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A DESCRIPTIVE CATALOGUE
OF THE
SCALIDÆ OF THE WEST INDIA ISLANDS.

By O. A. L. MÖRCH, Ph.D.

OBSERVATIONS.

The present paper was originally destined to be part of a descriptive Catalogue of the collection of the late Robert Swift, of St. Thomas and Philadelphia; but additions from the collections of Mr. Henry Krebs and Mr. A. H. Riise and others have much increased the material not only in new species, but especially in numerous specimens in well-selected suites representing varieties and geographical distribution.

It was the intention to figure not only the new species, but also those rarer ones already figured only in rare or costly works; but circumstances have compelled a change of plan, and limit the illustrations to a single plate.

COPENHAGEN, May, 1875.

The Scalidæ of the West Indies.

The species of the genus *Scala* of Klein were by Linné associated with *Turritella*, *Clausilia*, &c. in the genus *Turbo*, from which Lamarck separated it under the name *Scalaria*; distinguishing it by its numerous varices from *Turritella*. A knowledge of the animal and its anatomy has, however, shown that those two genera are widely different; *Turritella* belonging to the DIOICA, order Tænioglossata (Troschel), having seven rows of teeth with reflected edges, proving its phytophagous habits; *Scala*, on the contrary, to the ANDROGYNA, order Ptenoglossata, having subulate multiseriate teeth wanting the median or rhachial tooth. This latter circumstance proves that the animal, like *Testacella* and *Ianthina*, swallows its food entire or in large morsels. In fact, *Scala grönlandica* feeds (according to Dr. Gould)* eagerly on fresh beef, especially if somewhat macerated. In the form of the teeth and in their predacious habits, the *Scalidæ* agree with *Ianthinidæ*, in

* Gould, Invertebrata of Massachusetts, 1841, p. 250.

the mouth of which often are found young individuals of the same species. The *Ianthinidæ* differ chiefly from *Scalidæ* by the floating apparatus adapted to their oceanic life. Between the shells there are some marked transitions, e. g. *Recluzia* and the ribbed *Ianthina* (*Iodina*) *exigua*, Lam., on one side, and *Scala* (*Ianthoscala*) *inconspicua*, Sow., *S. concinna*, Sow., &c., on the other. The *Scalidæ* may be considered creeping *Ianthinidæ*.

Several attempts have been made to divide the genus *Scala* into subgenera, but as yet none have proved successful. In Cat. Yoldi, 1852, p. 48, I adopted the following divisions:—

ACIONA, Leach, with the whorls separated. *S. scalaris*, L.

SCALA, Klein (Clathrus, Oken), whorls not separated.

CLATHRUS, Gray (*Scal. australis*, Linn., and *S. grönlandica*, Perry), with flat sutures.

CIRSOTREMA, Mörch, is generally adopted as a genus on account of the crispate varices.

ACIRSA, Mörch, Prod. Moll. Grönl. 1857; Adams' Gen. Supp. Chiefly founded on the want of varices; this character is, however, very doubtful. *Scala ochotensis*, Midd., which evidently is nearly specifically the same, has sometimes rather distinct ribs, and *Scala wroblewskyi*, Mörch (*Scalaria borealis*, Gould), is sometimes quite smooth.

In the Genera of H. and A. Adams, Nov. 1853, p. 220, the following subgenera are added:—

AMŒA, H. and A. Adams; *Scala minuta*, Bolt (*Scala martinii*, Wood.)

The chief characters, rudimentary ribs and spiral striæ, are not constant even in the same species. If the spiral line proves of generic value, *Scala grönlandica* would enter this genus chiefly, as *Scala lovénii*, Mac Andr., considered by several as a variety only, has spiniferous ribs like *Amœa minuta*.

OPALIA, H. and A. Adams, was established on species with a spiral basal ridge, a character probably of less importance, as *Scala lamellosa*, Lam., and *Scala australis*, Lam., scarcely can be congeneric.

ACRILLA, H. and A. Adams, Proc. Zool. Soc. 1860, p. 241. Type *Scala acuminata*, Sowb. Shell turritelloid, ribs filiform.

The geographical distribution of the *Scalidæ* agrees in many respects with the Corals, the number of species being largest in the tropical seas, chiefly on the coral islands, and smallest towards the poles.

Thus in the north polar region are only found four species: *Scala grönlandica*, Perry, is circumpolar; in the sea of Greenland and Labrador is found besides this species *Scala* (*Acirsa*) *borealis*, Beck (*Sc. eschrichtii*, Holb.), which is not found recent on the European side of the Atlantic Ocean, but occurs fossil in Sweden (Uddevalla), Ireland, &c.

In the northern part of the Pacific Ocean is found, besides *Scala grönlandica*,

Scala wroblewskyi, Mörch (*Scalaria borealis*, Gould, now Beck), *Scala ochotensis*, Midd., which may be considered a gigantic *Scala borealis*, Beck.

In the south polar region *Scala wroblewskyi* is represented by *Scala australis*, Lam., which resembles it so closely that Dr. Gould considered it identical, and for this reason retired his species. *Scala borealis*, Beck, is represented by *Scala granosa*, Q. and G., which was considered a *Turritella* on account of the want of ribs.

On the American Atlantic coast line, from Cape Cod to South Carolina, six species are indicated. In the tropical region, the Gulf of Mexico with its islands, the north coast of South America, which however is little known, are found forty species, of which only one is not found on the islands.

From Rio Janeiro to the Strait of Magellan only six species are again indicated.

On the American Pacific coast line, from Vancouver's Island to Upper California, Dr. Carpenter has enumerated about eleven species. In the tropical region from California to Peru twenty-six species. On the south coast of South America influenced by the polar stream no species is indicated except *Scala magellanica*, Phil., from the Straits of Magellan.

On the European side of the Atlantic Ocean, on the coast of Norway and England, are indicated four species, all of which are found also in the Mediterranean; in this sea and in the adjacent parts of the Atlantic from Portugal to Madeira, are found twenty-three species, of which a few only are found at Madeira.

From the tropical west coast of Africa about six species are indicated; at Cape of Good Hope about five species, among which is *Scalaria australis*, Lam.

On the Asiatic side of the Pacific Ocean, from Japan and China, are indicated about thirty-three species; from the Philippine Islands thirty five species, nearly all collected by the late Mr. Cuming.

From the Red Sea and India about twenty-five species; from New Guinea and the other Pacific islands about twenty species; and from New Holland and New Zealand about fourteen species are known.

The number of living species is probably about 240, which generally have a limited distribution, although several species by some authors are considered identical on both sides of the Atlantic Ocean and between India and the West Indies.

The West Indian fauna, containing forty species, is the richest in Scalidæ, but I suppose that the Philippines, when better investigated, will prove still richer.

D'Orbigny in his excellent "Mollusques de Cuba," published 1842,* indicates seven species, of which five are new.

* The two volumes have the year 1853. Vol. I. is, according to Troschel's "Jahresbericht," published in 1841, except the two last sheets which are from 1842; of Vol. II. the first seven sheets were published 1842.

G. B. Sowerby, Jun., in the "Thesaurus Conchyliorum," 1844, Part IV., containing ninety-four species, indicates ten species from the West Indies, of which eight are new.

In the present paper are enumerated forty species, of which eighteen are new and three for the first time identified as West Indian.

Synopsis Familiæ Scalidarum Indiarum occidentalium.

Fam. SCALIDÆ.

Gen. SCALA, Klein (*Scalaria*, Lam.).

Sect. *. *Aciona*, Leach.

1. SCALA KREBSII, Mörch, n. sp., Pl. 29, figs. 1 and 2.

T. umbilicata, ovata, polita, striis spiralibus aciculatis irregularibus; striæ incrementi obsoletissimæ; anfr. disjuncti ad suturam angulato-plani, convexi; costæ x in anfr. ult. ad suturam auritæ: apertura subcircularis, labio subreflexo. Color albus, in media parte anfr. pallide ferrugineus.

Long. 17 mm.; lat. $10\frac{1}{2}$ mm.; alt. aperturæ 6 mm.

Analogue of *Scala subpretiosa*, Blv. (*Sc. pallasii*, Kien.) Sowb. Thes. Conch. 1844, fig. 14; but the new species is much smaller.

Hab. St. Thomas "60' bl. S. Mud." H. Krebs (fig. 1), St. Martin, spm. juvenile (H. Krebs, fig. 2).

2. SCALA PRETIOSULA, Mörch, n. sp.

T. perforata, oblongo-ovata, lactea, politissima; striæ incrementi argutæ, obsoletissimæ; anfr. omnino disjuncti, sutura hiantæ; costæ viii in anfr. ult. compressæ, candidæ, foliaceæ, obsoletissime crispatæ, suturam versus expansæ costæ 6 ult. antecedenti oblique adnatæ, cæteræ continuæ; apertura ovalis (sed. fracta in spm.).

Long. $11\frac{1}{2}$ mm.; lat. $6\frac{1}{4}$ mm.; alt. aperturæ 4 mm.

Hab. St. Martin (H. Krebs), two specimens; the smallest is 6 mm. long and 4 mm. broad.

Scala fasciata, Sowb., most nearly resembles this species. The whorls are completely separated, rendering the umbilicus visible through the sutural opening. The ribs are foliaceously dilated at the suture, touching the corresponding rib of the preceding whorl, but the last six ribs obliquely, giving the appearance of being alternate.

3. *SCALA PRINCIPALIS*, Pallas.

T. obtecte perforata, ovato-turrita, tenuiuscula, candida, nitidula, sub lente obsoletissime irregulariter spiraliter striata; anfr. x disjuncta, costis xiv regularibus acutis in anfr. ult.; apertura oblique ovalis, labio rectiusculo.

Long. 36 mm.; diam. 16 mm.; alt. aperturæ 10 mm.

Turbo principalis, Pallas, Spic. x. 1774, p. 32.

“ “ Naturg. merkwürd. Thiere. x. 1778, p. 51, t. 3, f. 3, 6.

Angarius scalaris seu var. rarissima, Meuschen Mus. Gevers. 1787, p. 260, n. 203.

Die seltene enge geribbte Wendeltreppe, Martini, Berlin, Samml. Bd. vii. p. 28, tab. tit.

Turbo principalis, Chem. iv. p. 273, f. 1128, 29.

“ Schröter Journal, ii. p. 451.

Hab. Tortola, spm. unicum (A. H. Riise).

Scalaria principalis, Sowb., Thes. fig. 75, p. 88, n. 23, from Xipixapi, is different.

Scala ducalis, Mörch.

Scala costulata, Kien. Spec. Gen. differs chiefly in having the ribs more numerous and lower.

I am not aware that this species is found in any collection but that of Mr. Riise, now in Copenhagen.

4. *SCALA SWIFTII*, Mörch, n. sp., Pl. 29, fig. 3.

T. acuminato-ovata, vix perforata, alba, polita, lineis aciculatis, spiralibus, obsoletissimis; anfr. disjuncti, convexi vii-viii, sutura rimata; costæ foliaceæ in anfr. ult. xii, pagina antica obsoletissime rugoso-granulosa; apertura ovata, abbreviata, antice effusa, labio subtorto.

Long. 14 mm.; diam. 9 mm.; alt. aperturæ 5 mm.

Hab. St. Thomas (R. Swift), spm. unicum.

“*Scalaria bulbulus*, Sowb.,” Coll. Swift.

Scala obtusa, Sowb., is the species nearest allied. The aperture is effuse, like that of *Melania*; the ribs of the last whorl touch the front side of the corresponding ribs of the preceding whorl.

5. *SCALA NOVEMCOSTATA*, Mörch, n. sp.

T. abbreviato-turrita, imperforata, alba, nitida, tenuiuscula; anfr. disjuncti, convexi, rima angustissima; costæ compressæ, acutæ, altissimæ, continuæ, in anfr. ult. ix. Apertura suborbicularis, obsolete coarctata.

Long. 9 mm.; diam. $4\frac{1}{2}$ mm.; alt. aperturæ 2 mm.

Hab. St. Thomas (Riise), spm. unicum.

Scala hexagona, Sowb., and especially *Scala foliacea*, Sowb., from the Crag formation, are nearly allied to this species.

6. *SCALA SPURIA*, Mörch, n. sp.

T. imperforata, alba, polita, turrita, gracilis; anfr. disjuncti, sutura aperta, hians; costæ compressæ, continuæ viii-ix in anfr. ult. suturam versus angulati, pagina antica obsolete malleata; apertura adnata, ovata, labio recto, antice producto.

Long. 14 mm.; lat. $5\frac{1}{2}$ mm.; alt. aperturæ 3 mm.

Pseudo-scalata, *Scala spuria*, Chem., Conch. Cab. iv, p. 275, f. 1438?

Hab. St. Thomas (Riise, Swift); Anguilla (Hornb.).

Is nearest allied to *Scala muricata*, Sowb., Thes. fig. 29. The shell is more elongated, the ribs only feebly angulated and not auriculated by the suture.

Chemnitz indicates St. Croix as habitat, and states that the operculum is yellow; but it must be recollected that the figured specimen was from Martini's Collection, and the described specimen from that of Chemnitz.

7. *SCALA FOLIACEICOSTA*, D'Orb., Pl. 29, fig. 6.

T. imperforata, elongato-conica, solidula, albida, nitidula; anfr. disjuncti xi convexiusculi; costæ vi-vii in anfr. ult., rectæ, altæ, ad suturam foliaceæ, auricula inflexa uncinata. Apertura suborbicularis adnata.

Long. $14\frac{1}{2}$ mm.; diam. $5\frac{1}{2}$ mm.

Scalaria foliaceicosta, D'Orb., Cuba, p. 17, ix, f. 26-28.

Scalaria aculeata, Sowb. Thes., p. p. fig. 35.

Hab. St. Thomas (Riise, Candé, Verkingen), St. Croix (Swift), Anguilla (Krebs); Martinique, Guadeloupe (Candé).

This species is analogous with *Scala tenuicostata*, Sowb., Thes. fig. 76, from the Philippine Islands. The ribs are auriculate at the sutures, produced and inflected.

8. *SCALA SPINÆ-ROSÆ*, Mörch, n. sp.

T. turrita, alba, imperforata; anfr. vix disjuncti, ad suturam planati; costæ crassæ, in anfr. ult. x continuæ, obliquæ, compressæ, non reflexæ, ad suturam spina brevi divergente; ambulacra torta sigmoidea; apertura subcircularis.

Long. $7\frac{1}{2}$ mm.; lat. $3\frac{1}{2}$ mm.

Hab. St. Thomas (H. Krebs), specimen unicum.

Analogue of *Scala aculeata*, Sowb., Thes. fig. 37.

9. *SCALA CENTIQUADRA*, Mörch, Pl. 29, fig. 4.

T. imperforata, abbreviato-turrita, alba, tenuis, pulcherrime decussata; lineæ spirales confertissimæ, alternatim majores et minores, line incrementi approximatae, capillares, sat regulares; anfr. convexi, sutura profundissima; costæ foliaceæ et præsertim postice subreflexæ, ad suturam spina brevi inflexa munitæ, pagina antica lineis transversis rugulosa. Apertura subovalis, labro strictiusculo, antice incrassato.

Long. $15\frac{1}{4}$ mm.; lat. 7 mm.; alt. aperturæ 5 mm.

Scalaria denticulata, Sowb., Thes. p. 87, t. 32, f. 25–26 (non Mg.)

Hab. Anguilla (H. Krebs); St. Thomas, St. Croix (Hornb., Swift, Riise, Krebs), Bahama (Riise).

Chiefly distinguished by its beautiful decussated sculpture between the ribs, arising from the filiform spiral lines of various thickness, generally alternating, every second, third, or fifth being thicker; and the lines of growth, which are very thin and capillaceous.

*Sect. **.* *Costis undulato-dentatis.*

10. SCALA SOLUTA, Dkr., n. sp., Pl. 29, fig. 5.

T. umbilicata, candida, polita, abbreviato-turrita; anfr. primi lævigati, sutura profunda, ult. tres soluti; costæ x in anfr. ult., lobis 4, parvis per paria digestis, posteriores 2 majores. Apertura circularis, labro lobato.

Long. 5 mm.; diam. $2\frac{1}{2}$ mm.

Scalaria soluta, Dkr., MSS. in Mus. Riise.

Hab. St. Thomas (Krebs); Smith's Bay (Riise).

Scala hyalina, Sowb., Thes. fig. 21, from the Philippine Islands, is the nearest allied species.

11. SCALA ECHINATICOSTA, D'Orb.

T. abbreviato-turrita, lactea; anfr. tres primi lævigati, adnati, cæteri soluti; costæ quadrilobatæ, in anfr. ult. xii. Apertura soluta, circularis, labio 4- vel 5-lobato.

Long. $3\frac{1}{2}$ mm.; lat. 2 mm.

Scalaria echinaticosta, D'Orb., Cuba, 2, p. 18, t. 11, f. 4–6.

Hab. St. Thomas (Swift, Riise).

Var. α. BLANDII, Pl. 29, fig. 8

T. abbreviato-turrita, lactea, perforata; anfr. disjuncti; costæ x in anfr. ult., huc illuc continuæ, foliaceæ, vix reflexæ, margine undulato-lobato. Apertura soluta, pisiformi-ovalis.

Long. $5\frac{1}{4}$ mm.; diam. 2 mm.

Hab. St. Thomas (Krebs).

The variety differs in having the suture less open, the lobes on the ribs smaller and more numerous; sometimes the ribs are continuous from one whorl to another.

12. SCALA VOLUBILIS, Mörch.

T. anfr. valde discreti, costis xiii in anfr. ult. brevissimis, undulatis, vix lobatis.

Long. 4 mm.; diam. 2 mm.; apertura diam. 1 mm.

Hab. St. Thomas; specimen unicum spira fracta (H. Krebs).

Scala hyalina, Sowb., Thes. fig. 22, is very like to this species.

*Sect. ***.*13. *SCALA PERNOBILIS*, Fischer and Bernardi.

T. imperforata, tenuis, alba, abbreviato-conica; anfr. v-vi convexi, lamellis copiosis elevatis, recurvis, superne subangulatis, ad marginem tenuibus simplicibusque; anfr. ultimus dilatatus, permagnus, non solutus. Apertura rotunda, columella incrassata, callosa, umbilicum tegens, peristomate crasso, lamella valida, superne producta et angulata.

Long. 40 mm.; lat. 33 mm.

Scalaria pernobilis, Fisch. and Bern., Journ. de Conch. 1854, p. 293, t. 8, f. 23.

Hab. Guadeloupe (Com. Bean).

The only known specimen was found on a fisherman's bow-net, together with *Pleurotomaria quoyana*, Crosse, and like this inhabited by a hermit crab. It is now preserved in the "Musée des Colonies" in Paris.

A very similar species, but very thick in the shell and fossil, is in the Jardin des Plantes and was obtained as the type specimen.

14. *SCALA OCCIDENTALIS*, Nyst.

T. imperforata, tenuis, alba, lævis; anfr. subsoluti, ad suturam depressi; costæ foliaceæ, obliquæ, continuæ, ad suturam angulatæ, huc illuc subauriculatæ, postice excavatæ, xiii-xiv in anfr. ult. Apertura reniformi-ovalis. Operculum flavum.

Long. 13 mm.; diam. $6\frac{1}{4}$ mm.

Scalaria tenuis, Sowb., Proc. Zool. Soc. 1844, p. 110 (non Gray).

" Sowb., Thes. p. 87, fig. 67.

Scalaria occidentalis, Nyst., Tableau 1873, p. 48.

Hab. St. Thomas (Hornb., Riise, Krebs, H. Kock.), Nassau (Krebs); Crabben Island (Unger).

Var. AURITA; in anfr. ult. costis xi crassiusculis.

Long. 11 mm.; diam. $5\frac{1}{2}$ mm.

Hab. St. Thomas (Riise).

This variety reminds me of *Scala foliaceicosta*, D'Orb.

15. *SCALA ERECTISPINA*, Mörch, n. sp.

T. minuta, imperforata, elongata-turrita, solidula, alba; anfr. contabulati, suturis excavatis profundis; costæ xiii in anfr. ult. postice excavatæ ad suturam, auriculis acutis erectis subreflexis vel tortis, postice excavatis uti canaliculatis. Apertura circularis, labio antice incrassato, producto, torto.

Long. $4\frac{3}{4}$ mm.; diam. $2\frac{1}{4}$ mm. Aperturæ alt. $1\frac{1}{4}$ mm.

Hab. St. Thomas (Riise).

This species is very like the preceding in the contabulate whorls, but is exceedingly small; from the following species it differs in being more elongate, not perforated, and having the aperture less lobed anteriorly.

16. *SCALA MICROMPHALA*, Mörch, n. sp.

T. minuta, obtecte-perforata, abbreviato-turrita, alba, spira flavescens; anfr. contabulati sutura profunda; costæ xviii in anfr. ultimo, valde reflexæ, postice excavatæ, auriculis erectis postice canaliculatis paululum reflexis. Apertura circularis, columella producta lobata.

Long. 5 mm.; diam. 3 mm.; aperturæ alt. 2 mm.

Hab. Vieque (Riise); spm. unicum.

Scalaria neglecta, Ad. and Reeve, is very like in shape.

17. *SCALA QUINDECIMCOSTATA*, Mörch, n. sp.

T. turrita, angusta, lactea, nitida; anfr. convexi disjuncti sed rima suturali angustissima; costæ regulares, acutæ, compressæ, validæ, candidæ, xv in anfr. ult. Apertura subovalis, antice obsolete angulata, labio duplice.

Long. $8\frac{3}{4}$ mm.; diam. 3 mm.

Hab. St. Thomas (A. H. Riise); spm. unicum.

Differt a *Sc. clathratula*, Mtg., testa majore, anfr. disjunctis.

18. *SCALA VENOSA*, Sowb., Pl. 29, fig. 9.

T. elongato-turrita, imperforata, lævis, lactea; anfr. 9 disjuncti, varicibus xi in anfr. ult., crassis, valde reflexis, approximatis, ad suturam subangulatis impressione torta. Apertura oblique ovalis.

Long. 13 mm.; diam. 5 mm.

Scalaria venosa, Sowb., Thes. I. p. 89, t. 33, f. 72-73.

Var. α varicibus vix reflexis.

Hab. St. Thomas (Swift, Krebs, Riise); Puerto Cabello, in the Lagoon (Dr. Prosch); Maracaibo (Riise); Vieque (Riise).

Scal. modesta, C. B. Adams; Coll. Swift.

19. *SCALA ORBIGNYI*, Nyst.

T. elongato-turrita, solida, alba, imperforata, sutura profundissima; costæ xiv in anfr. ult. brevissimæ, ad suturam angulata; apertura ovalis.

Long. 15 mm.; diam. $6\frac{1}{4}$ mm.

Scalaria elegans, D'Orb., Am. mér. p. 389, t. 54, f. 1-3 (non Risso).

Scalaria Orbignyï, Nyst. Tabl. 1873, p. 48.

Hab. St. Thomas (Krebs).

I refer to this species with some doubt, a worn specimen.

Scalaria georgettina, Kiener, is nearly allied.

20. *SCALA GRADATELLA*, Mörch, n. sp., Pl. 29, fig. 11.

T. imperforata, gracillima, lactea, polita; costæ candidæ, obliquæ, superne ad suturam anguliferæ vel obsolete auritæ, in anfr. ult. xi; sutura canaliculata, constricta. Apertura ovalis.

Long. $11\frac{1}{2}$ mm.; diam. 3 mm.

Hab. St. Thomas; specimen unicum (H. Krebs).

Scala gradata, Sowb., is very like in shape, but much larger.

*Sect. ****. Turbona*, Browne.

21. *SCALA UNIFASCIATA*, Sowb., Pl. 29, fig. 13.

T. turrita, imperforata, solida, nitida, alba, fascia ferruginea suturali, huc illuc striis spiralibus subtilissimis; anfr. convexusculi, sutura simplice; costæ vii in anfr. ult., continuæ, ambulacra vix torta. Apertura circularis labio incrassato antice subcrenulato, angulaproducto.

Long. 10 mm.; diam. 4 mm.

Scalaria unifasciata, Sowb., Thes. p. 98, t. 33, f. 68.

Hab. Anguilla, St. Vincent (Riise, Krebs, Swift, Ravn.); St. Croix (Oersted); St. Martins (Krebs); St. Jan. (Riise); Guadeloupe (Swift).

22. *SCALA UNDECIMCOSTATA*, Mörch, n. sp.

T. imperforata, abbreviato-turrita, solidissima, lactea vel isabellina, subtilissime et confertissime spiraliter striata; anfr. convexi, sutura profunda; costæ candidæ, crassæ, triquetrae, regulares, æquales circ. xi in anfr. ult., ad suturam expansæ, antrorsum adnatæ; ambulacra obliqua vix torta. Apertura ovalis pariete aperturali obtecto, labro crasso antice angulato.

Long. $10\frac{1}{4}$ mm.; diam. $4\frac{1}{2}$ mm.

Hab. St. Thomas (Krebs, Riise); Jamaica (Verkr.).

Allied to *Scala monocycla*, Lam.

23. *SCALA OCTOCOSTATA*, Mörch, n. sp.

T. gracilis, alba, polita, striis spiralibus subtilis simis sub lente vix detegendis; anfr. convexusculi, sutura impressa; costæ viii in anfr. ult. simplices, continua, humiles, ambulacra torta sigmoidea. Apertura obovata, pariete vix tecto, labio antice incrassato subeffuso.

Long. 8 mm.; diam. 3 mm.

Hab. St. Thomas; spm. unicum (H. Krebs).

Scala Elenensis, Sowb., is the nearest allied.

24. SCALA EBURNEA, Pot. and Mich., Pl. 29, fig. 10.

T. turrita, tenuiuscula, imperforata, albida, nitida, striis spiralibus obsoletissimis parcis; anfr. convexi, sutura impressa; costæ xii-xiii in anfr. ult. argutæ, margine reflexo præsertim ad suturam; ambulacra angusta torta. Apertura subovalis, pariete obtecto; labio antice incrassato.

Long. 20 mm.; diam. $7\frac{1}{2}$ mm. (spm. permagnum).

Scalaria eburnea, Pot. and Mich. 1838, Cat. Douai, p. 344, t. 31, f. 1-2.

Scalaria fragilis, Gray, Hanley, Textbook, 1842, pp. 63, 158; Sowb., Thes. 1, p. 88, t. 33, f. 164, 65, 66.

Scalaria albida, D'Orb., Cuba, p. 17, t. 20, f. 24, 25 (1853).

Scalaria ligata, C. B. Adams, Contr. No. 4, p. 67?

Var. α. Angusta.

Hab. Cuba (Aubér); St. Thomas (Dr. Ravn, Bardenfl., Riise, Krebs); St. Martin (Krebs); Trinidad, Barbadoes (Krebs); Anguilla (Hornb.); St. Vincent (Sowb.).

Var. β.? Costis membranaceis valde reflexis.

Long. 14 mm.; diam. $6\frac{1}{4}$ mm.

Hab. Nassau (Krebs).

Var. γ.? Pumilio.

Long. $7\frac{3}{4}$ mm.; diam. 4 mm.

Hab. Porto Plata, St. Barth. (Krebs).

25. SCALA LAMELLOSA, Lam.

T. imperforata, clavata; anfr. convexi sutura impressa; costæ compressæ acutæ, xii-xiii in anfr. ult.; ambulacra fere recta. Apertura subovalis, labio antice angulato. Color albus, fascia suturali, periomphali et maculis intermediis fuscis. Operculum flavum, ovale, nucleo excentrico, striæ incrementi capillares.

Long. 40 mm.; diam. 16 mm. (spm. giganteum).

Long. 31 mm.; diam. $14\frac{1}{2}$ mm. (spm. typ.).

Var. α. unicolor, castanea; Kien, spec. gen. t. 3, f. 7^a.

Var. β. alba, fascia suturali fusca.

Var. γ. alba, fascia suturali et basali (supra lineam) fuscis.

Var. δ. alba, fascia suturalis et basali (infra lineam) fuscis.

Var. ε. costæ reflexa, crassitil varia et alternatim non contiguous.

Var. ζ. costæ ultimæ tres latissimæ confluentes; lat. 8 mm.; long. testæ 30 mm.

Turbo clathrus, L. S. N. xii, p. 1237, n. 631, non S. N. x.

Scalaria pseudoscalaris, Brocchs, D'Orb., Cuba, p. 15, n. 191.

Scalaria clathrus, L., Sowb., Thes. p. 101, f. 134, 131, 132.

Hab. Very common throughout the West Indies—St. Thomas, St. Jean, Pas-

sage Island; young specimens on dead Madrepores from three feet depth (Krebs); St. Jean, Vieque (Riise); Guadeloupe (Bean).

This species, which is the most common in the West Indies, is generally considered identical with allied species in the Mediterranean and Pacific.

1. *Scala pseudoscalaris*, Brocchi, Desh., from the Mediterranean, differs by the shell being much narrower, the ribs equal, and the ambulacra nearly straight.

2. *Scala perplexa*, Pease, Proc. Zool. Soc. 1860; Am. Journ. of Conch. iii, p. 228; Desh. Moll. Reunion, p. 60, t. viii, f. 1, v. Martens Donum Bismarckianum, t. i, f. 19.

Differs in having single high ribs alternating with pairs of lower ribs.

26. SCALA CORONATA, Lam.

T. tenuis, lineis spiralibus sub lente distinctissimis; anfr. perconvexi sutura constricta, costæ xv-xvi in anfr. ult., lineares sed 1 vel 2 crassiores. Color albus, fasciis angustissimis 3 e maculis obliquis compositis; fascia suturali angusta plerumque obsoleta.

Long. 33 mm.; diam. 14 mm.

Scaloria coronata, Lam., Enc. Méth. 1816, Pl. 451, f. 5; Lam. Hist. vi, p. 227, n. 3; Lam. Hist. ed. Desh. ix, p. 74, n. 3; Desh. Enc. Méth. iii, p. 930 (1832); Kiener, Spec. Gen. tab. 3, f. 8^a; Sowb. Thes. p. 101, f. 133^a; Bean, Cat. Moll. Guadel. p. 12.

Hab. Antilles (Dr. Ravn. Com. Falsen, Nissen, Mrs. Eckardt); Guadeloupe (Bean).

In the collection of Christian, VIII, are found five specimens from the above collectors about from the years 1833-39, but I am not aware that this shell has since been collected at the Danish Antilles. Kiener indicates Cape of Good Hope as the locality for this species, but no author has since confirmed this assertion. The figure in the Encyclop. Méth. is the best, showing the whorls very convex and the sutures deep. The figures of Kiener and Sowerby show flat whorls like the preceding species. Mr. Deshayes indicates the number of ribs on the last whorl as 19-20.

*Sect. *****. Amœa*, H. and A. Adams.

27. SCALA (AMŒA) TURRICULA, Sowb., Pl. 29, fig. 7.

T. obtecte perforata, turrita, gracilis, alba, fasciis 2 interruptis ferrugineis, spiraliter lirata; liræ confertissimæ, ad regionem suturalem regulares, interstitia majora funiculis confertis munita; costæ xii-xiii in anfr. ult., plerumque lineares simplices, ultima et penultima et huc illuc in anfr. spiræ crassæ, ad suturam spinula adunca munitæ. Apertura ovalis, peristomate continuo ad umbilicum angulatum.

Long. 15 mm.; diam. 6 mm. (Fragm. spm. maj.), diam. 7 mm.

Scalaria turricula, Sowb., Thes. p. 92, f. 61, 88 (non Cantr.).

Scalaria turrita, Nyst., Tabl. 1873, p. 66 (non Blv.).

Var. α. T. in anfr. ult. costis crassis 5, quarum 2 ad aperturam et 3 ad finem anfr. penult. Long. 11 mm.; diam. 5 mm.

Var. β. T. unicolor, ferruginea, costis albis, Sowb., Thes. f. 61.

Hab. St. Thomas, Anguilla, Water Island, St. Martin (Riise, Krebs).

28. SCALA UNCINATI-COSTA, D'Orb.

T. minuta, imperforata, turrita, unicolor, alba vel flavescens; liræ spirales distinctæ, expressæ, regulares, interstitiis lævibus; costæ xii in anfr. ult. regulares, æquales, crassæ, ad suturam spina adunca obliqua. Apertura ovalis, peristomate continuo antice incrassato.

Long. 7 mm.; diam. $2\frac{1}{2}$ mm.

Long. $7\frac{1}{2}$ mm.; diam. 4 mm. Spm. magnum unicum.

Scalaria uncinati-costa, D'Orb., Moll. de Cuba, 1852, p. 25, t. xi, f. 25–27.

Hab. St. Thomas 60' bl. S. M. (H. Krebs); Guadeloupe (Candé).

Differs from the preceding in being much smaller, having regular and thick ribs provided with a minute sutural spine. D'Orbigny indicates the color as "rosea." It looks like a diminutive *Scala Loveni*, Me. Andrew.

29. SCALA CANDEANA, D'Orb.

T. imperforata, turrita, lactescens, nitens, sutura impressa; liræ spirales distinctæ, regulares, approximatae, interstitiis lævissimis, interdum lirula intercalante; costæ xii interdum xvi in anfr. ult., crassiusculæ, sæpe duplicatae, continuæ, simplices. Apertura ovalis, labio incrassata duplice, peristomate continuo.

Long. 9 mm.; diam. 3 mm. (spm. max.)

Long. 6 mm.; diam. 2 mm. (spm. vulg.)

Scalaria Candéana, D'Orb., Moll. Cuba 2, 1852, p. 20, t. vi, f. 28–30.

Scalaria acuta, Pfr. Archiv f. Naturg. 1840, p. 256 (teste Troschel, Jahresbericht, ibid. 1842).

Hab. Jamaica, St. Thomas (Candé); Smith's Bay (Riise).

I refer my specimens to the species of D'Orbigny, although the author indicates the number of ribs in the last whorl as 20–25, which does not agree with the figure. Of six specimens, only one has sixteen ribs. The measure of D'Orbigny indicates too a very small individual. *Scala grönlandica*, Perry, gives a good idea of this little shell.

30. *SCALA TURRITELLULA*, Mörch, n. sp.

T. minuta, imperforata, turrita, gracilis, spiraliter expresse lirata; anfr. convexi, sutura constricta; anfr. primi lævigati; costæ lineares circ. xxv in anfr. ult., ad suturam expansæ. Apertura ovalis pariete crasso, antice producta.

Long. 6 mm.; diam. 2 mm.

Hab. St. Martin (Lilienskiöld, Krebs).

Var. α. Rüsei. *T. turrita*, gracilis, spiraliter dense lirata; anfr. rotundati, contabulati, sutura constricta profundissima; nucleus (anfr. primi 4) lævigatus fuscus, nutans (casu?); costæ expressæ, angustæ, ad suturam angulatæ 25 in anfr. ult, huc illuc anguliferæ. Apertura ovalis, peritremate ad suturam et basin angulato.

Long. $6\frac{1}{2}$ mm.; diam. 2 mm.; spm. minus long. 4 mm.; diam. $1\frac{1}{4}$ mm.

Hab. St. Thomas (Riise); Porto Plata (Krebs).

31. *SCALA ÆOSPILA*, Mörch, n. sp.

T. obtecte perforata, turrita, albida, politissima, maculis ferrugineis, striis spiralibus distantissimis obsoletissimis; striæ incrementi distinctæ; anfr. convexi sutura impressa; costæ x in anfr. ult., lineares, ult. 2 crassiores. Apertura ovata obliqua. Color cinereo-albus, maculis ferrugineis rotundis vel obliquis in duplice serie digestis in anfr. spiræ et in triplice serie in anfr. ult.

Long. $14\frac{1}{2}$ mm.; diam. 6 mm.

Hab. St. Croix (Ovesen); St. Thomas, spm. maculis obliquis Hornbeck (coll. C. M. Poulsen).

The reddish spots are arranged so that one pair belongs to each rib. The polished surface is very notable. *Scala nova-angliæ*, Couth, seems, according to the figure, to be most allied to it.

32. *SCALA NAUTLÆ*, Mörch, n. sp., Pl. 29, fig. 12.

T. subulata, imperforata; anfr. convexi circiter 8, sutura subimpressa; costæ xii in anfr. ult., ad suturam angulatim reflexæ, lineares; ult. 2 crassiores. Apertura ovalis. Color lilacinus anfr. ult. et penult. medio ferruginei, costæ et sutura albæ.

Long. $12\frac{1}{2}$ mm.; diam. $3\frac{3}{4}$ mm.

Hab. ad litus mexicanum inter Vera Crux et Nautla (Rathsack, 1842).

33. *SCALA FILARIS*, Mörch, n. sp.

T. imperforata, subulata, tenuis, nitida, striis spiralibus parcis obsoletissimis, albescens, sutura utrinque fascia flava lata; anfr. ult. costis xiv antice obsoletis, ad basin linea elevata circumscriptus. Apertura subovalis.

Long. $10\frac{1}{4}$ mm.; diam. $3\frac{1}{2}$ mm.; apertura alt. 3 mm.

Hab. St. Martin (Krebs, Swift), spm. trita.

Differt a præcedente anfr. convexioribus et costis tenuioribus.

Scala fusca, Sowb., from Sierra Leone, is not very unlike.

*Sect. *****. Janthoscala.*34. *SCALA MODESTA*, C. B. Adams.

T. imperforata, abbreviato-turrita, flavescens alba, solida; anfr. convexi, sutura simplex; costæ regulares crassiusculæ xxi in anfr. ult., interstitiis lævigatis. Apertura ovalis, pariete aperturali tenuissima; peristomate postice angulato.

Long. $2\frac{1}{2}$ mm.; diam. $1\frac{1}{4}$ mm.

Scaloria modesta, C. B. Adams, Proc. Bost. Soc. Jan. 1849, p. 5.

Scaloria modesta, Sowb., Reeve, Iconica, 1873, t. xi, f. 78.

Hab. Porto Plata (Krebs), spm. unicum; Jamaica (C. B. Adams), without umbilicus much thicker, more elongate than the following species. *Scala concinna*, Sowb. Thes. No. 55, f. 66, is much more nearly allied.

35. *SCALA INCONSPICUA*, Sowb.

T. obtecte perforata, ovata, solidula, lactea, anfr. convexi, ad suturam impressam depressi, striis spiralibus remotis; costæ regulares lineares xxxi in anfr. ult. Apertura ovalis, columella recta antice subeffusa, peristomate subcontinuo.

Long. $6\frac{1}{4}$ mm.; diam. 4 mm.

Scaloria inconspicua, Sowb. Thes. p. 90, No. 30, t. 33, f. 53.

Var. α, inflata. Long. 9 mm.; diam. $5\frac{1}{8}$ mm.

Hab. St. Croix, St. Thomas (Swift, Riise); Vieque (Riise). The var. from St. Thomas (considered a distinct species by Professor Dunker) is in the collection of Mr. Riise.

*Sect. *****. Opalia, H. & A. Adams.*36. *SCALA (OPALIA) CRENULATA*, Kiener.

T. abbreviato-turrita, imperforata, crassa, lactea, spiraliter subtiliter et confertissime, tæniatim fortiter striata; periomphalo costa crassa obsoleta; lira crassa spirali in anfr. ult. sub suturam evanescens; sutura canaliculata foveolato-dentata; costæ continuæ, in anfr. ult. evanescens, dentes suturales 13 solum substant. Apertura oblongo-ovalis obliqua.

Long. 17 mm.; diam. 7 mm.

Scalaria crenulata, Kien. Icon. p. 17, t. 6, f. 18.

Scalaria crenata, L., Sowb. Thes., p. 505, No. 88, fig. 123.

Scalaria sp., Weinkauff, Mittelm., p. 241.

Hab. St. Thomas (Riise); Porto Plata, St. Martin, Anguilla (Krebs); Jamaica (C. B. Adams); Arecibo (J. W. Newton).

The described specimen is from Mr. Riise's collection, the other being imperfect. This species is also much broader than the Mediterranean species *S. crenata*.

37. SCALA (OPALIA) HOTESSERIANA, D'Orb.

T. imperforata, turrita, subcylindrica, crassa, leviter flexa, alba vel interdum lilacina, subtilissime spiraliter striata; sutura foveolata sed non canaliculata; costæ crassæ, convexæ, obliquæ xi-xii in anfr. ult.; costa basali crassa utrinque foveolata. Apertura orbicularis, peritremate crasso, antice producta.

Long. $11\frac{1}{2}$ mm.; diam. 4 mm.; sed plerumque minor.

Scalaria Hotesseriana, D'Orb., Cuba, p. 16, t. xi, f. 22-23.

Scalaria crassicosta, Mus. Brit., Sowb. Thes. p. 104, No. 83, f. 119 (non Desh.)

Rissoa crassicosta, C. B. Adams, Proc. Bost. Soc., Jan. 1845, p. 6.

Scalaria grossicostata, Nyst., Tabl. 1873, p. 36, No. 136.

Turbo coniferus, Mtg. Brit. Shells, p. 314?

Hab. Guadeloupe (Hotessier); St. Martins (Swift); St. Thomas (Krebs, Riise).

38. SCALA (OPALIA) SCÆVA, Mörch, n. sp.

T. imperforata, turrita, albescens, spiraliter et subtilissime confertissime, striata; anfr. convexi, obsoletissime confertissime striata; anfr. convexi, medio obsoletissime angulati, costæ crassæ confertæ, versus suturam attenuatæ, in anfr. ult. circ. xv obliquæ plicæ formes, umbilicum versus sæpe evanescentes; spira varioribus 2; sutura crenulata. Apertura ovalis, peritremate crasso.

Long. 13 mm.; diam. $4\frac{1}{2}$ mm.

Var. α, costis obsoletis. Long. 12 mm.; diam. 4 mm.

Hab. St. Thomas (Krebs, Riise).

39. SCALA (OPALIA) SUBVARICOSA, Dkr. (MSS.), n. sp.

T. turrita, subcylindrica, imperforata, lactea, subtilissime et confertissime spiraliter striata; anfr. medio angulati; costæ obsoletæ, pone angulum furcatæ; anfr. ult. carinis 2, carina anteriore minore nodosa; sutura foveolata; fovæ circ. 16 in anfr. ult. Apertura ovalis, peritrema marginatum.

Long. 14 mm.; diam. 4 mm.

Hab. St. Thomas, Anguilla (Krebs, Riise); Bahama (Riise).

Scalaria crassilabris, Sowb. Thes. p. 87, f. 115, is very like the species.

Var. pumilio, spira varicibus crassioribus sparsis.

Long. 5 mm; diam. 2 mm.

Hab. St. Thomas (Krebs, Riise); Bahama (Riise). A very large specimen.

*Sect. *****. Cirsotrema*, Mörch.

40. SCALA (CIRSOTREMA) COCHLEA, Sowb.

T. turrita, imperforata, alba vel pallide ferruginea; anfr. contabulati, sutura canaliculata, liris circ. 5 squamosis, varicibus 3 ad suturam angulatis, dorsalibus, continuis; laminæ incrementi confertæ, undulatæ, reflexæ, margine utrinque expansæ, depressæ, lineis divaricatis, sæpe approximatae vel fere confluentes vel huc illuc foramina orbicularia formantes. Sutura et costa spirali basali laminis incrementi utrinque septa. Apertura subcircularis. Operculum nigrum.

Long. 40 mm.; diam. 13 mm.; alt. aperturæ 7 mm.

Scalaria varicosa, Gray, Wood Supp. 1828, t. 6, f. 19?

Scalaria cochlea, Sowb., Thes. p. 103, fig. 142.

Scalaria varicosa, Lam., Skand. Naturforsker Möde, 1846, p. 938.

Scalaria attenuata, "Helbl.," Beck, ibid.

Hab. St. Thomas (Hornbeck); St. Croix (Riise, Krebs); St. Domingo (Shomburgk, B. Mus.) Tortola in mud, 1–2 feet water (Swift).

In good specimens the edges of the ribs are dilated, touching each other, only leaving some small interstices formed by the undulations of the lines of growth; the surface between the ribs is thus quite concealed.

I feel convinced that the specimen figured in Thesaurus, fig. 142, in reality is from the West Indies, and not as indicated collected by Dr. Thams at Loanda. The figure 143 is without doubt from the latter locality, a specimen from Fayal, in Rob. Swift's collection, agreeing exactly as well with Sowerby's as Dunker's figure in Mollusca Guineensia.

Scalaria fimbriata, Lam., Enc. Meth. 1816, t. 451, f. 4.

Scalaria varicosa, Lam., hist. p. p.

Scala crispa, "Lam.," Kien. Spec. gen. t. iv, f. 12, not Lam.†

Scalaria varicosa, p. p. Sowb., Thes., fig. 143.

Scalaria cochlea, Dkr. Moll. Guineens., t. 2, f. 47–48.

* Böhmische Privatgesellschaft iv, 1799, p. 114, tab. 1, f. 20.

Which is a fossil species.

ALPHABETICAL LIST OF THE SPECIES OF SCALIDÆ MENTIONED IN THIS PAPER.

Acuta, Pfr., No. 29.

Aculeata, Sowb., No. 7.

Albida, D'Orb., No. 24.

Attenuata, Helbl., No. 40.

Æospila, Mörch, No. 31.

Candeana, D'Orb., No. 29.

Centiquadra, Mörch, No. 9.

Clathrus, L., No. 25.

Concinna, Sowb., No. 34.

Cochlea, Sowb., No. 40.

Coniferus (Turbo), No. 37.

Coronata, Lam., 26.

Crassicosta, Br. Mus., 37.

Crassicostata, Nyst., No. 37.

Crassilabris, Sowb., No. 39.

Crenata, L., No. 31.

Crenulata, Kien., No. 31.

Denticulata, Sowb., No. 9.

Ducalis, Mörch, No. 3.

Eburnea, Pot. and Mich., No. 24.

Echinaticosta, D'Orb., No. 11.

Elegans, D'Orb., No. 19.

Elenensis, Sowb., No. 23.

Erectispina, Mörch, No. 15.

Fasciata, Sowb., No. 2.

Filaris, Mörch, No. 33.

Foliacea, Sowb., No. 5.

Foliaceicosta, D'Orb., No. 7.

Fragilis, Gray, Hanl., No. 24.

Fusca, Sowb., No. 33.

Gradata, Sowb., No. 20.

Gradatella, Mörch, No. 20.

Hexagona, Sowb., No. 5.

Hotesseriana, D'Orb., No. 37.

Hyalina, Sowb., Nos. 16 and 12.

Inconspicua, Sowb., No. 34.

Krebsii, Mörch, No. 1.

Lamellosa, Lam., No. 25.

Ligata, C. B. Adams, No. 24.

Micromphala, Mörch, No. 16.

Muricata, Sowb., No. 29.

Modesta, C. B. Ad., No. 34.

Nautlæ, Mörch, No. 32.

Novangliæ, Couth., No. 31.

Novemcostata, Mörch, No. 5.

Obtusa, Sowb., No. 4.

Occidentalis, Nyst., No. 14.

Octocostata, Mörch, No. 23.

Orbignyii, Nyst., No. 19.

Pallasii, Kien, No. 1.

Perplexa, Pease, No. 25.

Pernobilis, Fisch. and Bern., No. 13.

Pretrosula, Mörch, No. 2.

Principalis, Pallas, Sowb., No. 3.

Pseudoscalaris, Brocchi, No. 25.

Quindecimcostata, Mörch, No. 17.

Scæva, Mörch, No. 38.

Soluta, Dkr., No. 10.
 Spina-rosæ, Mörch, No. 8.
 Spuria, Mörch, No. 6.
 Subpretiosa, Blv., No. 1.
 Subvaricosa, Dkr., No. 39.
 Swiftii, Mörch, No. 4.

Tenuicostata, Sowb., No. 7.
 Tenuis, Sowb., No. 14.
 Turricula, Sowb., No. 27.
 Turrita, Nyst., No. 27.

Turritellula, Mörch, No. 30, 21.

Undecimecostata, Mörch, No. 22.
 Unifasciata, Sowb., No. 21.
 Uncinaticosta, D'Orb., No. 23.

Varicosa, Gray, No. 28.
 Venosa, Sowb., No. 18.
 Volubilis, Mörch, No. 12.

Wroblewskyi, Mörch, No. 1.

EXPLICATIO TABULÆ 29.

Fig. 1. Scala Krebsii, Mörch, No. 1.

2. " " " "
3. " Swiftii, Mörch, No. 4.
4. " centiquadra, Mörch, No. 9.
5. " soluta, Dkr., No. 10.
6. " foliaceicosta, D'Orb., No. 7.
7. " turricula, Sowb., No. 27.

Fig. 8. Scala echinaticosta, D'Orb., var.

- Blandii, No. 11.
9. " venosa, Sowb., No. 18.
10. " eburnea, Pot. & Mich., No. 24.
11. " gradatella, Mörch, No. 20.
12. " Nautlæ, Mörch, No. 32.
13. " unifasciata, Sowb., No. 21.

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