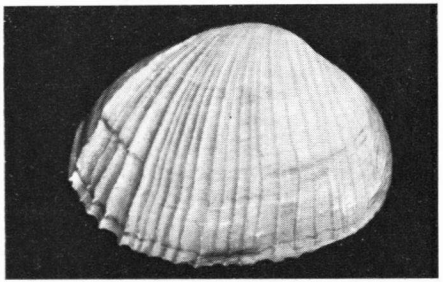

Fig. 2. *Standella solanderi* (Gray), Jeffrey's Bay, enlarged.

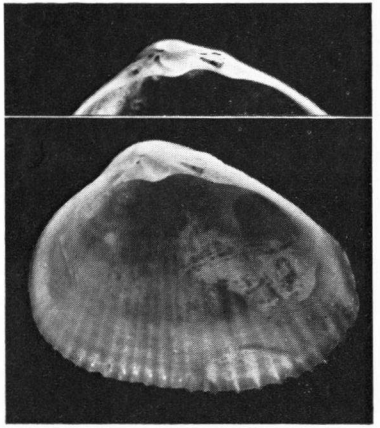

Fig. 3. *Standella solanderi* (Gray), Durban, Mus. Amsterdam, enlarged.

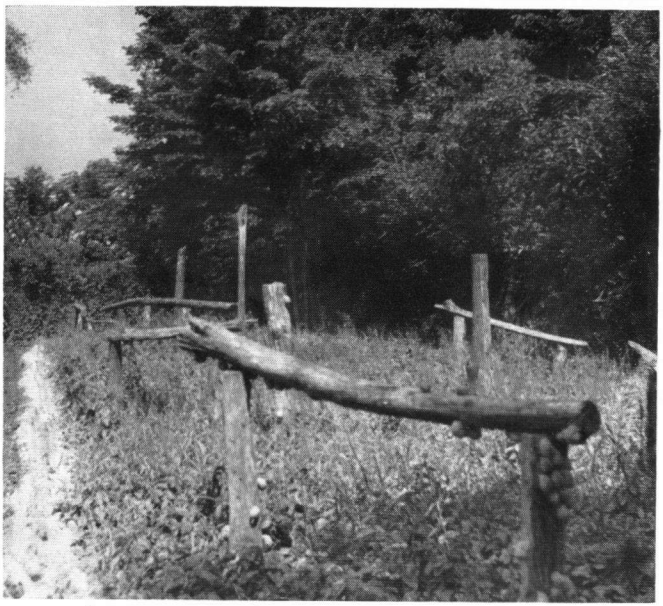

Fig. 1. Snail farm at Valkenburg, June 1951. Note the little bridges with Roman Snails and the strip of marl along the cultivation bed.
(Photo P. J. van der Feen.)

Fig. 2. Snail farm at Valkenburg, June 1951. One of the little bridges with Roman Snails.
(Photo P. J. van der Feen.)