Notes on Canarium sensu Abbott. 2. On the identity of Strombus dentatus Linnaeus, 1758 with the designation of a neotype and notes on its subjective synonyms (Caenogastropoda: Strombidae)

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Notes on *Canarium* sensu Abbott. 2[1]. On the identity of *Strombus dentatus* Linnaeus, 1758 with the designation of a neotype and notes on its subjective synonyms (Caenogastropoda: Strombidae)

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For a long time the nominal taxon *Strombus dentatus* Linnaeus, 1758, currently *Tridentarius dentatus*, has been a source of confusion. Herein the early sources of confusion are investigated based on literature roughly up to 1800. A lectotype for *S. dentatus* has been designated earlier on, but, as the specimen is not a syntype, this lectotype designation is not in agreement with the IZCN Code. To fix the identity of *S. dentatus* unambiguously, a neotype for this species is designated. Lectotypes for the nominal taxa *Lambis dentata*, a subjective synonym and secondary homonym of *S. dentatus*, and *S. samarensis*, a subjective synonym of *S. dentatus*, are designated. Information, on the (possible) whereabouts of specimens referred to by subsequent authors, is added. An appendix with notes on Martin Lister's Historiae Conchyliorom is added.

Keywords: Gastropoda, Strombidae, *Tridentarius*, neotype, lectotype.

INTRODUCTION

For a general introduction to this series, see Kronenberg (2025). In this paper I discuss and secure the identity of *Strombus dentatus* Linnaeus, 1758.

The brief description and the lack of references to illustrations (Linnaeus, 1758; 1767) caused quite some confusion about the identity of *Strombus dentatus* Linnaeus, 1758, currently *Tridentarius dentatus*, in the past. It is also one of the causes of the introduction of names for species that are at present considered to be junior subjective synonyms of *S. dentatus*. These synonyms have already been summarized in e.g. the partial chresonomies presented by Issel & Tapparone Canefri (1876: 352-353) and Abbott (1960: 85). Especially the epithet *tridentatus*, introduced by Gmelin (1791) has been used up to 1970 to denote this species.

Dodge (1956: 285) discussed briefly the identity of *S. dentatus* and the confusion that had arisen, concluding that *S. tridentatus* was a junior synonym of *S. dentatus*. Yet, Kira (1959: 35 caption to pl. 15 fig. 3) used *Canarium tridentatum* to denote this species.

Dodge's discussion was summarized by Abbott (1960: 85) in his influential monograph. Ever since Abbott (1960) almost all authors agree on the identity of Linnaeus's taxon, except e.g. Habe (1970: 41) who, like Kira, used the name *Canarium tridentatum* to denote this species. Also Kronenberg (in Severns 2011: 128) used in the caption to fig. 6 the name *Tridentarius tridentatus* (L., 1758) [sic] as the valid name for this taxon. Linnaeus however never described this species with the epithet "*tridentatus*", and in the introductory notes to the family (Kronenberg in Severns 2011: 128) the epithet is spelled correctly, i.e. "*dentatus*", so "*tridentatus*" should be considered to be a lapsus calami.

Apart from describing some new genus-group taxa, Liverani et al. (2021) designated a lectotype and a type locality for *S. dentatus* Linnaeus, 1758, viz. the figures in Chemnitz (1788: pl. 157, figs 1501, 1502). Linnaeus died in 1778, so he could never have seen the illustration in Chemnitz that was published in 1788, and in Chemnitz (1788) there is no indication that Linnaeus ever saw the specimen(s) illustrated on pl. 157 figs 1501, 1502. Therefore, the lectotype designation by Liverani et al. is not in agreement with the rules and regulations as set by the IZCN (1999) (as it is not a syntype) and Arts 74.1 and 74.2 are applicable.

As *Strombus dentatus* is also the type species of the genus group taxon *Tridentarius* Kronenberg & Vermeij, 2002, it is

1 For part 1 in this series see: Kronenberg, G.C., 2025. Notes on *Canarium* sensu Abbott. 1. On the primary types of two species currently assigned to *Maculastrombus* Liverani, Dekkers & S. J. Maxwell, 2021 and recognition of the epifamily Stromboidae Rafinesque, 1815 (Caenogastropoda: Strombidae). – Basteria, 89 (1): 24-28.

expedient to fix the identity of its type species by the designation of a neotype, as there are no known syntypes. As cryptic species within Strombidae are recognised based on molecular analysis (Irwin et al. 2024), it is possible that the current concept of *T. dentatus* comprises one or more cryptic species, which is one more reason to designate a neotype for *S. dentatus*. Apart from this it is also expedient to examine the identity of subjective synonyms of *S. dentatus*, as it cannot be ruled out that one (or more) of these actually represent valid species. As the type locality of any given species is the locality of the name-bearing type, i.e. syntypes, holotype, lectotype or neotype (IZCN Art. 76), the type locality for *Strombus dentatus* also needs to be corrected, and, when not fixed yet, type localities for the subjective synonyms as well.

ABBREVIATIONS

For collections, the following acronyms are used: GCK – Gijs C. Kronenberg collection; GJV = G.J. Visser collection, deposited in Naturalis; LSL = Linnean Society, London, UK; MNHN = Muséum national d'Histoire naturelle, Paris, France; MSNF = Museo di Storia Naturale di Firenze, Florence, Italy; MSNUP = Museo di Storia Naturale Università de Pisa, Pisa, Italy; NBC = Naturalis Biodiversity Center, Leiden, The Netherlands; NHMD = Natural History Museum of Denmark, Copenhagen, Denmark; NHMUK = The Natural History Museum, London, UK; NHMW = Amgueddfa Cymru (Natural History Museum Wales), Cardiff, UK; NMW = Naturhistorisches Museum Wien, Vienna, Austria; OUMNH = Oxford University Museum of Natural History, Oxford, United Kingdom; RMNH = Rijksmuseum voor Natuurlijke Historie, Leiden, The Netherlands, collection present in Naturalis; UUZM = Uppsala University, Museum of Evolution, Zoology section; ZMA = Zoologisch Museum Amsterdam, collection present in Naturalis.

Other abbreviations: ad. = adult; im. = immature; juv. = juvenile (terminology following Savazzi, 1991); sa. = subadult (phase where outer lip is formed); Sta. = Station.

SYSTEMATIC PART

Class Gastropoda Cuvier, 1795
Subclass Caenogastropoda L. R. Cox, 1960
Order Littorinimorpha A. N. Golikov & Starobogatov, 1975
Superfamily Stromboidea Rafinesque, 1815
Family Strombidae Rafinesque, 1815

Genus *Tridentarius* Kronenberg & Vermeij, 2002

Type species (by original designation): *Strombus dentatus* Linnaeus, 1758, monotypic.

Remarks. — Since its description *Tridentarius* has been accepted as a genus-group taxon within Strombidae by subsequent authors. This has recently been confirmed based on DNA analysis (Irwin et al., 2024).

***Tridentarius dentatus* (Linnaeus, 1758)**
(Figs 1, 5-10, 12, 14-16)

For synonymy, see further below.

Neotype. — New Caledonia, Kendec Isl., near Koumac, Expedition Koumac 2.1, Station KM302, 20°40'06.8"S 164°15'24.9"E, in crevice at 0 m depth, 09.ix.2018, leg. Yasunori Kano; MNHN-IM-2019-1738 (Figs 1a-e), GenBank accession number: MW244820 (https://www.ncbi.nlm.nih.gov/nuccore/MW244820.1).

Type locality: New Caledonia, Kendec Island, near Koumac, 20°40'06.8"S 164°15'24.9"E, in crevice at 0 m depth (Figs 2a-c).

Description of neotype. — Shell solid, glossy, axially plicated and three sharp tooth-like projections on the abapical part of the outer lip, height 40.2 mm. Protoconch purplish consisting of three rounded whorls. First post nuclear whorl with six very fine spiral incised lines, first three teleoconch whorls with distinct, white varices, about three sub-regularly placed per whorl, shell colour gradually changing from purplish to irregularly mottled various shades of brown on an off white background, the last about one third of the last whorl abapically with a light purplish shade; abapical part of the last whorl on dorsal side with numerous, sometimes fused, white spots. After the 8th varix, axial plicae are formed, gradually increasing in strength, strongest on the sub-angled shoulder, with 14 plicae on the last two whorls, on the last whorl over about one third of the whorl's height, abapically of plicae smooth except for some very fine spiral; threads. Columellar callus white, distinct, well defined, smooth, forming a distinct posterior canal with the outer lip, parallel to the shell axis, with three white lirae at adapical part just abapically of the posterior canal, and five dark purple lirae at the abapical part, adapically of the slightly elongated anterior canal. Outer lip thickened, only slightly expanded, bearing three sharp, tooth-like projections on the abapical fifth part of the outer lip, the two most abapical forming the strombid notch. Adapically of these teeth, two more, rounded projections, the most adapical one hardly developed. Aperture with numerous dark purple, nearly black lirae, some towards the white rim of the outer lip bifurcated, but not reaching the rim of the outer lip, except between the most abapical lirae, situated between the outer lip and anterior canal, and within the strombid notch.

Distribution. — (see also material examined). *Triden-*

Figs 1a-e. *Tridentarius dentatus* (Linnaeus, 1758), neotype of *Strombus dentatus*. Museum National d'Histoire Naturelle, Paris, MNHN-IM-2019-1738. **a.** Dorsal side. **b.** Ventral side. Actual size: shell height 40.2 mm. **c-e.** Living neotype in situ at type locality. **d-e.** Zoomed out images of 1c showing crevice with living specimen (arrow). Reproduced under the creative commons license CC BY 4.0, photos by Yasunori Kano, MNHN Our Planet Reviewed program. **Fig. 2.** General view of type locality of neotype of *Strombus dentatus*. Reproduced under the creative commons license CC BY 4.0, photos by Yasunori Kano, MNHN Our Planet Reviewed program.

tarius dentatus as currently understood, appears to have a very large distribution area (see also map in Abbott (1960: 85, pl. 59)) that encompasses the Red Sea (Issel & Tapparone Canefri, 1876: 352; Pickery & Wellens, 1998: 60, pl. 2 fig. 7), along the eastern coast of Africa from Mombassa (Kenya) to Mozambique, Madagascar and La Réunion and Mauritius, along the Thai coast of the Andaman Sea and a large part of the western Pacific, roughly from southern Japan (south of Amami-guntō, Kira, 1965), Taiwan, south to Vietnam (Thach, 2005) including Sarawak, Malaysia (Raven, 2002), Indonesia (Dharma, 2005) and Australia from Scott Reef (WA) north Queensland (Wilson, 1993) and in the east from Hawai'i (Kronenberg in Severns, 2011) south to Tuamoto Isls (French Polynesia, Boutet et al., 2020), and intermediate areas in the Pacific. It is apparently absent from Indian subcontinent as it is neither mentioned in Subba Rao (2003), nor in Ravinesh (2016) nor in Patterson Edward et al. (2022), and also absent from the Chinese mainland (Zhang, 2016).

Material examined. — **Kenya**: Mombassa, 1993 GCK 3450/3 ad.; **Tanzania**: Tanga, leg. M. De Lanoy Meijer-de Gier, RMNH.MOL.178728/3 ad.; Zanzibar, 1966, ex. J. v.d. Peijl, RMNH.MOL.178738/1 ad.; Zanzibar, 1971, GCK 403/1 ad.; Zanzibar, 1975, leg. M.I. Gerhardt, ZMA.MOLL.49794/1 ad.; Zanzibar, viii.1999, leg. V. Liverani, GCK 5992/2 ad.; **Seychelles**: NIOP-E, Tyro Seychelles exp., Sta. 756, St. Joseph Atoll, north rim, 5°24'S 53°20'E, reef slope, scuba diving 27.xii.1992, RMNH.MOL.97362/1 ad.; NIOP-E, Tyro Seychelles exp., Sta. 792 St. François atoll, west rim, 7°05'S 52°44'E, outer slope down to 27 m, transect 20, 5.i.1993, RMNH.MOL.97363/1 ad.; **Mozambique**: off Nacala Bay, GCK 1257/1 ad.; Nacala Bay, ex J. Berkhout, GCK 5464/1 ad.; Nacala, ex J. Berkhout, GCK 5466/1 ad.; **Malagasy Rep.**: Tulear, in coral sand at 5 m, by local people, XI 1998, ex G.J. Visser 0164.d, RMNH.MOL. */4 ad.; **La Réunion**: Cap La Houssayi, in sand trails at night, GCK 2772/1 ad.; **Mauritius**: not specified, ex Ph. Dautzenberg, ex L. de Priester, ZMA.MOLL.46211/3 ad.; not specified, ex Mulder, RMNH.MOL. 187739/4 ad.; by diver at 10 ft, ex J.P. Camp, ZMA.MOLL.335919/1 ad.; **Thailand**: Ko Bon Isl., GCK 424/1 ad.; Ko Bon Isl., GCK 541/1 ad.; off Phuket, dredged viii.1980, ex J. Berkhout, GCK 5460/1 ad.; **Philippines**: Mactan, Punta Engano, ii.2000, leg. & don. F. Costura, RMNH.MOL.113354/9 ad.; Cebu, ex. J. Berkhout, GCK 5467/1 ad.; Cebu, ex. S. Martin, ZMA.MOLL.45011/3 ad.; University of San Carlos Cebu Strait expedition, Olango Isl., 10°16'N 124°03'E, by divers, RMNH.MOL.178726/3 ad.; Samar, ex J. Berkhout, GCK 5459/1 ad.; N. Bohol, Calitoban Isl., at 20-25 m at night, ex P. van Stipdonk, i.1999, GCK 6544/1 ad.; **Indonesia**: Kalimantan, Berau exp. 2003 Sta. 10 ; Berau Isls, 2°07'31.6"S 118°20'09.7"E, by scuba diving, 7.x.2003, RMNH.MOL.110830/1 ad.; Kalimantan, Berau exp. 2003 Sta. 14, off Pulau Panjang lighthouse, NE side, 2°23'14.2"S 118°12'33.8" by scuba diving, 9.x.2003, RMNH.MOL.110831/1 ad.; Kalimantan, Berau exp. 2003 Sta. 24, Berau Isls, Samama Isl. (= Pulau Kakaban), SE side, 2°07'50.6"S 118°20'23.4"E, by scuba diving, 15.x.2003, RMNH.MOL.110832/1 ad.; Sulawesi, north coast, Molas in beach-drift, 13.iii.1989, leg. L. Duiveman, ZMA.MOLL.53834/1 im.; Sulawesi, Gugusan Spermonde, Pulau Lanykang, 39 km WNW of Ujung Pandang, E side, 28.v.1985, leg. B.W. Hoeksema, RMNH.MOL.178725/1 ad.; Sulawesi, Gugusan Spermonde, Pulau Lankei, 36 km WNW of Ujung Pandang, W-side, 25.vii.1985, leg B.W. Hoeksema, RMNH.MOL.178727/1 ad.; Sulawesi, Gugusan Spermonde, Pulau Kudingareng Keke, 14 km WNW of Ujung Pandang, W side, 24.iii.1986, leg. B.W. Hoeksema, RMNH.MOL.178724/1 ad.; Sulawesi, Gugusan Spermonde, Pulau Kudingareng Keke, 14 km WNW of Ujung Pandang, SW side, 28.v.1986, leg. B.W. Hoeksema, RMNH.MOL.178729/1 ad.; Sumatera, Simaloar, Laboean Badjam, ex E. Jacobsen, RMNH.MOL. 178734/1 ad.; Moluccas, ex De Seriere, ZMA.MOLL.45016/5 ad.; Moluccas, ZMA.MOLL.45021/ 5 ad.; Moluccas, ex M.M. Schepman, ZMA.MOLL.45007/6 ad. + 1 im.; Moluccas ex A.J. Duijmaer van Twist, ZMA.MOLL.45008/4 ad.; Moluccas, Ternate, ex E.F. Jochim, RMNH.MOL.178740/2 ad.; Moluccas "south-coast", leg. Rijkschroef, ex L.J.M. Butot, ZMA.MOLL.45015/4 ad.; Moluccas, Ambon, 1926, leg. E. Scheibener, ZMA.MOLL.45012/1 ad.; Moluccas, Ambon, ex D.S. Hoedt RMNH.MOL.178736/2 ad.; Moluccas, Pantei Molana, south of Pulau Saparua, dead on beach, leg. W. Faber, 1.v.1993, GCK 6598/1 ad.; Flores, Pulau Sebolo, NW of Labuan Baja, 8°24'01.01"S 119°48'43.16"E, on beach at low tide, leg. J.N.J. Post, M.H.J. Post-Vermeulen & I. Post, GJV 0164.g, 28.vii.2003, RMNH.MOL.*/1 ad.; Flores, north coast, Sao Wisata Resort, E of Maumere in reef material cast ashore during 1992 tsunami 20/25.xi.1993, leg. J. v.d. Land, RMNH.MOL.37412/1 ad.; Papua Barat, Pulau Wai, S. of Waigeo and Pulau Gam, NW of Sorong, 2001, leg. M. Ammers, GJV 0164.g, RMNH.MOL.*/3 ad.; Papua Barat, Sagewin Strait, Batamba, Desa Wallebet, NW of Sorong, washed ashore, 1999, leg. J.N.J. Post, C.J. Heij, F. Advokaat & K. Tindige, GJV 0164.f, RMNH.MOL.*/2 ad.; Papua Barat, Doreh Bay, ex. E.F. Jochim, RMNH.MOL.178741/ 1 ad.; Papua Barat, Doreh Bay, Manokwari, beach, ex D. Smits, RMNH.MOL.178723/2 ad.; Papua Barat, Doreh Bay, Manokwari, leg. M. v.d. Wiel, 1956, ex Kaas & ten Broek, RMNH.MOL.178730/3 ad.; Papua Barat, Doreh Bay, Manokwari, leg. Ms Snackey, ZMA.MOLL.49795/2 ad.; Papua Barat, Doreh Bay, Pasir Putih, near Manokwari, 0°52'43.89"S 134°05'37.01"E, 10.xi.2005, leg. C.J. Heij, K. Tindige, S. Prativi, GJV 0164i, RMNH.MOL.*/1 ad.; Papua Barat, Pulau Yapen, ex D. Rietdijk, GJV 0164.c, RMNH.MOL.*/1 ad.; Papua, Hollandia (= Jayapura), ZMA.MOLL.45013/1 ad.; **Papua New Guinea**: Madang Prov., GJV 0164.e, RMNH.MOL.*/1 ad.; **Australia**, Queensland, Grub Reef, 14°03'S 143°56'E, ex P. Hessel, ZMA.MOLL.187651/3 ad.; **U.S.A.**, Hawaii, Oahu, Haleiwa at 50-75 ft, GCK 509/1 ad.; Hawaii, Oahu, at 90-100 ft in sand and rubble, ex P. Hessel, ZMA.MOLL.187645/1 ad.; Hawaii,

Oahu, Haleiwa, at 15-16 m, leg. T. Ernest, vi.1991, GCK 3365/1 ad.; Hawaii, Oahu, Haleiwa, ex. P. Hessel, ZMA. MOLL.187635/4 ad. + 1 juv.; **Marquesas**: south coast of Nuku Hiva, Taiohac Bay at 5-10 m at night, x.2000, ex. J. Wiersma, GCK 6338/1 ad.; MUSORSTOM 9, Plongée Laboute, August-Sept. 1997, MNHN, unnumbered/1 ad.; Plongée Laboute, 300 m right of harbour exit at 24 m in sand, 13.ix.1997, MNHN, unnumbered/1 ad.; Plongée Laboute, Baie Taiohae, Anse Teana-Pikiu at 24 m at night, 18.ix.1997, MNHN, unnumbered/1 ad. + 1 sa.; Plongée Laboute, at night at 30 m, 20. ix.1997, MNHN, unnumbered/3 ad.; Sta. CP 1188, MNHN, unnumbered/1 ad.; Sta. DW 1203, MNHN, unnumbered/2 sa.; Sta. 1204, MNHN, unnumbered/1 sa.; Sta. 1395, MNHN, unnumbered/1 juv.; **Marshall Isls**.: Kwajalein Atoll, ocean side of western reef, at 50 ft. in sand, leg. Scott Johnson, viii.1988, GCK 1730/1 ad.; **Marianas**: Saipan, Laolao Bay, buried in sand, v.2004, ex. J. Wiersma, GCK 6337/1 ad.; Guam, ex P. Hessel, ZMA.MOLL.187662/5 ad.; Guam, Piti Reef at 18-24 m, leg. F. Schroeder, 1990, ex J.A. Buijse, ZMA. MOLL.426465/1 ad.; **Society Isls**., north coast off Raiatea, 16°50'S 151°25'W, at 1-3 ft along the beach among dead reddish coral in very clear water, ex. J. Berkhout, GCK 5458/1 ad.; **Solomon Islands**, Guadalcanal, x.1980, GCK 708/2 ad.; Guadalcanal, Marau Sound, GCK 719/1 ad.; Guadalcanal, Marau Sound, GCK 909/2 ad.; Guadalcanal, Marau Sound, ex J. Berkhout, GCK 5461/2 ad.; Guadalcanal, Marau Sound, ex J. Berkhout, 1986, GCK 5462/1 ad.; Guadalcanal, Marau Sound, 1991, GCK 2345/1 ad.; Guadalcanal, Marau Sound, ex N. Koekkoek, ZMA.MOLL.44497/1 ad.; Guadalcanal, Marau Sound, ex Herlaar, GJV 0164.a, RMNH.MOL.*/1 ad.; Guadalcanal, near Honiara, at 20-30 m, ex. A. Delsaerdt, ex J. Berkhout, GCK 5463/2 ad.; Guadalcanal, W of Honiara, East Rove in sand among coral boulders with algae, at 3-4 m at night, VI 1974, leg. W.N. Gray, RMNH.MOL.509804/10 ad.; north of Guadalcanal, Sovo Isl., at 50 ft. in black sand by SCUBA diving at night, 20.viii.1987, ex. J. Berkhout, GCK 5469/3 ad.; Russel Isls., Kokia Isl., ex P. Hessel, ZMA. MOLL.187646/1 ad.; **New Caledonia**, no further details, ex J. Berkhout, GCK 5468/1 ad.; SORSTOM 1985: Sta. 351, MNHN, unnumbered/1 ad.; Sta. 461, MNHN, unnumbered/1 juv.; Sta. 553, MNHN, unnumbered/1 ad.; SORSTOM 1987: Sta. 715, MNHN, unnumbered/1 juv.; Sta. 864, MNHN, unnumbered/2 juv.; SORSTOM 1989: Sta. 1154, MNHN, unnumbered/1 juv.; Sta. 1159, MNHN, unnumbered/1 adult, 1 im.; "Alis", SMIB 5: Sta. DW 99, MNHN, unnumbered/1 im.; Sta. DW 113, MNHN, unnumbered/1 ad.; Sta. DW 128, MNHN, unnumbered/1 ad.; Expédition Montrouzier, 1993: Sta. 1287, MNHN, unnumbered/1 juv.; Sta. 1301, MNHN, unnumbered/2 ad.; Sta. 1303, MNHN, unnumbered/2 ad.; Sta. 1308, MNHN, unnumbered/1 juv.; Sta. 1310, MNHN, unnumbered/1 ad.; Sta. 1312, MNHN, unnumbered/1 ad. + 4 juv.; Sta. 1318, MNHN, unnumbered/4 ad.; îles Loyauté, Atelier Lifou: Sta. 1417, MNHN, unnumbered/1 ad., crabbed; Sta. 1421, MNHN, unnumbered/4 ad.; Sta. 1422, MNHN, unnumbered/1 ad. + 1 sa.; Sta. 1428, MNHN, unnumbered/1 ad.; Sta. 1430, MNHN, unnumbered/1 juv.; Sta. 1431, MNHN, unnumbered/7 ad.; Sta. 1433, MNHN, unnumbered/15 ad. + 3 juv.; Sta. 1440, MNHN, unnumbered/3 ad.; Sta. 1451, MNHN, unnumbered/1 ad.; Sta. 1453, MNHN, unnumbered/1 ad.; Sta. 1457, MNHN, unnumbered/1 ad.; îles Chesterfield, CORAIL 2: Sta. DW 18, MNHN, unnumbered/1 ad.; Sta. DW 70, MNHN, unnumbered/1 ad.

Please note that some samples from private and institutional collections are not incorporated in the list as presented above, as there are no locality data, or the locality data only give e.g. "Indonesia" or "Philippines", being too broad to give useful information. The collection of the late G.J. Visser has been donated to NBC. At the time of my visit, the collection had not yet been registered, but will receive RMNH.MOL. numbers. In the above, these are indicated as "RMNH.MOL.*/".

Variability. — Like many strombids, *Tridentarius dentatus* as currently understood is quite variable, both in size, colour pattern, sculpture, i.e. the extensiveness and strength of the axial plicae on the spire and the degree of development of the labral projections. The number of plicae on the penultimate whorl may vary from six to sixteen; the strength may vary from hardly developed to quite strong, but always strongest on the dorsal side of the last whorl, and from rounded to angled at the shoulder. The colour pattern is also variable, with the protoconch varying from purplish via brown to off white; the purplish shade on the last whorl may be more or less extended, restricted to nearly the tip of the anterior canal, or absent altogether. The white spots on the last whorl may be absent, and the mixed brown colours of the teleoconch may be in one uniform brown colour on an off white background, or rather be seen as a (dark) brown coloured shell with a few white blotches.

Already Gmelin (1791) in his additional description noted the variability in colour pattern, see further down below. Abbott (1960: 85) gave as dimensions 26.0 to 56.5 mm; Kreipl & Poppe in Poppe & Groh (1999: 33) gave 30 to almost 65 mm. A good set of illustrations that show the variability both in colour pattern and strength and number of plicae can be found in Poppe & Groh (1999: pl. 56) and in Wieneke et al..

Remarks. — Linnaeus (1758: 745, species # 0) provided only a brief description: "Str.[ombus] testae labro attenuato brevi dentato, ventre spiraque plicatis." [translated: "Shell with elongated lip, short toothed, belly and spire with folds"] without any reference to a figured specimen. Of importance is the fact that from the text it is not evident whether the singular word "tooth" or the plural "teeth" is intended (Henk Menkhorst and Theo Kemperman, pers. comm.; John Tholen pers. comm. to Theo Kemperman); the English "toothed" has the same ambiguity (Jon Ablett, NHMUK, pers. comm. 24.ii.2025). Also, the fact that Lin-

naeus indicated that there were plicae (folds) on the spire and ventral side, more or less implying that there were no plicae present on the dorsal side of the last whorl (in contrast to *T. dentatus* that has distinct plicae on the dorsal side) has contributed to the confusion about the identity of Linnaeus's species.

The Linnaean collection, present in the Linnaean Society, London, UK, does not hold any specimen of this species, already noticed as such by Dodge (1956: 288) and confirmed by pers. obs. (xii.2008), and confirmed again by Jon Ablett (pers. comm. 08.i.2025). It is well known (see e.g. Kronenberg, 2008: 59) that Linnaeus visited the collection of the queen of Sweden before the publication of the 10th edition of the "Systema Natura" (1758) and therefore he might have seen a specimen in the queen's collection. Such a specimen could have been a putative syntype. However, there is no mention of *Strombus dentatus* in Linnaeus's (1764) account of the queens collection.

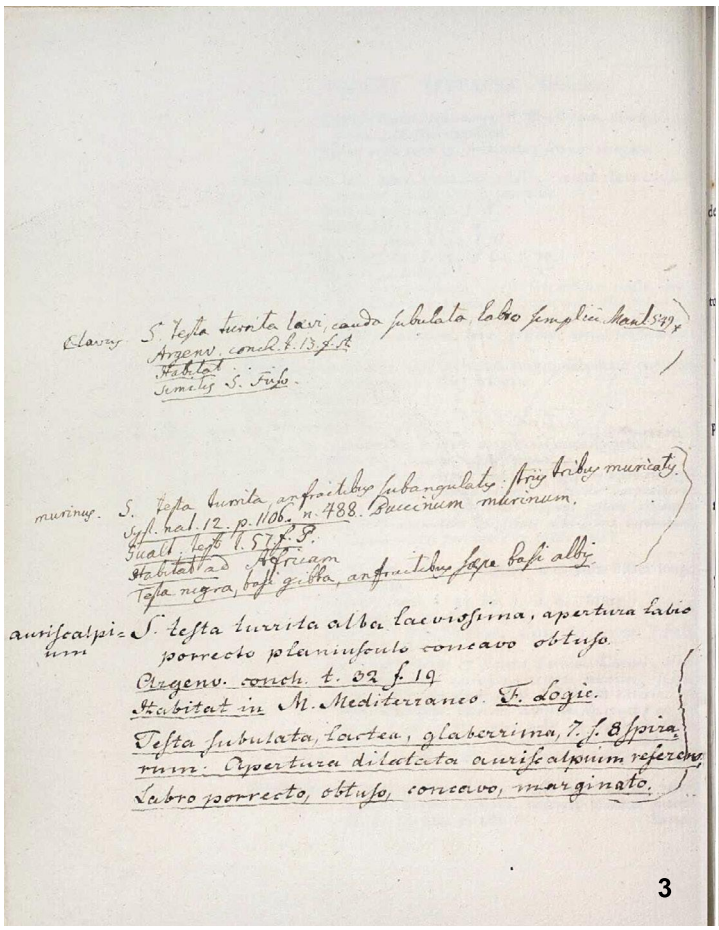


Fig. 3. Inserted page opposite of p. 1213 from Linnaeus's private copy of the (Linnaeus 1767) 12th edition with annotations present in the Library of the Linnean Society of London. Note the entry "clavus" with a reference to Dezallier d'Argenville (1842 pl. 13 fig. A). *Strombus clavus* had already been described by Linnaeus (1771: 549) but with a shorter description. In the note one can read "similis *S. fusa*" (looks like *S. fusus*), not present in Linnaeus (1771). Added are also the entries "murinus" and "auriscalpium" with references to illustrations. From this it is evident that Linnaeus intended to describe two species to be named "*Strombus murinus*" and "*S. auriscalpium*" respectively in a forthcoming 13th edition. The fact that Gmelin (1792) did not describe any "*Strombus murinus*" or *S. auriscalpium*" in the 13th edition that was published (1791) is circumstantial evidence that Gmelin did not have access to this copy owned by Linnaeus. Book reference: 22/5. Courtesy of the Linnean Society of London, published with permission.

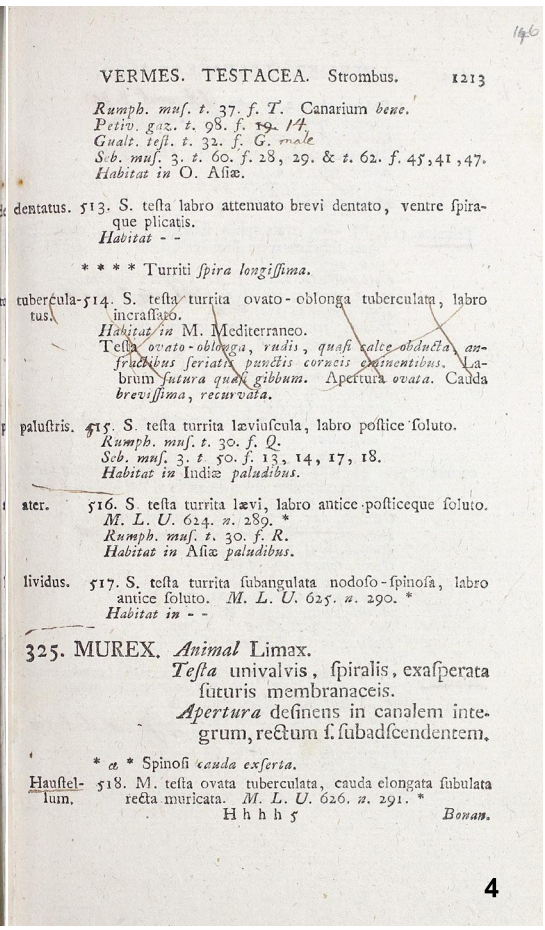


Fig. 4. Page 1213 from Linnaeus's private copy of the (Linnaeus 1767) 12th edition with annotations present in the Library of the Linnean Society of London with the entry *Strombus dentatus*. Note the change in reference, second line, to an illustration of *Strombus urceus*, and the scoring out of the entry *Strombus tuberculatus*. Book reference: 22/5. Courtesy of the Linnean Society of London, published with permission.

It is known that Linnaeus has received specimens from other collections (Wallin, 1992; 2001) before he published his 10th edition of the Systema Naturae (Linnaeus, 1758). Among these were duplicates of the collection of the crown prince of Sweden, the later king Adolf Frederik (1710-1771). Later on, Linnaeus (1754) published a catalogue on the then king of Sweden. From this catalogue it is clear that the kings cabinet mostly consisted of vertebrates, including species illustrated. Also a few non vertebates were listed, viz. "*Dentalium*"; "*Chiton*"; "*Lepas*"; "*Microcosm.*" (Linnaeus 1754: 38), the latter name also appearing as "*Microcosmos pellucidens/gelatinosus*" (ibid: 96). Note that this work is unavailable as it predates 1758. An appendix was subsequently published, attributed to Linnaeus as well ([Linnaeus] 1764), but there are no Mollusca in that work.

Wallin (1992: 168) recorded specimens of *S. dentatus*, # 910; and # 1232, referring to *S. tridentatus*; and (1992: 173) the same specimens, now identified as *S. tridentatus,* # 910 ex Gustav IV Adolf (1778 – 1837; king of Sweden 1792 – 1809); and # 1232a, b, ex Karel (Carl) XIII, (1748 – 1818; king of Sweden 1809-1818), present in UUZM. In the sixth version of this publication (Wallin 2001: 94; 96), these specimens are recorded again.

King Karel XIII was the son of Adolf Frederik, and Gustav IV Adolf his grandson. It is known that Linnaeus visited the collection of Queen Ludovica Ulrica in 1766, prior to the publication of the twelfth edition of the Systema Naturae (1767). There is however no proof whatsoever that one or more specimens of *S. dentatus* entered the queens collection after the publication on the queen's collection (Linnaeus 1764), see e.g. account by Mats Eriksson quoted in Kronenberg (2008: 59, 60). Moreover, there are no Thunberg labels associated with the specimens of *S. dentatus* presented by king Gustav IV Adolf (Wallin 1992; 2001).

It is therefore concluded that there are no syntypes, i.e. specimens seen by Linnaeus of the current concepts of *T. dentatus* prior to the publication of the 10th edition (1758) and we can only speculate on the reasons why Linnaeus did not refer to an illustration which indeed, as indicated by Liverani et al. (2021: 53), is rather unusual especially since before the publication of Linnaeus (1758) this species, as understood at present, had been illustrated in works consulted by Linnaeus, for a discussion, see further below.

In the 12th edition Linnaeus (1767: 1213) the entry received a number, viz. # 513, but the description was unaltered, and still no reference to a published figure was added, so, as in the 10th edition, this does not give a clue to Linnaeus's intentions. Yet, in the 1767 edition references to published figures, or other works were added. In the preceding entry, *Strombus urceus*, a reference to a figure in Seba was added (note: this cannot be considered to be a paralectotype of *S. urceus*), and in the entry *Strombus lividus* a reference to the Museum Ludovicae Ulricae (Linnaeus, 1764) was added. So, the opportunity that Linnaeus had to add a reference in the 12th edition (1767) to his concept of *S. dentatus* was not taken, which is remarkable.

Linnaeus (1771) described some more species within his concept of *Strombus* but again didn't take the opportunity to make an addition to the description or a reference to an illustration.

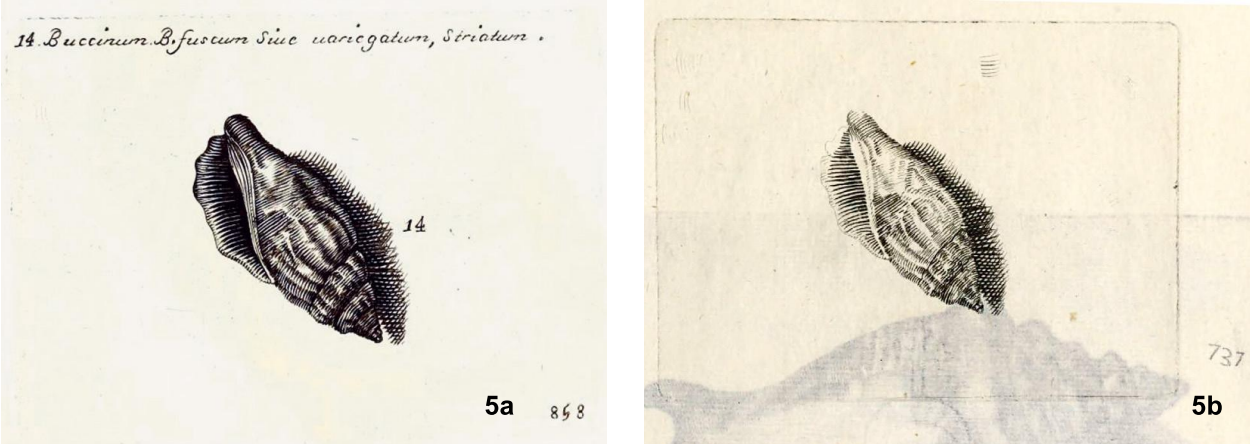
Lastly, Linnaeus intended to publish a 13th edition and to that end he already made notes in the margins of his private copy of the 12th edition and slips of paper inserted (Dodge, 1959: 170). In the library of the Linnean Society (London, UK) there are five copies of the 12th edition with annotations, some of which are in Linnaeus' hand, and some of which are from his son, Linnaeus the Younger (Isabelle Charmantier, pers. comm. 10.i.2025). None of the five copies contain an annotation for *Strombus dentatus*. Page 1213 of the 12th edition of Linnaeus's private copy with the entry *Strombus dentatus* that contains the notes for a forthcoming edition is reproduced here (Fig. 4), as well as the blank sheet opposite (= before) page 1213, with annotations on *Strombus* sensu Linnaeus, including some new species, not recorded in previous works by Linnaeus, is reproduced here (Fig. 3).

THE OMITTED REFERENCES TO ILLUSTRATIONS IN 1758 AND 1767

As known, apart from making descriptions, Linnaeus (1758; 1764; 1767; 1771) also referred to published illustrations. As far as the species currently under discussion is concerned, in the 10th edition (1758) reference could have been made to Lister (1688); Rumphius (1705); and Gualtieri (1742). Petiver (1713) could also have been referred too, but reference to that work was made only in the 12th edition (Linnaeus, 1767) when also references to Seba (1759) and other works were added. Illustrations in all these works are important, as they were referred to by subsequent workers as reference to their concept of *S. dentatus* and/or one or more of the subjective synonyms misidentifications.

Lister

Lister (1688: fig. 14 / fig. 858) (here re-illustrated Fig. 5a). This illustration has a caption that reads translated "Whelk. W. brown or variegated, striped". Although rounded and not pointed, the figure clearly shows the three teeth at the abapical part of the outer lip and also the fourth rounded projection adapically of the three more developed teeth. Dillwyn (1823: 39) considered this to be *Strombus samar*, a junior subjective synonym of *T. dentatus* of modern authors, I concur with that view, see further below. Lister's work was republished in 1770 (Huddesford edition) and again by Dillwyn (1823) as the third edition.



Figs 5a-b. *Tridentarius dentatus.* **5a.** Figure from Lister (1688) sect. XII, cap. 2 fig 14. **5b.** Figure from Lister, version from the Wellcome Library, London, UK.

It is worthwhile to mention (see Roos, 2019) that the "Historiae Conchyliorom" as the work by Lister is known, has been a "work under construction" with the possibility of numbering of the specimens and the lay out of the pages constantly being changed, illustrations inserted, all before the definitive version was printed, see Appendix for some notes.

Dance (1986: 217) indicates that Listers' main collection is supposedly present in OUMNH. Indeed, in "(…) 1683 Martin Lister (…) was awarded a Doctorate in Medicine for which he had not himself supplicated but which was spontaneously conferred on him by the University of Oxford; (…). He was famous for his deeds and his writings; and in order to further the study of Natural History, he enriched the museum collection with shells of all kinds, form the sea, form the rivers and from the land; also freshwater mussels; formed stones and fluors and various types of gypsum, mica, talc and metals of all kinds, most of which come from England. (…)" (MacGregor et al., 2000: 5, translation from Latin into English by G. Moss). No specimens agreeing with Lister's (1688) illustration, and retraceable to the Lister collection have been found. Moreover, "(…) The 'Lister' collection, or specimens from it, have long been sought after here but none have been found. It's possible given the age of the collection that it was incorporated into the general collections and/or lost, deteriorated in the centuries between donation and formal curation of the Museum collection in the 19th Century. (…)" (Mark Carnall, OUMNH, pers. comm. 19.iii.2025). However, it appears that the specimens used by Lister for his Historiae Animalum Angliae (Lister, 1678) were removed from the collections of the Ashmolean in 1796 (Roos, 2019: 8).

It is important to note that the donation to the museum made by Lister was done in 1683 or prior to that year, and that the donation consisted of "most of which come from England" (Roos, 2019: 71). It is likely that these are specimens and/or duplicates of specimens illustrated in Lister's 1678 work on the natural history of the United Kingdom (spiders, molluscs and fossils).

The plates in Lister (1688) surrounding fig. 14 / fig. 858 however, show Stromboidea and with the exception of *Aporrhais pespelecani* (Linnaeus, 1758) these are not from England. The illustrations appeared only in 1688, but, of course, the drawing on which the engraving was based could have been made (much) earlier.

Lister (1688) had three sources for his illustrations:

Illustrations from earlier works. Dillwyn (1823: 35) noted that fig. 769 / 17b (*Conus monile*) is a copy of an illustration from Buonanni (1684: fig. 337). This is also true for fig. 863 / 18b (*Aliger gigas*) which is a copy of Buonanni (1684: fig. 405), now with correct dextral coiling. These copies were not attributed to the original artist, and may have been "last minute additions" as Buonanni's (1684) work preceeds Lister's only with a few years. Other engravings however were attributed to the original artist such as fig. 864 (=? *Aliger costatus*) that was attributed to Aldrovandi), but also from others, e.g. from work by Wenceslaus Hollar (a.k.a. Václav or Wenzel Hollar, 1607-1677), a famous graphic artist born in the kingdom of Bohemia, such as the illustration of *Hippopus hippopus* (Linnaeus, 1758) in Lister (1787: Liber 3, fig. 350), see also Roos (2019: pls 15, 16). Perhaps most appealing to art lovers is Listers figure of *Conus marmoreus* (1688: figl. 787 / fig. 39), being a copy of the famous etching by Rembrandt van Rijn, but this time with the correct dextral coiling of the shell.

Specimens from other collectors. Some of the specimens illustrated by Lister (1685-1692), originally from the Courten collection (Maton & Rackett, 1804: 140), ended up in the Sloane shell collection. It is however not sure whether all Courten specimens depicted in Lister ended up in the

Sloane collection. The specimens that ended up in the Sloane collection are now present in NHMUK, see Wilkins (1953) for further details. Apart from Courten, Lister borrowed specimens from others, e.g. the specimen that was to become the holotype of *Strombus listeri* T. Gray, 1852 (Lister, 1688: pl. 855, top figure), now in the Hunterian Museum Glasgow (Gray, 1852). One should consult Lister's correspondence (over 1000 pieces of correspondence are present in the Bodleian Library) with the "Republic of Letters" (Roos, 2019: 7; 73) for possible clues. Another clue may be in the "scrap books" that contain the original drawing by the daughters of Lister, Susanna and Anna Lister (Roos, 2019: pl. 14)

Lister's private collection. Lister's collection was divided into three cabinets and he tried to sell his collection in 1707, including the copper plates used for his Historiae Conchyliorum, to Hans Sloane for £ 150 (Roos, 2019: 72; footnote 12). Sloane however refused. It is unknown to me whether other attempts were made to sell (part(s) of) the collection; Lister's private correspondence should be consulted.

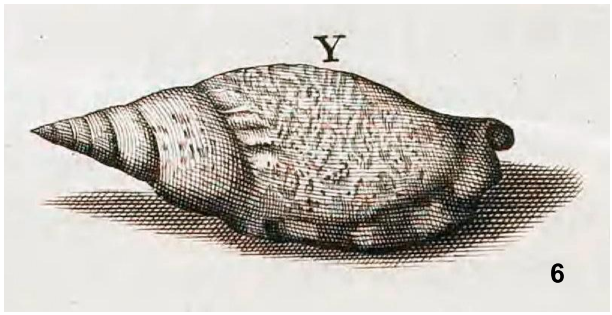
It is not known whether the illustration in Lister (1688: fig. 14 / fig. 858) came from Lister's private collection or was borrowed from one of his many contacts. Whether it came from one of his contacts may be found in the original drawings made by Anna and Susanna Lister. In these drawings they made, prior to engraving on the copper plates, notes about the provenance of the specimen(s) illustrated. E.g. the two specimens of *Strophocheilus pudicus* (O. F. Müller, 1774) [*S. almeida* Spix, 1827 in Wilkins, 1953: 14] illustrated in Lister (1685: pl. 22) came from the D.G. Curteni (= William Courten) collection as noted in the caption with the original drawing of the two specimens (Roos, 2019: pl. 24 bottom drawing and pl. 25).

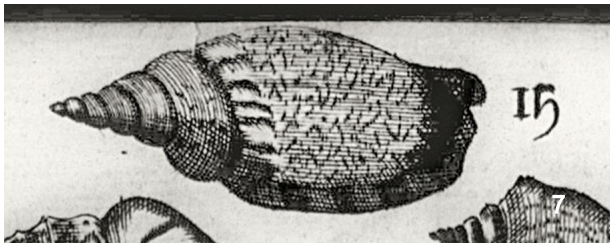
Whatever the case, it is clear that the present whereabouts of the specimen illustrated as fig. 14 / fig. 858 are unknown. It may still be in the UK somewhere, unrecognized as such, but it may also be lost.

It is important to note that the illustrations in Lister (1685-1693) are in natural size, that is for specimens Lister (and his daughters!) had at hand, which can be inferred from (1) the huge differences in sizes of the illustrations (demonstrated in Roos (2019: pls 25-29) and (2) that some images show two views of one specimen put together in one illustration (Roos, 2019: pl. 28) in order to show important detail that cannot be observed otherwise.

Rumphius

Rumphius (1705: pl. 37 fig. Y) (here re-illustrated Fig. 6). The accompanying text (Rumphius, 1705: 112) reads: "XV, *Samaar*, gehoort mede onder de Kanaryen, langwerpig, rond, en toegespitst, om den omloop met plooijen verziert" [translation, adopted from Beekman (1999: 160): XV. *Samaar*, belongs to the Canaries as well, oblong round, with

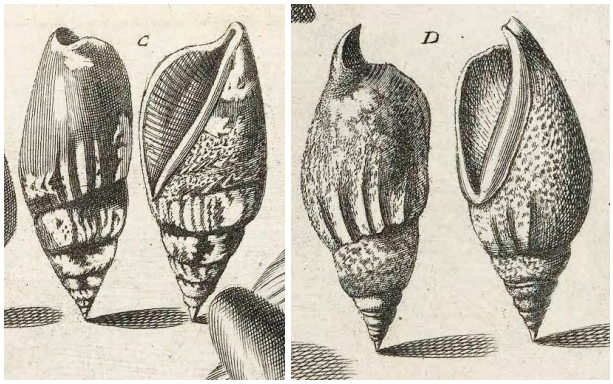




Figs 6-7. *Tridentarius dentatus*. **6.** Figure from Rumphius (1705) pl. 37 fig. Y. **7.** Figure from Petiver (1713) pl. 14 fig. 15.

pointed tip, with folds on its circumvolution.]. Neither the folds, nor the denticles (outer lip projections) are visible on Rumphius's illustration, and therefore not with 100% reliability identifiable as *T. dentatus*. The figure might be interpreted as *Terestrombus terebellatus* (G. B. Sowerby II, 1842), but that species is more slender, or *Terestrombus fragilis* (Röding, 1798), but that species is more bulbous. Therefore, in my opinion, this represents *T. dentatus*.

The Rumphius collection (or part of) was acquired by Cosimo III de Medici, grand duke of Tuscany, in 1682 and Gualtieri, who served as court-physician of the grand duke received duplicates. These collections were dispersed, and specimens are present in MSNUP; MSNF; and NMW (see e.g. Dijkstra, 1997 and references therein). This has been confirmed by Dr. Antonio Callea, MSNUP (pers. comm. 9.xii.2024). But there are neither labels nor catalogues to identify them with certainty. Some of the older shells do have numbers written on the inside, but it is unclear from which collection they came. Dr. Callea (pers. comm.) added that "(…) In the historical collection [of MSNUP, GCK] there are two lots (probably of nineteen century?) only with two specimens each of *T. dentatus*, one from Mauritius and the other from Moluccas Sea. All of the 4 shells have no number or any other mark that characterize them in some way, but one from Moluccas (h: 50,3 mm; w: 19,5 mm) seems similar to the illustration 33D of Gualtieri and somewhat smoother of the illustration 37Y of Rumphius. In my opinion this is not Rumphius or Gualtieri shell! Other Rumphius shells could be in the collection of the museum of Florence University and in Vienna Museum: I worked several years on Florence collection, but again I was not able to separate any



Figs 8a-b. *Tridentarius dentatus.* Figures from Gualtieri (1742) pl. 33 figs C, D.

Rumphius shell. I already contacted Vienna, but at the present without succes: no Rumphius shells identified!".

Petiver

Petiver (1713: pl. 14 fig. 15) (here re-illustrated Fig. 7). Some specimens figured in works by Petiver became part of the Sloane collection, now present in NHMUK, but the specimen figured in Petiver 1713 (pl. 14 fig. 15) is not, see Wilkins (1953) for some further details. The caption to the figure Petiver (1713: 3) reads: "Samaar R. 111. 15. Y. Samaar Canarie." and is a clear reference to Rumphius (1705) (see above). In fact, the figure in Petiver appears to be a copy of Rumphius's illustration (compare Figs 6 and 7).

Gualtieri

Gualtieri (1742: pl. 33 figs C, D) (here re-illustrated Figs 8a, b). One might conclude that Gualtieri (1742: caption to pl. 33) considered these figures to represent two different species, as can be concluded from his descriptions.: "C: Murex with inner lip fringed, outer lip inside striated, first whorl wrinkled, smoothly fringed, beak smooth & pallid; in the back off white & marked with yellow." "D: pointed Murex, outer lip inside striated, first whorl wrinkled, yellow marked with various minute white spots." Striking is that in neither of the two descriptions there is a mention of teeth on the outer lip, and the illustrations do not show any teeth either. But the illustrations clearly show the plicae and the habitus of the shell, as well as the pattern. Again, in my opinion this is the species under discussion.

Seba

Seba (1759: pl. 61 figs. 34, 41-47) (here re-illustrated Figs 9a-h). Albertus Seba (1665-1735) sold his first collection of shells (and other curiosities) to Czar Peter the Great in 1717, and are now probably in the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia. It is unlikely that any specimens from that collection were illustrated in Seba (1759). After Seba sold this collection to the Czar, Seba started to form another one that even grew bigger as the previous one. This collection was auctioned from 14.iv.1752, and following days, i.e. 17 years after Seba's death (!). For this auction a catalogue was prepared (Anonymous, 1752). Some specimens were bought by Queen Louisa Ulrica of Sweden according to Dance (1986: 225), probably by one of the brokers, viz. Th. Sluyter, indicated "Scandinavian principals", in the extensive study by Boeseman (1970: 179) on the fate of Seba's specimens. Sluyter may also have acted on behalf of the museums in St. Peterburg (Russia) and Bremen (Germany). It is unlikely that any of the specimens representing *T. dentatus* were amongst the specimens bought by Queen Louisa Ulrica, otherwise they would have been seen by Linnaeus, and listed in his catalogue of the collection of the queen (Linnaeus, 1764). The collection was thus dispersed all over Europe, and present whereabouts of specimens are unknown to me. Tax (2002) mentioned that the Amsterdam Historical Museum acquired an engraved shell from the Seba collection. For more details of the dispersal of the Seba collection, see Boeseman (1970).

Unfortunately, Seba (1759: 161) did not provide detailed descriptions to accompany the figures on his pl. 61. Only some general remarks were made both in Latin and French, translated:

"Num. 11—68. All these Whelks, whose several are seen from below here, differ from each other in grain colour and

Figs 9a-h. *Tridentarius dentatus.* Figures from Seba (1759) pl. 61 figs 34, 41-47.

shape; however each one is outstanding by the magnificence of its ornaments and the marvellous proportion of its various parts: moreover they are too numerous to undertake to describe them separately.". Seba's figures indeed show a great variety, and species depicted are now assigned to different genera of Strombidae, among them *Canarium*; *Conomurex*; *Gibberulus*; *Maculastrombus*; and *Tridentarius*. In the index (Seba, 1759: unnumbered pages) only identification for a few figures is provided: figs 11; 12; 20; 21 as "Luhuanae" (Luhuanes in French); where figs 20 and 21 indeed are *Conomurex luhuanus* (Linnaeus, 1758) with certainty and figs 11 and 12 very likely. Figure 22 is referred to as "Ignota species est" (French: Espèce inconnue") i.e. an unknown species; and, as far as the other species are concerned: "All other species should be arranged in the class one names Canaries.".

It is clear that Seba was very well aware that under "Canaries" more than one species was involved, yet he refrained from providing a name for them all. It should be noted here that the colours of the hand-coloured specimens do not represent the true colours of the specimens depicted. Especially the blue colour in Seba's fig. 34, but also in figs 43; 45 and 46 is unnatural. This may be a result of deterioration of the dyes used, or the colourist used a dye from hear say. Seba had already died, the collection was auctioned in 1752 and the book was only published in 1759, so the colouring artist may not have had a specimen at hand. See also e.g. Jansen & Cheke (2020).

Interesting is the use of the word "Samaar", by Seba. He uses this word in the caption of pl. 62 figs 38-50: "Num. 38—50. We add here some representations of many other different species of which it would be too long to give descriptions of each in particular. Some are called Samaar in Flemish. Their shapes differ a lot. Some have the shape of a pointed tower: others are spiked with tubers, speckled, fluted, diversified in the form of flames or marble and certainly deserve particular attention. Most are a yellowish red. Some are represented from above and others from below." Again, in the index (Seba 1759: unnumbered pages) only "identification" for a few figures is provided: figs 40 and 44 are referred to as "Alatae imperfectae", French: "Ailées imparfaites" [wings not fully grown], and 41-43 and 45-50 are "Canaria variantia", French: "Diverses sortes de Canaris" [different sorts of Canaries].

It Is concluded here that the vernacular name "Samaar" as interpreted by Seba (1759) differs from that in Rumphius (1705); in the latter one it could point to *T. dentatus* as currently understood, but in Seba's (1759) vocabulary it more or less equals the vernacular "Canaries", that should be interpreted as *Canarium* sensu Abbott and probably some more "lookalike" strombids, i.e. species that do not have a clearly expanded outer lip.

Huddesford

Although an illustration, i.e. a copy of the illustration in Lister (1688), was provided in the Huddesford (1770) edition of Lister's Historiae Conchyliorum (1685-1692), it remained without a name. This edition has two indexes. The second index (1770: 2-77) "Index alter Conchyliorum classes complectens, juxta methodum celeberrimi Caroli a Linné, ad tabulas Listerianas accomodatus" has alternating pages with Linnaean names (even page numbers) and vernacular (English) names (odd page numbers). Because of the strictly binominal index, Huddesford's publication is an available work (IZCN art. 11.4.3). The name *Strombus dentatus* appears on page 50, but no reference to the figure in Lister is made. *Strombus dentatus* Huddesford, 1770 therefore is a nomen nudum and not available.

ILLUSTRATIONS IN EARLY POST LINNAEAN WORKS

The first work that illustrated specimens subsequently to be referred to in connection with the identity of *S. dentatus* or one of its subjective synonyms was by Martini (1777). Before Linnaeus died (10.i.1778), Martini (1777) published his third volume of the "Neues systematisches Conchylien Cabinet". This work is non-binominal and although Linnaeus could never have referred to this work, it is important in this context as it illustrates specimens of what is the current concept of *T. dentatus* (Martini 1777: pl. 78 figs 811-814, here reproduced Fig. 10), see further below.

Martini

Martini (1777: pl. 78 figs 811-814) (here re-illustrated, Figs 10a-d) illustrated specimens from the Feldmann and his private collection as "The tongued, thin-shelled winged gastropod. The women's sleeping robe. Samaar". It is not clear which specimen came from either of these two collec-

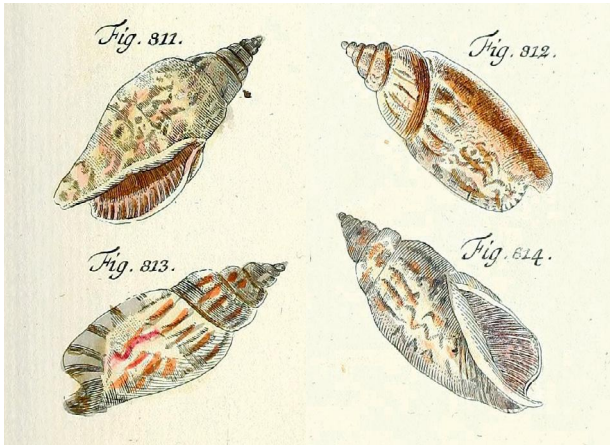


Fig. 10. *Tridentarius dentatus.* Figures from Martini (1777) pl. 78, figs 811-814.

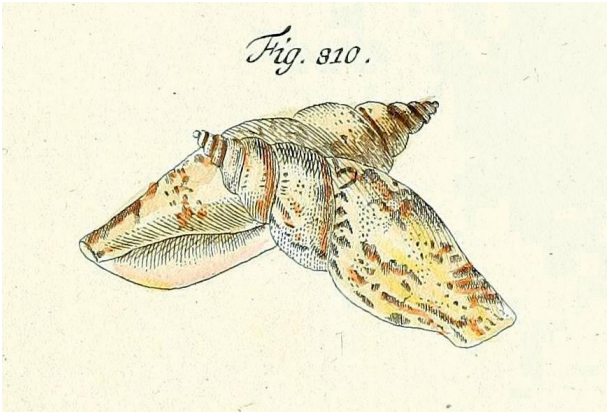
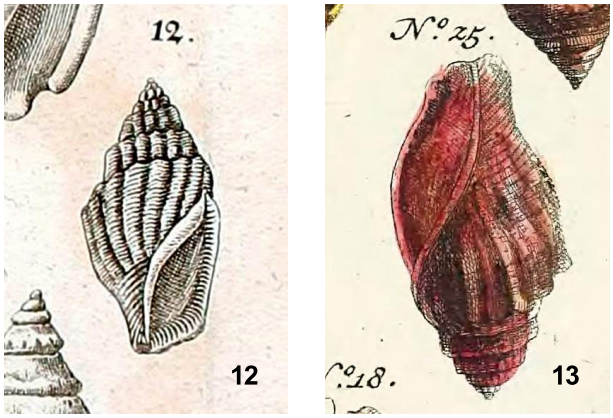


Fig. 11. *Terestrombus terebellatus* (G. B. Sowerby II, 1842). Figure from Martini (1777) pl. 78, fig. 810.



Figs 12-13. *Canarium labiatum* (Röding, 1798), representing *S. dentatus* sensu Schröter. **12.** Figure from Schröter (1783) pl. 2 fig. 12. **13.** Figure from Seba (1759) pl. 61 fig. 25.

tions. Martini also included pl. 78 fig. 810 (here reproduced Fig. 11) as being that species, but, judging from its habitus, that is a specimen representing *Terestrombus terebellatus*. In his "synonymy" (Martini 1777: 103-104) clearly made a connection with the illustrations in the earlier works by Lister (1688); Rumphius (1705); Petiver (1713) and Gualtieri (1742). Just like the illustrations in the latter three, there are no teeth visible in Martini's illustrations, and therefore the adjective "gezahnte" [toothed] appears to be rather strange. Yet, the habitus of the specimens illustrated (1777: figs 811-814) clearly points to *T. dentatus* of modern authors.

On the fate of the Martini collection, see Kronenberg & Reise (2023). As to the fate of the Feldmann collection there is some uncertainty. Bernhard Feldmann (11.xi.1704 – 21.x.1776) was a German physician and collector. For a biography, notes on his collection and his connection to Martini, see Anonymous (1777). These biographical notes also contain a note by Martini (in Anonymous, 1777) that stresses the importance of the Feldmann collection for Martini. The collection of Bernard Feldmann was sold in 1781-1782 (Coan & Kabat, 2024: 584), or put to auction in 1882 (Bignon, 2021: 45), or sold in or 1785 (Tom Schiøtte, NHMD, pers. comm. 16.v.2024). A catalogue of the collection was compiled (Anonymous, 1881), the "Alatae" (a non available name that also contains Strombidae) are listed in Sectio X: 160-168, lot numbers 4425-4579. There are no mollusc specimens registered as ex Feldmann present in Museum für Naturkunde, Berlin, Germany (Christine Zorn, pers. comm. 15.v.2024). However, at least one mollusc specimen (labelled as an *Amphidromus*), is present NHMD. This specimen had apparently been bought by a shell dealer named Cetti, not to be confused with Francesco Cetti (1726-1778), and subsequently sold to the Danish crown prince, the later Christian VIII (Tom Schiøtte, pers. comm. 16.v.2024). So, it appears that the Feldmann collection was dispersed, and the present whereabouts of the specimens illustrated in Martini (1777: pl. 78 figs 810-814) is unknown. I have not been able to find any further details about this shell dealer Cetti, but there may be a familial relationship with Francesco Cetti.

Schröter

Linnaeus's description of *S. dentatus* was copied by Schröter (1783) and Gmelin (1791: 3519).

Schröter (1783: 446) copied Linnaeus's description (1758; 1767), added a vernacular name in German ("Die gefaltene Flügelschenecke"), a description in German, a reference to an illustration, viz. Seba (1759: pl. 61 fig. 25), and illustrated a specimen (1783: pl. 2 fig. 12) of what he believed to be *T. dentatus*.

The illustration in Schröter (1783: pl. 2 fig. 12, here reproduced Fig. 12) appears to be a specimen of *Canarium labiatum* (Röding, 1798), and most certainly not *T. dentatus* as currently understood. Also the reference to Seba (1759: pl. 61 fig. 25), is clearly not conspecific with the current concept of *T. dentatus* and also appears to represent the species currently known as *C. labiatum*.

The description in German by Schröter, translated into English reads as follows:

"This winged gastropod has a weakly incurved, short, toothed wing and is folded on the first and all subsequent whorls. It is so similar to the preceding one [= *S. urceus*, GCK] that I can only consider them remarkable variations. However, they differ nevertheless, 1) by the vertical, slightly oblique folds, which only become visible in the middle or half of the first whorl and then continue through all the whorls. 2) by the strongly set whorls, and 3) by the stronger stripes of the mouth opening. Most of them have a particularly thin shell, which is transparent to the light, but others also have a strong shell. They are all only of an average size of 1½ inches. One of my examples is completely white and

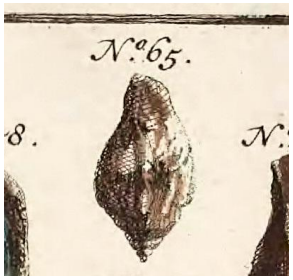


Fig. 14. Cf. *Maculastrombus mutabilis* (Swainson, 1821), one of the figures representing *S. dentatus* sensu Gmelin. Figure from Seba (1759) pl. 61 fig. 65.

only has brownish spots at the edge; another is brownish yellow, with a few narrow white lines, but the border is dark brown and spotted with white; the remaining four are marbled. I believe that they are found in the same place as the preceding one and that they lie hidden and unrecognized in the cabinets under the knotty canary snail, *Strombus vrceus* [sic!]. See Pl. II. Fig. 12."

The use of the phrase "(…) toothed wing (…)" however is confusing, as there are no teeth visible on the outer lip of *C. labiatum*. Moreover, Schröter (1783: 450) listed also species that were "genera and varieties that were missing in Linné" with the vernacular German name "Der Samaar, oder die gestickte dünnschalige Canarienschnecke", with a comparison to *S. urceus*, and references to several illustrations: Martini (1777: pl. 78 figs 810-814, see above); Lister (1688: pl. 858 fig 14, see above); Rumphius (1704: pl. 37 fig Y, see further below); Gualtieri (1742: pl. 33 figs C, D, see above); Seba (1759: pl. 61 figs 34, 41-47, see above), all representing the current concept of *T. dentatus*. Apart from this, Schröter (1783: 450) also provided a description: "(…) but it can be easily distinguished from it (= *S. urceus*): 1) by its exceptionally thin shell. 2) by its more elongated structure, in which all the whorls are strongly folded. 3) by the lack of nodes on the dorsum, although folds are present here. 4) By their violet-blue coloured nose [= anterior canal GCK], which also forms a wide notch. 5) The three sharp prongs at the end of the outer apertural lip, which are always found on mature and well-preserved specimens. On a white background they are generally marked with orange-coloured spots and clouds, and look like embroidery." that also points unequivocally to *T. dentatus*.

The Schröter collection was acquired by F.C. Schmidt, and subsequently became part of the collections of the Museum der Natur Gotha, Germany (Joost 1990). For some further details on the Schröter collection see Strack (2024) and references therein.

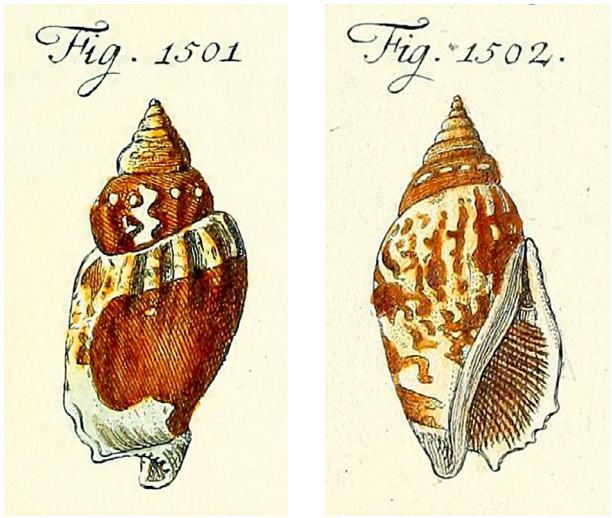
Chemnitz

After Schröter's (1783), but before Gmelin's (1791) work, one more 18th century work, again non-binominal, was published that played an important role in as far as the name *Strombus dentatus* is concerned. This is the work by Chemnitz (1788), that was also referred to by subsequent workers (see further below) in their treatment of *S. dentatus*.

Chemnitz (1788: pl. 157 figs 1501-1502, here re-illustrated Figs 15a-b) illustrated a specimen from the Spengler collection as "The toothed winged gastropod" which is referrable to *T. dentatus* of modern authors. The illustrated specimen clearly shows the teeth at the rim of the outer lip, albeit a bit smaller, so there cannot be any confusion about this character. In his caption to the figs 1501 and 1502 (Chemnitz, 1788: 204) it is stated: "Die gezahnte Flügelschnecke *Strombus dentatus Linnaei*". Chemnitz (1788: 220) repeated this name, viz. *Strombus dentatus*, and in his subsequent discussion, Chemnitz was clear about the identity of his illustrations, and once more noted that this species should be named *S. dentatus*: "It therefore fully deserves to be called *Strombus dentatus Linnaei*.". Thus the Linnaean name became connected with the illustrations in this work. Apart from reference to Linnaeus, there were other references and a Latin description that is more extended as the one provided by Linnaeus (1758; 1767): "(…) shell awl-shaped, longitudinal plicated, underside outer lip toothed, throat dark reddish striped, outer lip labro infra dentato, fauce striata obscure rufescente, inner lip reflected, alongside."] (Chemnitz, 1788: 220).

Furthermore, Chemnitz also identified Seba's (1759: pl. 61 figs 41-47) illustrations as representing his "Gezahnte Flügelschnecke".

The Spengler collection, or part of it, is now housed in NHMD, see further below, see also Cernohorsky (1974). According to Chemnitz (1788: 220) the specimens are from Mauritius.



Figs 15a-b. *Tridentarius dentatus*, figs from Chemnitz (1788) pl. 157 figs 1501, 1502.

Gmelin

In the entry *Strombus dentatus* Gmelin (1791: 3519) copied Linnaeus's original description, and added to this description: "(…) similar to "*urceus*" but the spire has oblique plicae and whorls that are further apart and distinguished by marked lines near the aperture, shell 1½ inch long, sometimes variable, sometimes white with dark brown rim, sometimes yellow with white rim, sometimes translucent, sometimes a solid dark.". Gmelin also added references to illustrations, viz. Seba (1759: pl. 61 f. 25 [= *C. labiatum*], also referred to by Schröter (1783, see above); fig. 41 [= *T. dentatus*]; and fig. 47 [= *T. dentatus*]; and Schröter (1783: pl. 2 fig. 12 [= *C. labiatum*]). Gmelin also recognized varieties: β) Seba 1759 (pl. 61 fig. 55 [= ? juvenile *C. labiatum*]); γ) Seba 1759 (pl. 61 fig. 65? [= ? *Maculastrombus mutabilis* (Swainson, 1821), here reproduced Fig. 14]; and δ) Seba 1759 (pl. 61 fig. 56 [= ? juvenile strombid].

Röding

Röding (1798: 62, # 790), as *Lambis dentata*, referred to Gmelin 1791 *Strombus clavus* sp 7 [= juvenile of *Tibia* cf. *fusus*], but not a direct reference to a figure of this species, and Chemnitz 1788, pl. 157 figs 1501-1502 [= *Tridentarius dentatus* of modern authors, Figs 15a-b]. There was no further description. In the remains of the Bolten collection there are no specimens of *T. dentatus* present, see Kronenberg & Wieneke (2020: 97).

The specimen figured by Chemnitz is however present in NHMD, collection number 231934, ex Spengler collection (Tom Schiøtte, pers. comm. 16.v.2024), measuring 37.8 mm shell length. Oddly enough, this specimen was not listed by Cernohorsky (1974) in his account on the type specimens of the then Zoological Museum Copenhagen, presently NHMD. To unequivocally establish the identity of *Lambis dentata* Röding, 1798, I hereby designate the specimen present in NHMD, as lectotype of *L. dentata*, thus making *L. dentata* both a junior secondary homonym and a junior synonym of *S. dentatus* Linnaeus (Figs 15a-b). Type locality: Mauritius.

At first glance, Chemnitz's figures (Figs 15a-b) appear to show two different specimens. Figure 1501 (Fig. 15a) seems to have only one tooth, whereas fig. 1502 (Fig. 15b) appears to have apart from the very distinctive most abapical one, three minor teeth adapical of that one. Yet, it is the same specimen as is demonstrated by Figs 16a-b, being two views of one specimen, almost exactly positioned as the figures in Chemnitz. This specimen is also a bit aberrant, as usually the three most abapical teeth are of about the same size, whereas in this specimen the most abapical one, bordering the anterior canal, is distinctly larger as the other two.

Figs 16a-c. *Tridentarius dentatus* (Linnaeus, 1758), specimen figured by Chemnitz (1788: pl. 157 figs 1501, 1502. NHMD-231934, actual size 37.8 mm. **a.** Ventral view. **b.** Dorsal view. **c.** Accompanying labels. All images: © NHMD, reproduced with permission.

SUBJECTIVE SYNONYMS

Strombus tridentatus Gmelin, 1791

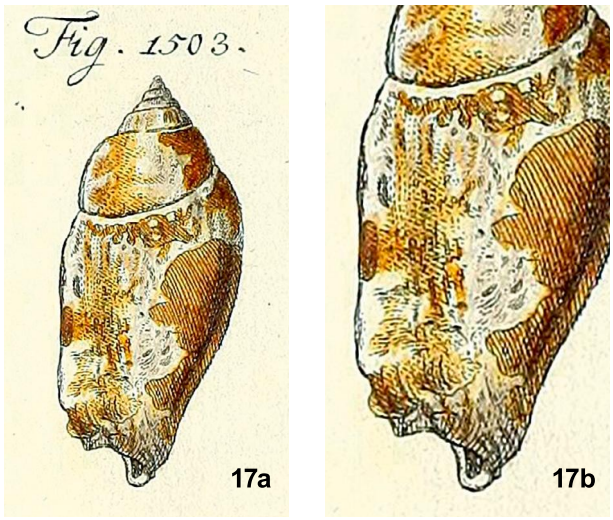
Original description. — Gmelin, 1791: 3519, sp. # 30: "Str[ombus] testa tenui alba aurantio maculata et nebulosa, dorso laevi plicato, cauda violacea, anfractibus canaliculatus, labro triacantho." [with a thin white shell spotted and misty golden orange, on the left back with fold, violet tail, channeled whorls and three-toothed lip.].

Lectotype designation. — Gmelin referred to: Lister (1688) Liber 4, Sect. xii, Cap. 2, fig. 14 (858), here reproduced (Fig. 5a); Gualtieri (1742) pl. 33 figs C, D (Figs. 7a, b); Seba (1759) pl. 61 fig. 34 (Fig. 8a); and Martini (1777) pl. 78, figs 810-814 (Figs 10a-d), note that fig. 810 (Fig. 11) in Martini is a specimen of *Terestrombus terebellatus*. It is quite remarkable that Gmelin only referred to only one figure in Seba. As indicated above, on the same plate figs 41-47 also represent this species where some were referred to in his concept of *S. dentatus*; and especially figs 43-45 also clearly show the three teeth at the rim of the outer lip. I hereby select the specimen illustrated in Lister (1688) Liber 4, Sect. xii, Cap. 2, fig. 14 (858), here reproduced (Fig. 5a), as lectotype of *Strombus tridentatus* Gmelin, 1791.

Type locality. — "Habitat rarior in mari indico, *urceo affinis*".

Remarks. — Gmelin (1791: 3519) also recognized a variety β, referring to Chemnitz (1788: pl. 157 fig. 1503), here reproduced (Fig. 17a). This figure was referred to in Chemnitz (1788: 221) as "Die glatte Samar" and came from Chemnitz's private collection. This is "the smooth Samar", and is here identified as representing a specimen of *Lambis fragilis* Röding, 1798, currently known as *Terestrombus fragilis*, type species of *Terestrombus* Kronenberg & Vermeij, 2002. Chemnitz (1788: 221) did not provide any other name for this species. Chemnitz's figure is a bit strange as the illustration, here enlarged (Fig. 17b), appears to show a tooth-like projection within the strombid notch. I never have seen a specimen of this species with such a procession and until the specimen (Chemnitz collection) is found we can only guess whether this was truly so, or a slip of the engraver's pen and subsequent plate colouring. (Parts of) Chemnitz's collection are present in the Zoological Institute ras, St. Petersburg, Russia (Martynov, 2002), but no specimen agreeing with Chemnitz pl. 157 fig. 1503 has been found yet.

In conclusion, as demonstrated above, Gmelin's references are a mixture of three species as currently recognised, viz. *Tridentarius dentatus*; *Terestrombus terebellatus* and *Terestrombus fragilis*.



Figs 17a-b. *Terestrombus fragilis* (Röding, 1798), fig. from Chemnitz (1788) pl. 157 fig. 1503, paralectotype of *Strombus samarensis* Reeve, 1851, designated herein. **b.** Enlarged detail of a.

Strombus samar Dillwyn, 1817

Original description. — Dillwyn, 1817: 674, # 34: "Shell smooth, thin, and plaited on the shoulder of the body-whirl; outer lip very little expanded and three-toothed; base and pillar dark brown or violet.", and additionally: "Shell about an inch and a half long, and about half as broad of a yellowish white colour, spotted and clouded with brown or orange; the spire is produced, and consists of eight or nine slightly ventricose whirls; the outer lip is but very little expanded, and is thickened at its upper extremity.". Locality: "Inhabits the coasts of Amboyna. *Rumphius*. East Indian Seas. *Martini, &c.*".

Types. — Lewis Weston Dillwyn had a collection that is now present in nhmw (Davy Dean, 1936: 230-232). Within the nhmw collections, there is one specimen present labelled *Strombus samar* (PR51605, no locality), but there is no evidence that it belonged to Dillwyn; the Dillwyn specimens that are held in nhmw are separate from the main collection and do not contain any specimen that is labeled *Strombus samar* (Harriet Wood, pers. comm. 12.iii.2024). From this it appears that Dillwyn did not have a specimen of what he (Dillwyn) considered to be a representative of *Strombus samar*. For syntypes we thus have to rely on the references cited by Dillwyn.

Dillwyn (1817: 674) mentioned in his synonymy the following references (sequence as given in Dillwyn): 1) Chemnitz; 2) Gmelin; 3) Schreibers; 4) Schröter; 5) Meuschen; 6) Lister; 7) Rumphius; 8) Petiver; 9) Gualtieri; and 10) Seba. These are discussed here under remarks.

Remarks. — From his description (Dillwyn, 1817: 674) it is clear that he described the species currently known as *T. dentatus*, which is also evident from his reference to e.g. Gmelin's *S. tridentatus*. However, not all of Dillwyn's refer-

ences are this species. Dillwyn referred to:

1) Chemnitz, 1788, pl. 157, figs 1503 (as *Strombus samar*, not available from Chemnitz, = *Terestrombus fragilis*, see above).

2) Gmelin, 1791: 3519 (as *Strombus tridentatus*, see above).

3) Schreibers, 1793: 187. Schreibers did not illustrate this species, but provided a description, listing it as a variety of *Strombus urceus*:

"About a. *Strombus tridentatus*. The Samaar Linne pag. 3519 [= Gmelin, 1791, GCK] is thin-shelled and white with orange-coloured spots and clouds, ribbed whorls, violet-blue, gutter-like nose with its folds and an outer apertural lip with three prongs." Schreibers (1793: 187) provided a reference to an illustration, viz. Martini, 1777: pl. 78, fig 810, but this represents *Terestrombus terebellatus*, see above. So, Schreibers's concept of a three-toothed "Canarienschnecke" does have three teeth, but the reference to the illustration in Martini (1777) does not.

Schreibers (1793: 187) also recognized a variety b. "Has regular rows of knobs with a broad and a narrow band, for the remainder similar to the knobbed Canary" with a reference to Seba (1759) pl. 61 fig. 35, which is provisionally considered an undetermined species of *Canarium*.

Schreibers (1793: 188) also listed *Strombus dentatus*, that was described as " Has a weak, curved, short and toothed wing, strongly protruding whorls, and a white, brownish-yellow or dark brown shell with a brown-spotted or white-spotted edge and pale white lines. Asia and Amboina are their homeland.". There is no reference to any illustration, but the phrasing "(…) short and toothed wing (…)" appears to point to *S. dentatus*.

4) Schröter, 1783: 450, see above.

5) Meuschen, 1787: 336, # 841. In the Museum Geversianum, under the heading "Genre XXI Ailees" there is an entry "A. Samar", with a very brief description "shell swollen, convex, transversely knobbed on the first whorl", i.e. no mentioning of teeth whatsoever, with references to figures (Seba pl. 61, figs 34, 41-46; Lister pl. 858 fig. 14; Rumphius pl. 37 fig. Y; and Gualtieri pl. 33 figs C, D). Taking into account this short description, it seems that this was not a specimen of *T. dentatus*; the whorls are not "nodosa", but would rather be referred to as "plicata". There was one specimen present in this cabinet, present whereabouts unknown.

For the other references in Dillwyn (1817), viz.

6) Lister 858 fig 14;

7) Rumphius pl. 37 fig. Y,

8) Petiver, pl. 14 fig. 15,

9) Gualtieri pl. 33 figs C and D; and

10) Seba pl. 61 fig. 34,

see further above. I hereby select the specimen illustrated in Lister (1688) Liber 4, Sect. XII, Cap. 2, fig. 14 (858), here reproduced (Fig. 5a), as lectotype of *Strombus samar* Dillwyn, 1817, thus making *S. samar* Dillwyn, 1817 an objective synonym of *S. tridentatus* Gmelin, 1791.

Type locality: "Inhibits the coasts of the Isle of Amboyna [= Ambon, GCK]. *Rumphius*. East Indian Seas. *Martini, &c.*".

Dillwyn (1817: 674), directly under *S. samar*, also recognized *S. dentatus* as being a species, i.e. distinct from *S. samar*. Dillwyn provided a brief description: "Shell longitudinally plaited, with outer lip slightly expanded and toothed, and sinuated near the base; inner lip thickened and reflected; throat striped." and references (sequence as in Dillwyn 1817: 674) to 1) Linnaeus; 2) Schröter; 3) Chemnitz; 4) Gmelin; 5) Schreibers; and 6) Seba (1759: pl. 61 fig. 25).

1) Linnaeus (1767: 1213) is the copy of the original description in Linnaeus 1758 (745).

2) Schröter (1783: 446, pl.2 fig. 12 with a question mark) has been discussed above.

3) Chemnitz (1788: 220, pl. 157 figs 1501 and 1502).

4) Gmelin (1791: 3519) has both *S. dentatus* and *S. tridentatus* on the same page, but as *S. tridentatus* is explicitly mentioned in the synonymy of *S. samar*, this reference points to *S. dentatus* sensu Gmelin.

5) Schreibers (1793: 188), see above.

6) Seba (1759: pl. 61 fig. 25) is here identified as representing *Canarium labiatum*.

It is remarkable that, when comparing the two descriptions by Dillwyn, the outer lip is "three-toothed" in *S. samar* and "toothed" in *S. dentatus*.

***Strombus samarensis* Reeve, 1851**

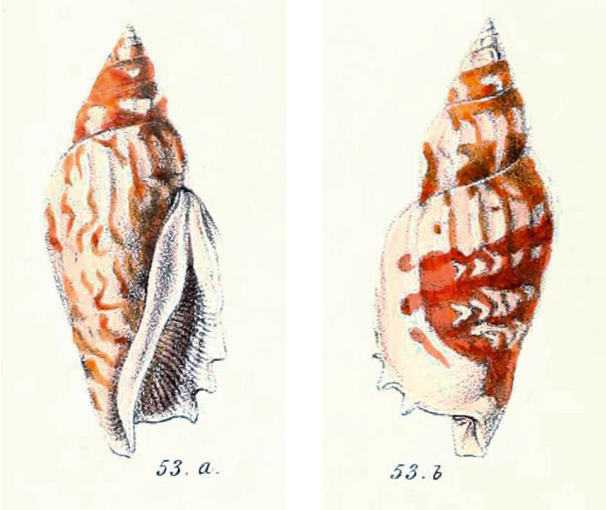
(Figs 18a-21)

Original description. — Reeve, 1851: caption to pl. 19 fig. 53a, b: "Species 53".

Types and type locality. — Two syntypes NHMUK 1969336 ex Hugh Cuming "Philippine Islands" (Reeve, 1851: (vol. 6) pl.19 figs 53a, b), here reproduced, Figs 18a, b.

Apart from a description in both Latin and English (caption to pl. 19 fig. 53a, b), Reeve mentioned in his synonymy *Strombus samar* (Chemnitz Conch. Cab. Vol. x p. 221, pl. 157 f. 1503) (= *Terestrombus fragilis*, to be considered a syntype). Reeve further referred to *Strombus tridentatus* Lamarck; and *Strombus dentatus* Sowerby (not of Linnaeus), and also stating that "This species was not known to Linnaeus (…)".

It is not known how many specimens Reeve originally had at hand, but there are two syntypes in NHMUK, measuring respectively 51.1 and 39.5 mm in length (Figs 19a-21). Although much paler as in the original illustration (compare Figs 18a-b with 19a-b), it is clear that the larger one is the specimen figured by Reeve. To unequivocally determine the identity of *Strombus samarensis* Reeve, 1851, I hereby select the specimen illustrated by Reeve (1851: pl.



Figs 18a-b. *Tridentarius dentatus* (Linnaeus, 1758), figs from Reeve (1851) pl. X figs x, y, Lectotype figure of *S. samarensis*. **a.** Ventral view. **b.** Dorsal view.

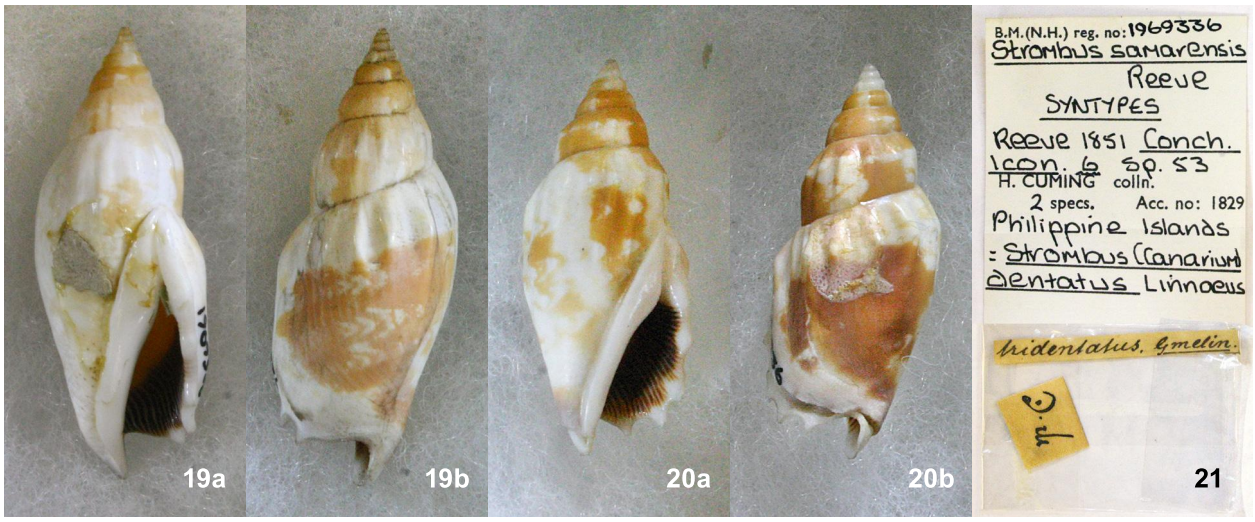
19 fig. 53a, b), measuring 51.1 (Fig. 19a-b) as lectotype of *S. samarensis*. This specimen is present in NHMUK 1969336, see above. By default, the other specimen in NHMUK (with the same collection number, measuring 39.5 mm, as well as the specimen illustrated in Chemnitz (1788, pl. 157 fig. 1503 = *Terestrombus fragilis*), are paralectotypes. It is remarkable that Reeve did not refer to the illustrations in Chemnitz (1788, pl. 157 f. 1501, 1502) as these clearly represent the same species. Is this a lapsus calami by Reeve, or did he not actually see the work by Chemnitz?

As Reeve's specimens came from Cuming with locality "Philippines" it is not inconceivable that Reeve, being well aware of the existence of the Island of Samar in the Philippine Archipelago, confused the name "Samar", as coined by Rumphius, being a reference to the origin of the species, and named the species after this locality. It is however not certain that the two specimens that Reeve had at hand indeed came from Samar.

Remarks. — It is remarkable that Reeve did not refer to Dillwyn (1817) who introduced *Strombus samar*. Perhaps he thought that the epithet *samar*, being originally from Chemnitz, was not an available name, and therefore could not be used, but this is mere speculation. It is also remarkable that Reeve completely ignored Gmelin's (1791) original description of *Strombus tridentatus*, but did refer to Lamarck (1822). Lamarck (1822: 209) referred to Gmelin as being the author of *S. tridentatus*, and synonymised Linnaeus's *S. dentatus* with his (= Lamarck's) concept of *Strombus plicatus* (= *Canarium labiatum* Röding, 1798).

The reference of Reeve to Sowerby (1842: 31, species # 29, figs 86, 87) is clearly *Strombus dentatus* as currently accepted. The description by Sowerby (1842: 31) also clearly points into that direction. His illustrations clearly show this species, with fig. 86 having nicely developed teeth on the outer lip, fig. 87 with the teeth worn to almost indiscernible.

Reeve also recognised *Strombus dentatus* as a valid species (1850: pl. 9, fig. 17). There is one sample of three specimens, ex Cuming from "Philippines" present in NHMUK, collection number 1969329, that were probably studied by Reeve. On the accompanying label is written "probable syntypes". This cannot be so, as Reeve (1850: caption to pl. 9, fig. 17) clearly attributed the name to Linnaeus. These speci-



Figs 19-21. *Tridentarius dentatus* (Linnaeus, 1758). Lectotype and paralectotype of *S. samarensis* and accompanying labels *Strombus samarensis* Reeve, 1851, NHMUK 1969336. **19a.** Illustrated syntype, ventral view. **19b.** Illustrated syntype, dorsal view. Actual size: 51.1 mm. **20a.** Second syntype, ventral view. **20b.** Second syntype, dorsal view. Actual size: 39.5 mm. **21.** Accompanying labels. Note the handwritten label "*tridentatus* Gmelin". All images: ©Ulrich Wieneke, reproduced with permission.

mens are here identified as representing *C. labiatum*. Reeve did not refer to any other published illustration, but did refer to Lamarck's *S. plicatus* (= *C. labiatum* Röding, 1798).

Interestingly, in search of a reasoning for the name *dentatus*, Reeve noted: "In the absence of a dentated lip, the compressed dorsal tubercules may probably have suggested the name by which Linnaeus distinguished this species.".

DISCUSSION

The references to published illustrations of *S. dentatus* are summarised in Table 1, and those of the synonyms, viz. *S. tridentatus*, *S. samar* and *S. samarensis* in Table 2. What unfolds is a picture, as already noticed by Dodge (1956) and Abbott (1960); i.e. a mixture of species, all referrable to species that were in *Canarium* sensu Abbott, but now allocated to three genera and four species viz. *Canarium labiatus*, *Terestrombus terebellatus*, *T. fragilis* and *Tridentarius dentatus*. This was caused by the very vague description by Linnaeus (1758), as the word "dentato" [toothed], that could either refer to singular or plural; his mentioning of plicae only on the ventral side of the shell and the absence of references to figures. This makes it impossible to tell which species Linnaeus actually intended with his *Strombus dentatus*. Linnaeus (1767) did not use the opportunity to provide references to illustrated specimens in the subsequent 12th edition, although the figures in Seba of this species are easily recognizable, even if the colour does not fully match. Even in his personal copy with notes as preparation for a 13th edition (Fig. 3) Linnaeus made no addition with references to illustrations.

Early authors, like e.g. Schröter (who was a preacher), were very familiar with Latin (Strack 2024 and references therein) and he (Schröter) interpreted the word "dentato" as singular, and so did Gmelin, possibly influenced by Schröter. So this would perfectly explain the introduction of *S. tridentatus* by Gmelin (1791) to distinguish this species from the Linnaean taxon. It should however be noted that occasionally words derived from Greek were included in the Latin descriptions, such as the word "triacantho" in Gmelin's (1791: 3519) description of *S. tridentatus*.

Therefore, due to the very poor description by Linnaeus, and as there are several species within the genus *Canarium* sensu Abbott (1960) that have or may have "ventre spiraque plicatis" i.e. axial ribs, such as *C. labiatum*, *S. dentatus* should have been considered a nomen dubium or taxon inquirendum. The subsequent introduction of *S. tridentatus*, *S. samar* and *S. samarensis*, only contributed to the confusion.

Also, although the shell morphology was well interpreted, the lack of teeth in the Rumphius, Petiver, Gualt-

S. dentatus	**Lister**	**Rumphius**	**Petiver**	**Gualtieri**	**Seba**	**Martini**	**Schröter**	**Chemnitz**
Linnaeus	—	—	—	—	—	—	—	—
Huddesford (nomen nudum)	—	—	—	—	—	—	—	—
Martini "Samaar"	pl. 858 fig 14 *T. dentatus*	pl. 37 fig. Y *T. dentatus*	pl. 14 fig. 15 *T. dentatus*	pl. 33 figs C, D *T. dentatus*	—	pl 78 figs 811-814 *T. dentatus* pl 78 fig. 810 *Te. terebellatus*	—	—
Schröter	—	—	—	—	pl. 61 fig. 25 *C. labiatum*	—	pl. 2 fig. 12 *C. labiatum*	—
Chemnitz	—	—	—	—	pl. 61 figs 41-47 *T. dentatus*	—		pl. 157 figs 1501, 1502 *T. dentatus*
Gmelin	—	—	—	—	pl. 61 fig. 25 *C. labiatum* pl. 61 figs 41, 47 *T. dentatus* var. β: pl. 61 fig. 55 ? *C. labiatum* var. γ: pl. 61 fig. 65 ? *M. mutabilis* var. δ: pl. 61 fig. 56 = Strombidae indet.	—	pl. 2 fig. 12 *C. labiatum*	—
Röding	—	—	—	—		—	—	pl. 157 figs 1501, 1502 *T. dentatus*
Dillwyn	—	—	—	—	pl. 61 fig. 25 *C. labiatum*	—	?pl. 2 fig. 12 *C. labiatum*	pl. 157 figs 1501, 1502 *T. dentatus*
Reeve	—	—	—	—	—	—	—	—

Table 1. References to illustrations of *Tridentarius dentatus*. Only direct references to illustrations are mentioned.

Subjective Synonym	Lister	Rumphius	Petiver	Gualtieri	Seba	Martini	Schröter	Chemnitz
Schröter [not named]	pl. 858 fig 14 *T. dentatus*	pl. 37 fig. Y *T. dentatus*	—	pl. 33 figs C, D *T. dentatus*	pl. 61, figs 34, 41-47 *T. dentatus*	pl. 78 figs 810-814 *Terestrombus terebellatus*	—	—
S. tridentatus	pl. 858 fig 14 *T. dentatus*	—	—	pl. 33 figs C, D *T. dentatus*	pl. 61, fig 34 *T. dentatus*	pl. 78 figs 810-814 *Terestrombus terebellatus*	—	var. B : pl. 157 fig. 1503 *Terestrombus fragilis*
S. samar	pl. 858 fig 14 *T. dentatus*	pl. 37 fig. Y *T. dentatus*	pl. 14 fig. 15 *T. dentatus*	pl. 33 figs C, D *T. dentatus*	pl. 61, fig 34 *T. dentatus*	—	—	pl. 157 fig. 1503 *Terestrombus fragilis*
S. samarensis	—	—	—	—	—	—	—	pl. 157 fig. 1503 *Terestrombus fragilis*

Table 2. Subjective synonyms of *Tridentarius dentatus* with illustrations referred to. Only direct references to illustrations are mentioned. Specimens mentioned in this table are to be considered as syntypes of the taxa mentioned. The illustrations of the syntype of *Strombus samarensis* in Reeve (1851: pl. 19 fig. 53a, b) are not included in this table.

ieri and Martini illustrations, may have contributed to the confusion. This whole matter on the illustrations referred to for *Strombus tridentatus* was perfectly summarised by Lamarck (1822: 209-210): "The figures cited for this shell are more or less mediocre, with the exception of those by Seba that show well its general shape and the three serrations on the right edge.".

The subsequent introduction of *S. samar* by Dillwyn (1817), who's possible rationale was that the earlier name given by Rumphius (1705) "Samaar" would have had priority over the one given by Gmelin (1791). By doing so, Dillwyn made that name available under current IZCN regulations.

Confusion with *Terestrombus fragilis* may have been caused by Chemnitz's (1788) pl. 157, fig. 1503. This illustration (Fig. 17b, enlarged) suggests a tooth within the strombid notch.

Ever since Abbott's (1960) influential monograph nearly all authors agreed on the identity of Linnaeus's taxon, and the designation of a Neotype herein is in agreement with the concept of these subsequent authors.

Based on the general morphology of *Tridentarius dentatus* it is considered here, following Abbott and subsequent authors, to be only one species of *Tridentarius*, and *S. tridentatus*, *S. samar* and *S. samarensis* are considered to be junior subjective synonyms. However, we cannot rule out the possibility that more species are hidden under the name *T. dentatus* as shown by Irwin et al. (2024), who found some cryptic species. As far as known, there is a gap in the distribution of this species between the Pacific and the western Indian Ocean. Furthermore, the endemicity of species in Hawaiian waters (in Strombidae there are the endemic *Euprotomus hawaiensis* (Pilsbry, 1918); *Hawaiistrombus hellii* (Kiener, 1843); *Maculastrombus maculatus* (G. B. Sowerby II, 1842)) is well known. I cannot exclude the possibility that either or both of these populations, i.e. the one in the western Indian Ocean / Red Sea, or Hawaii, will turn out to be a distinct species. More research on molecular level is warranted.

Unfortunately, none of the illustrated specimens referred to from the Lister, Rumphius, Gualtieri, and Seba collections could be traced, as I would prefer to designate a tangible specimen instead of an illustration. Despite many efforts, not one specimen from the museums where the Rumphius and/or Gualtieri collections are kept has been identified with certainty as being a genuine Rumphius, and/or Gualtieri specimen. To my knowledge, not one specimen from the Seba collection has been identified or traced with certainty. Therefore I have chosen the specimen illustrated in Lister as the specimen with the most promising of being localised.

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APPENDIX: A NOTE ON LISTER'S HISTORIAE CONCHYLIORUM

The realisation of the "Historiae sive synopsis methodicae conchyliorum" is a bit complicated. It was delivered in four parts and two appendices (see Table 3), but the number of plates appears to be different according to different sources.

Lister had created a small version of this book for circulation to friends in 1685, but almost immediately began to work on an expanded version which was produced from 1685 to 1692. According to Chapman (2018) this expanded version had 490 pages, with 1062 engraved copper plates, showing 2000 figures of molluscs.

The work was completed in 1692 and published again, i.e. a second edition, in 1697 (Chapman 2018). It was subsequently republished in 1770 by William Huddesford, then curator of the Ashmolean Museum (Oxford, United Kingdom), an "edition altera", with two indexes added. In fact this was the third edition, but it is generally known as the second edition, under a slightly different title. Subsequently, a fourth edition, known as the third edition was published by Dillwyn (1823). This last edition also contained identifications of the species illustrated in the Linnaean (binominal) system.

Coan & Kabat (2024, Annex 1: 88) provide a table based on Wilkins (1957) with the years of publication and the number of figures. That table is not correct, and a correct table is reproduced here (Table 3).

The 1697 second edition had an additional 27 plates, 3 unnumbered, two indicated as "quarta" resp. "quinta", with their own figure numbers, and 22 numbered plates, indicated as "Tab. 1" and so on, all with anatomical illustrations, see Table 4 for a brief overview, following the format in Coan & Kabat (2024, Annex 1: 88). Of these latter series of plates, at the bottom of tab. 2 it reads: "Anna Lister delineavit [translation: drew] 1693" and at the bottom of pl. 4: "Anna Lister delinea[vit]" without a year visible.

Apart from the texts added by Huddesford (1770) and Dillwyn (1823), there are also differences within the printed plates as they appear in the work in all editions. These differences are obvious on the plate where *Strombus dentatus* is illustrated, see Figs 22-24.

Figure 22 shows a page taken from a copy present in the Wellcome Library, London, UK. This copy once belonged to Jacobi Robertson and has a coat of arms with "Marques d'Angela" written on a banner with that coat of arms. The page contains only three illustrations, without frames. The top fig. has the number 737 added outside the rim of the copper plate; the two bottom figures haves the number 738 added. No captions are present.

Figure 23 shows a page taken from a copy present in the Linda Hall Library, University of Missouri, Kansas City, USA. Former owners are indicated as Edward Brockway Sturge (1836-1898), probably a descendant of Joseph Sturge, an English Quaker, abolitionist and activist, who founded the British and Foreign Anti-Slavery Society; and Jan Willem Six van Vromade (1872-1936), a Dutch nobleman, who's

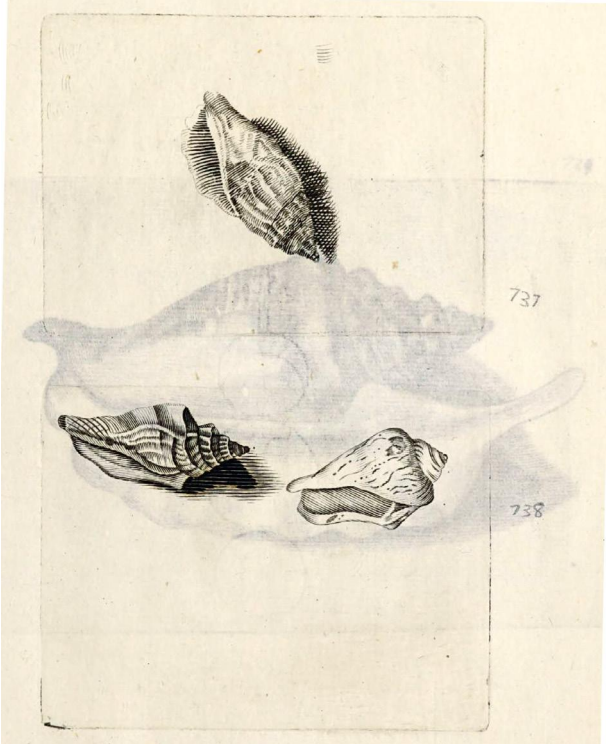

Fig. 22. Page with illustration of *Strombus dentatus* taken from copy present in Wellcome Library, London, UK.

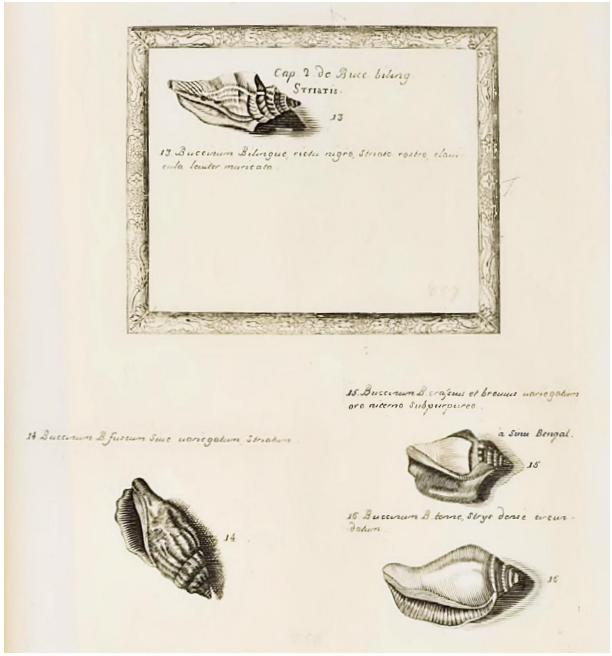

Fig. 23. Page with illustration of *Strombus dentatus* taken from copy present in Linda Hall Library, University of Missouri, Kansas City, U.S.A.. Reproduced under Creative Commons License cc by 4.0. Courtesy of The Linda Hall Library of Science, Engineering & Technology.

Liber [book]	title	figures	year
1	de conchleis terrestribus	1-100	1685
2	de turbinibus et bivalvibus aquae dulcis	101-157	1686
3	de bivalvibus marinis	158-433	1687
Appendix to 3	de conchitis ysuc lapidibus	434-508	1688
4	de buccinis marinis	509-974	1688
Appendix to 4	de buccinitis ysuc lapidibus	975-1026	1692

Table 3. Correction to the collation of Historiae Conchyliorum (Lister 1685-1692) as from Coan & Kabat (2024: 88), based on Wilkins (1957).

Addition in 2nd printing	title	plates	year
	Mantissa	3 unnumbered, figs numbered 1-10; 1-9; 1-5	? 1697
	Appendicis	Quarta, figs 1-13; Quinta, figs 1-8	? 1697
	Figurae anatomicae	Tab. 1-22	? 1697

Table 4. Additional plates in second printing of Historiae Conchyliorum (1697).

library was auctioned in five (!) sessions (1925, 1926, 1930, 1932, and finally after his death, 1936). The copy shows four shells, the illustration from the bottom row, left in Fig. 22, has moved to the top of the page, now within a frame; the illustration at the top in Fig. 22 has moved downward and to the left of the page; and the illustration on the bottom row at the right has been replaced by two other illustrations. The illustration at the top now has # 14, and the others are numbered 15-17. All illustrations now have a caption, within the frame of the top figure there is added the title of the chapter: *Cap.* 2. *De Bucc. biling.* Striatis.

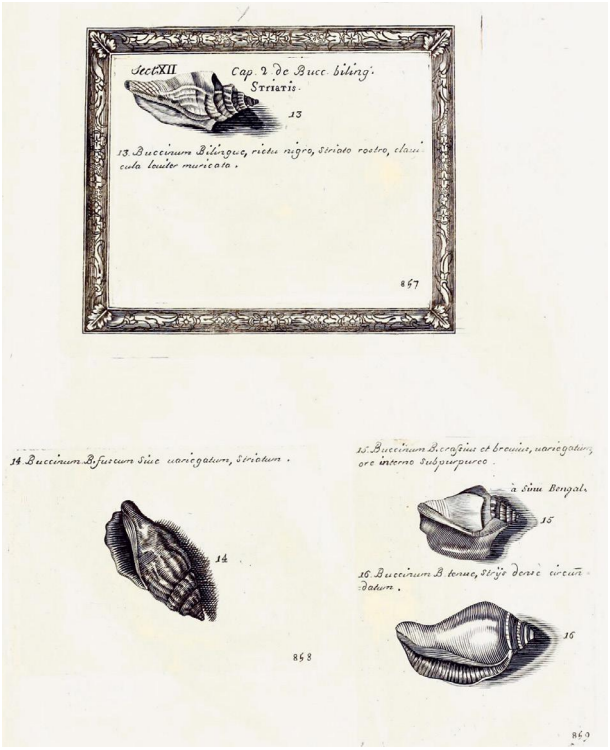

Fig. 24. Page with illustration of *Strombus dentatus* taken from a Huddesford copy present in Smithsonian Libraries and Archives.

Figure 24 is nearly the same as Fig. 23. But now apart from the numbering 14-18, also a numbering 857-859 has been added, and in the top left hand corner within the frame "*Sect.* xii" has been added before *Cap.* 2. *De Bucc. biling.* Striatis.

It looks that the copy in Wellcome Library, with the example of Fig. 22 is indeed some kind of proof page from the "work under construction", after which illustrations were moved around and added, and frames and captions were added after the engravings were found in order. But also the very first illustration showing shells in Liber 1 deviates from the known complete copies: only the title "Sectio I *de* Buccinas *Terrestribus a sinistra dextrorsum tortilibus laevibus edentulis* and the top two shells, without numbering are illustrated, whereas "normal" copies have three shells illustrated with captions, numbered 1-3.

The copy present in the Linda Hall Library does have the Mantissa, but only in three plates with the illustrations unnumbered. A fourth plate is added, but these only show a total of three separate valves, one accompanied by the letter "A", and the other by a small caption "I mauritio". So, this is a copy in which the last part, the "Addition in 2nd printing" is incomplete: the first three unnumbered plates have no numbering, and plates quarto, quinto, and the plates 1-22 with anatomical drawings, are missing, while at the other hand one plate has been added. And here again, the very first illustration showing shells in Liber 1 deviates from the known complete copies: only the title "Sectio I *de* Buccinas *Terrestribus a sinistra dextrorsum tortilibus laevibus edentulis* and the top two shells, without numbering are illustrated. Also, the consecutive numbering of all illustrations, leading to # 858 for *Tridentarius dentatus* is missing in this copy.

It is far beyond the scope of this contribution to be exhaustive in comparison between these different printings, and I have limited myself to these two examples. I hope that someone will dig further into this intriguing matter; perhaps other incomplete copies with different plates exist.