BIJDRAGEN TOT DE KENNIS DER FAUNA VAN CURAÇAO.
Resultaten eener Reis van Dr. C. J. VAN DER HORST in 1920.

MARINE MOLLUSCS OF THE ISLAND OF CURAÇAO

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(With 5 text-figures).

The account on West-Indian molluscs which I will give in the following pages, was started as a consequence of material, collected by Dr. J. BOEKE in the course of 1905, by Dr. C. J. VAN DER HORST during April and May of 1920 and by engineer G. J. H. MOLENGRAAFF since 1921. Besides I will mention species from Curaçao already present in the collections of the Zoological Museum at Amsterdam.

The majority of these species were collected alive and all of them belong to the littoral zone stretching from high-water-mark to about one fathom.

The researches by BOEKE, VAN DER HORST and MOLENGRAAFF fill up each other's gaps, so that this combination has given us a fairly representative collection of littoral molluscs of Curaçao.

The results of their investigations were kindly presented to the Zoological Museum of the Amsterdam University. I had the pleasure to study them there at the suggestion of its former Director, Prof. Dr. M. WEBER, under the friendly supervision of the present Director, Dr. L. F. DE BEAUFORT, and frequently consulting the rich collections of the Museum and the valuable library of the Royal Zoological Society „Natura Artis Magistra" in Amsterdam. I gratefully remember the advice given to me by Dr. VAN DER HORST on different occasions.

First of all follows an enumeration of the principal literature referring to the marine molluscan fauna of the island and the surrounding district in general. For information concerning special genera or species I quoted the different papers in the systematic part referring to the species considered.

Synonymy is limited to the original references and to those which served to identify the species, generally TRYON-PILSBRY, Manuel of Conchology.

Of the class of Scaphopoda no specimens have been collected. The Amphineura, Cephalopoda as well as the Gastropoda Opisthobranchia have been or will be treated by other specialists in this Journal.

For details about the different localities I may refer to Dr. VAN DER HORST's „Narrative of the voyage and short description of localities" (Bijdragen tot de Dierkunde, Afl. XXIII, 1924, pag. 1—12).

The photographs were kindly taken by Mr. T. WESTERDIJK, Director of Salm's Instrument Stores Ltd. Amsterdam.

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—— On some marine Mollusca from the south coast of Brazil. The Nautilus, Vol. 5, 1891, pag. 42—44, with appendix. Ibid. Vol. 6, pag. 109—111.

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SYSTEMATIC PART.

GASTROPODA PROSOBRANCHIA.

Conus mus Hwass.

Conus mus Hwass in Bruguière, Encycl. Méth. Vol. 1, part 2, 1792, pag. 630.
Conus mus Tryon, Man. of Conch. Vol. 6, 1884, pag. 19, pl. 5, fig. 72 and 73.

Caracasbay, 30. IV. 1920, 2 spec.; in coral, 13. V. 1920, 6 spec.; 1923, 1 spec.
Westpunt, 14. V. 1920, 2 spec.
Spanish Bay, 1921, 7 spec.

At the entrance to Spanish Water Mr. MOLENGRAAFF collected another specimen which belongs to the variety *roseus* Lamarck (TRYON, Man. of Conch. Vol. 6, 1884, pag. 20, pl. 5, fig. 73).

Conus nebulosus Solander.

Conus nebulosus (Solander) Hwass in Bruguière, Encycl. Méth. Vol. 2, part 1, 1792, pag. 607.
Conus nebulosus Tryon, Man. of Conch. Vol. 6, 1884, pag. 28, pl. 7, fig. 31—34.

Curaçao, 2 spec.
Caracasbay, 1921, 2 spec.

Conus testudinarius Martini.

Conus testudinarius Martini, Conch. Cab. Vol. 2, 1773, pag. 250, pl. 55, fig. 605.
Conus testudinarius Tryon, Man. of Conch. Vol. 6, 1884, pag. 65, pl. 20, fig. 18.

Caracasbay, 1921, 1 spec.
Spanish Bay, 1921, 1 spec.

Conus granulatus Linné.

Conus granulatus Linné, Syst. Nat. Ed. X, 1758, pag. 716.
Conus granulatus Tryon, Man. of Conch. Vol. 6, 1884, pag. 81—82, pl. 25, fig. 42 and 43.

Spanish Bay, 1923, 1 spec.

Daphnella lymneiformis (Kiener).

Pleurotoma lymneiformis Kiener, Coq. Viv. 1834, *Pleurotoma* pag. 62—63, pl. 22, fig. 3.
Daphnella lymneiformis Tryon, Man. of Conch. Vol. 6, 1884, pag. 300, pl. 25, fig. 60, pl. 26, fig. 89, 90 and 93.

Spanish Water in *Porites furcata*, 5. V. 1920, 1 spec.

Olivella jaspidea (Gmelin).

Voluta jaspidea Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3442.
Olivella jaspidea Tryon, Man. of Conch. Vol. 5, 1883, pag. 68, pl. 15, fig. 91—94.

Curaçao, 8 spec.
Spanish Water, 6. IV. 1920, 3 spec.
Caracasbay, 19. IV. 1920, 7 spec.
Small lagoon near Caracasbay, 26. IV. 1920, 2 spec.
Spanish Harbour, 20. V. 1920, 6 spec.

This species seems to be extremely abundant throughout the whole Caribbean region. It is rather variable in shape and colouring.

Oliva fusiformis Lamarck.

Oliva fusiformis Lamarck, Ann. du Mus. Vol. 16, 1809, pag. 318.
Oliva fusiformis Tryon, Man. of Conch. Vol. 5, 1883, pag. 83, pl. 30, fig. 86—89, pl. 34, fig. 56.

Curaçao, 1 spec.

Oliva reticularis Lamarck.

Oliva reticularis Lamarck, Ann. du Mus. Vol. 16, 1809, pag. 314.
Oliva reticularis Tryon. Man. of Conch. Vol. 5, 1883, pag. 83, pl. 30, fig. 90—95, pl. 31, fig. 96—4, pl. 34, fig. 57.

Curaçao, 1 spec.

Ancillaria glabrata (Linné).

Buccinum glabratum Linné, Syst. Nat. Ed. XII, 1767, pag. 1203.
Ancillaria glabrata Tryon, Man. of Conch. Vol. 5, 1883, pag. 96, pl. 39, fig. 54.

Curaçao, 24 spec.

Three of the specimens are almost quite white, another shell differs from the usual type by being more conic than the average.

Marginella margarita Kiener.

Marginella margarita Kiener, Coq. Viv. 1834, *Marginella*, pag. 15, pl. 9, fig. 42.
Marginella margarita Tryon, Man. of Conch. Vol. 5, 1883, pag. 25, pl. 7, fig. 22 and 23.

Curaçao, 2 spec.

A useful synopsis of the recent *Marginellidae* was compiled by J. R. LE BROCKTON TOMLIN in 1917 (Proc. Malac. Soc. London, Vol. 12, pag. 242—306).

Marginella interruptelineata (Mühlfeldt).

Voluta interruptelineata Megerle von Mühlfeldt, Mag. Ges. naturf. Freunde Berlin, Vol. 8, 1818, pag. 6, pl. 1, fig. 6*a* and *b*.
Marginella interruptelineata Tryon, Man. of Conch. Vol. 5, 1883, p. 37, pl. 11, fig. 16 and 17.

Curaçao, 2 spec.

Marginella maculosa Kiener.

Marginella maculosa Kiener, Coq. Viv. 1834, *Marginella*, pag. 26, pl. 9, fig. 40.
Marginella maculosa Tryon, Man. of Conch. Vol. 5, 1883, pag. 37, pl. 11, fig. 22 and 23.

Curaçao, 1 spec.

Marginella catenata (Montagu).

Voluta catenata Montagu, Test. Brit. 1803, pag. 236, pl. 6, fig. 2.
Marginella catenata Tryon, Man. of Conch. Vol. 5, 1883, pag. 38, pl. 11, fig. 28 and 29.

Caracasbay: 25. V. 1920, 2 spec.; 1923, 4 spec.

Marginella chrysomelina Redfield.

Marginella chrysomelina Redfield, Ann. Lyc. Nat. Hist. New York, Vol. 4, 1848, pag. 492, pl. 18, fig. 2 (in text erroneously pl. 17).
Marginella chrysomelina Tryon, Man. of Conch. Vol. 5, 1883, pag. 39, pl. 11, fig. 32.

Curaçao, 1 spec.

Marginella avena Valenciennes.

Marginella avena Valenciennes in Kiener, Coq. Viv. 1834, pag. 17, pl. 6, fig. 24.
Marginella avena Tryon, Man. of Conch. Vol. 5, 1883, pag. 50—51, pl. 13, fig. 2—5 and 8.

Spanish Water, 8. V. 1920, 2 spec.
Curaçao, 1 spec.
Caracasbay, 8. V. 1920, 2 spec.

Marginella obscura Reeve.

Marginella obscura Reeve, Conch. Icon. Vol. 15, 1865, pl. 24, fig. 132.
Marginella obscura Tryon, Man. of Conch. Vol. 5, 1883, pag. 52, pl. 13, fig. 22.

Curaçao, 2 spec.

Voluta musica Linné.

Voluta musica Linné, Syst. Nat. Ed. X, 1758, pag. 733, n^0 370.
Voluta musica Tryon, Man. of Conch. Vol. 4, 1882, pag. 83—84, pl. 24, fig. 29—34 and 38.

Curaçao, 1 spec.
Caracasbay, 1921, 3 spec.
Spanish Bay, 1923, 4 spec.

The music-shell is a very common Antillean species with a rather wide distribution in the tropical Atlantic Ocean as it is said to occur also on the west coast of Africa (DALL, A review of the American Volutidae, Smiths. Misc. Coll. Vol. 48, 1907, pag. 346). Anatomical details concerning this species and other members of the *Volutidae* were published by PACE (Proc. Malac. Soc. London, Vol. V, 1902, pag. 21).

Vasum capitellum (Linné).

Murex capitellum Linné, Syst. Nat. Ed. X, 1758, pag. 750.
Vasum capitellum Tryon, Man. of Conch. Vol. 4, 1882, pag. 73, pl. 21, fig. 24.

Caracasbay: 7. IV. 1920, 1 spec.; 1921, 4 spec.
Spanish Water, in *Porites furcata*, 5. V. 1920, 4 spec.

This is one of the rather numerous instances of West-Indian molluscs which apparently have a circumtropical distribution. HORST & SCHEPMAN (Catal. Syst. Moll. Mus. Hist. Nat. Pays Bas, Vol. 1, 1894, pag. 96) mention twice its occurrence in Malaysia.

Vasum capitellum var. *mitis* (Lamarck).

Turbinella mitis Lamarck, Anim. s. Vert. Vol. 9, 1822, pag. 382.
Vasum capitellum var. *mitis* Tryon, Man. of Conch. Vol. 4, 1882, pag. 73, pl. 19, fig. 25.

Curaçao, 1 spec.

Mitra barbadensis (Gmelin).

Voluta barbadensis Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3455.
Mitra barbadensis Tryon, Man. of Conch. Vol. 4, 1882, pag. 118—119, pl. 35, fig. 45, 46, 48 and 49.

Caracasbay, on stones at the shore, 7. IV. 1920, 2 spec.

TRYON's figure 49 refers to *Mitra picta* Reeve and should be omitted if we agree with ROUS (The Nautilus, Vol. 20, 1906, pag. 57) that *M. picta* and *M. barbadensis* are specifically quite distinct. I have only once seen a specimen of *M. picta* from South Africa which had got very much worn on the beach. But the *M. barbadensis* already present in the collection of the Zoological Museum and also the two mentioned above collected by Dr. VAN DER HORST are sculptured with "spiral raised lines, with fine microscopic spiral and longitudinal lines decussating the spaces between them" (ROUS l. c.). The two shells of Caracasbay are provided with 5 columellar plaits, whereas four specimens from Venezuela only show 4 of such plaits. The latter set are rather light-brown and abundantly marbled with white, the two from Caracasbay are very dark brown with only a few irregular streaks of a lighter brown (not white) colour. These shells measure (in mm.):

maximal total height	19	14
maximal height of aperture . . .	10	6,5
maximal diameter	7	5

Mitra granulosa Lamarck.

Mitra granulosa Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 304.
Mitra granulosa Tryon, Man. of Conch. Vol. 4, 1882, pag. 133, pl. 38, fig. 138.

Curaçao, 1 spec.
Caracasbay, 1924, 7 spec.

Turricula dermestina (Lamarck).

Mitra dermestina Lamarck, Ann. du Mus. Vol. 17, 1811, pag. 221, n^0 76.
Turricula dermestina Tryon, Man. of Conch. Vol. 4, 1882, pag. 182—183, pl. 54, fig. 559—566.

Spanish Bay, 1923, 1 spec.

Latirus eppi Melvill.

Latirus eppi J. C. Melvill, Notes Leyden Museum, Vol. 13, 1891, pag. 158.

Curaçao, 1 spec.

Latirus eppi does not seem to be a common species in the West-Indies, for since its discoverer Dr. EPP collected it at Curaçao about 1890 I never heard of other records. The shell is characterised by being ovate-fusiform, thick, brown-red, and having the whorls crossed by longitudinal ribs which are shiny. The whorls bear revolving lirae which are quite distinct at the sutures, but become indistinct towards the base of the last whorl and towards the middle on the penultimate ones. Outer lip lirate within, canal sulcate, white, columella provided with four plaits, white.

Latirus brevicaudatus (Reeve).

Turbinella brevicaudata Reeve, Conch. Icon. Vol. 4, 1847, pl. 10, fig. 50.
Latirus brevicaudatus Tryon, Man. of Conch. Vol. 3, 1881, pag. 92, pl. 69, fig. 151 and 154.

Caracasbay, 1. V. 1920, 1 spec.
Spanish Water, in *Porites furcata*, 5. V. 1920, 2 spec.

In diagnoses of this species I never found any reference to the peculiar way in which every whorl is fastened to its preceding one by means of small scale-like, elevated arches.

Leucozonia cingulifera (Lamarck).

Turbinella cingulifera Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 107.
Leucozonia cingulifera Tryon, Man. of Conch. Vol. 3, 1881, pag. 95—96, pl. 70, fig. 165—173.

Curaçao, 5 spec.
Spanish Water, in *Porites furcata*, 14. V. 1920, 2 spec.
Caracasbay, 1923, 1 spec.
Spanish Bay, 1923, 2 spec.

Leucozonia ocellata (Gmelin).

Buccinum ocellatum Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3488.
Leucozonia ocellata Tryon, Man. of Conch. Vol. 3, 1881, pag. 95, pl. 70, fig. 178 and 179.

Spanish Bay, 11. IV. 1920, 1 spec.
Boca Grandi, 12. V. 1920, 1 spec.

Melongena melongena (Linné).

Murex melongena Linné, Syst. Nat. Ed. X, 1758, pag. 751.
Melongena melongena Tryon, Man. of Conch. Vol. 3, 1881, pag. 107, pl. 41, fig. 197—198.

Curaçao, 1923, 1 spec.

Pisania pusio (Linné).

Murex pusio Linné, Syst. Nat. Ed. X, 1758, pag. 754.
Pisania pusio Tryon, Man. of Conch. Vol. 3, 1881, pag. 145, pl. 71, fig. 188—189.

Curaçao, 1 spec.
Spanish Bay, 1921, 2 spec.

Nassa ambigua (Montagu).

Buccinum ambiguum Montagu, Test. Brit. 1803, pag. 242, pl. 9, fig. 7.
Nassa ambigua Tryon, Man. of Conch. Vol. 4, 1882, pag. 42, pl. 13, fig. 194—197 and 213.

Caracasbay, in sponge, 10. V. 1920, 4 spec.

Columbella mercatoria (Linné).

Voluta mercatoria Linné, Syst. Nat. Ed. X, 1758, pag. 730—731.
Columbella mercatoria Tryon, Man. of Conch. Vol. 5, 1883, pag. 106—107, pl. 43, fig. 28—33.

Caracasbay: 10. IV. 1920, 2 spec.; under stones in the surf, 18. V. 1920, 2 spec.; 1921, 6 spec.
Spanish Bay, 1921, 1 spec.

An analogous systematical list as TOMLIN's for the *Marginellidae* was composed by S. PACE for the *Columbellidae* (Proc. Malac. Soc. London, Vol. 5, 1902, pag. 34—154), treating the recent and the fossil species both.

Columbella nitida Lamarck.

Columbella nitida Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 295.
Columbella nitida Tryon, Man. of Conch. Vol. 5, 1883, pag. 113—114, pl. 46, fig. 23.

Curaçao, 5 spec.
Spanish Bay: 11. IV. 1920, 3 spec.; 1921, 2 spec.
Caracasbay: 1. V. 1920, 28 spec.; on stones at the shore, 3. V. 1920, 14 spec.; 1923, 7 spec.
Boca Labadera, 12. V. 1920, 2 spec.
Westpunt, 14. V. 1920, 6 spec.

A very abundant and variable species.

Columbella cribraria (Lamarck).

Buccinum cribrarium Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 274.
Columbella cribraria Tryon, Man. of Conch. Vol. 5, 1883, pag. 122, pl. 48, fig. 73—77.

Curaçao, 2 spec.
Caracasbay, on stones at the shore, 7. IV. 1920, 6 spec.
Spanish Water, in *Porites furcata*, 5. V. 1920, 3 spec.
Spanish Bay, 1923, 3 spec.

Columbella pulchella (Blainville).

Buccinum pulchellum Blainville, Faune franç. Moll. 1829, pag. 178—179, pl. 7, fig. 4.
Columbella pulchella Tryon, Man. of Conch. Vol. 5, 1883, pag. 157—158, pl. 55, fig. 63.

Curaçao, 2 spec.

Columbella catenata Sowerby.

Columbella catenata Sowerby, Proc. Zool. Soc. London, 1844, pag. 52.
Columbella catenata Tryon, Man. of Conch. Vol. 5, 1883, pag. 179—180, pl. 58, fig. 51—55.

Curaçao, 3 spec.
Caracasbay, 10. IV. 1920, 2 spec.

Columbella dormitor Sowerby.

Columbella dormitor Sowerby, Thes. Conch. Vol. 1, 1844, pag. 143, pl. 40, fig. 173.
Columbella dormitor Tryon, Man. of Conch. Vol. 5, 1883, pag. 181, pl. 59, fig. 63.

Curaçao, 1 spec.

Murex brevifrons Lamarck.

Murex brevifrons Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 161.
Murex brevifrons Tryon, Man. of Conch. Vol. 2, 1880, pag. 95—96, pl. 18, fig. 171—173, pl. 19, fig. 175, 179 and 180.

Spanish Water: on mangrove roots, 8. IV. 1920, 7 spec.; in *Porites furcata*, 19. IV. 1920, 2 spec.; 21. V. 1920, 2 spec.

I do not know if this species is also found on the shore of Caracasbay, but in Spanish Water it seems to be quite abundant. And indeed the frondosely branched spines can develop better to such a rich extent in the sheltered lagoon than on an exposed and surf-beaten coast.

Murex chrysostoma Gray.

Murex chrysostoma Gray in Sowerby, Conchol. Ill, 1841, fig. 1.
Murex chrysostoma Tryon, Man. of Conch. Vol. 2, 1880, pag. 82—83, pl. 13, fig. 135—136.

Spanish Water, 15. V. 1920, 1 spec.

Murex nuceus Mörch.

Murex nuceus Mörch, Kjerulf. Catal. 1850, pag. 31, pl. 1, fig. 9.
Murex nuceus Tryon, Man. of Conch. Vol. 2, 1880, pag. 122, pl. 37, fig. 429.

Spanish Water, on mangrove roots, 1920, 1 spec.

Purpura patula (Linné).

Buccinum patulum Linné, Syst. Nat. Ed. X, 1758, pag. 739.
Purpura patula Tryon, Man. of Conch. Vol. 2, 1880, pag. 159, pl. 43, fig. 19—22.

Caracasbay: 7. IV. 1920, 1 spec.; in coral, 7. IV. 1920, 3 spec.
Spanish Harbour, 17. IV. 1920, 8 spec.
Boca Labadera, 12. V. 1920, 2 spec.
Boca Grandi, 12. V. 1920, 1 spec.
Spanish Bay, 1921, 1 spec.

It is one of the most abundant shells in this region and as a rule it is easily recognisable in all stages of growth.

Purpura deltoidea Lamarck.

Purpura deltoidea Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 247.
Purpura deltoidea Tryon, Man. of Conch. Vol. 2, 1880, pag. 163, pl. 47, fig. 55 and 58.

Caracasbay: on stones at the shore, 7. IV. 1920, 2 spec.; 1. V. 1920, 3 spec.
Boca Labadera, 12. V. 1920, 1 spec.

Purpura haemastoma haemastoma (Linné).

Buccinum haemastomum Linné, Syst. Nat. Ed. XII, 1767, pag. 1202.
Purpura haemastoma haemastoma Tryon, Man. of Conch. Vol. 2, 1880, pag. 167, pl. 49, 80 and 84, pl. 50, fig. 87.

Spanish Water, in *Porites furcata*, 1920, 1 spec.

In order to distinguish the different forms in which this extremely variable species from circumtropical regions is known, TRYON proposed a kind of trinominal nomenclature to designate the more characteristic forms which are connected by intermediate stages with the parent form.

Purpura haemastoma undata (Lamarck).

Purpura undata Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 238.
Purpura haemastoma undata Tryon, Man. of Conch. Vol. 2, 1880, pag. 167, pl. 49, fig. 82, pl. 50, fig. 100 and 103, pl. 51, fig. 109.

Curaçao, 9 spec.

Purpura haemastoma floridana (Conrad).

Purpura floridana Conrad, Journ. Acad. Nat. Sci. Philadelphia, Vol. 7, 1837, pag. 265, pl. 20, fig. 21.
Purpura haemastoma floridana Tryon, Man. of Conch. Vol. 2, 1880, pag. 167—168, pl. 49, fig. 83 and 85, pl. 50, fig. 86, 90 and 94.

Caracasbay, 10. IV. 1920, 3 spec.

Sistrum nodulosum (C. B. Adams).

Purpura nodulosa C. B. Adams, Proc. Boston Soc. Nat. Hist. Vol. 2, 1845, pag. 2.
Sistrum nodulosum Tryon, Man. of Conch. Vol. 2, 1880, pag. 190, pl. 59, fig. 275.

Spanish Bay, 11. IV. 1920, 1 spec.
Spanish Water, 18. V. 1920, 1 spec.
Caracasbay, 1923, 1 spec.

Coralliophila abbreviata (Lamarck).

Pyrula abbreviata Lamarck, Encycl. Méth. 1816, pl. 435, fig. 2*a* and *b*.
Coralliophila galea Chemnitz, Tryon, Man. of Conch. Vol. 2, 1880, pag. 207—208, pl. 65, fig. 362—364.

Curaçao, 2 spec.
Caracasbay: 7. IV. 1920, 17 spec.; in coral, 7. IV. 1920, 12 spec.; in *Maeandrina*, 7. IV. 1920, 3 spec.; in roots of *Gorgonia*, 10. IV. 1920, numerous spec.; 1923, 3 spec.
Spanish Water, in *Porites furcata*, 14. IV. 1920, 2 spec.
Spanish Bay, 1923, 1 spec.

The adult shell, generally known as *Coralliophila galea* Chemn., but which for the sake of priority should be called *C. abbreviata* Lam., may as a rule be identified without difficulty, but the young ones of which in our collection we have several representatives from 5 mm. upwards in the 2nd, 3rd, 4th and 5th of the above-mentioned samples, present quite different characters.

In one case they are more turreted and the whorls are more rounded than in aged specimens, in another on the contrary the turns have more prominent edges and ridges and the shell is more pointed towards the base, so that it is only by a large set in which nearly all stages and all ages are present that we get a fair impression of the various shapes and sculptures of these immature specimens which are known in literature by the name of *Murex* (= *Coralliophila*) *plicata* Wood.

Scalaria eburnea Potiez & Michaud.

Scalaria eburnea Potiez & Michaud, Cat. Gal. Douai, 1838, pag. 344, pl. 31, fig. 1—2.
Scalaria eburnea Nyst, Ann. Soc. malac. Belg. Vol. 6, 1871, pag. 106.
Scala eburnea Mörch, Journ. Acad. Sci. Philadelphia, Vol. 8, 1876, pag. 199.
Scalaria eburnea Tryon, Man. of Conch. Vol. 91, 1887, pag. 71, pl. 14, fig. 57 and 58.

Curaçao, 1 spec.

The specimen of Curaçao and another one from St. Thomas were present in the collection of the Zoological Museum under the name *S. fragilis*. For the sake of priority however the name of POTIEZ and MICHAUD should be adopted.

Scalaria lamellosa Lamarck.

Scalaria lamellosa Lamarck, Anim. s. Vert. Vol. 6, 1822, pag. 227.
Scala lamellosa Mörch, Journ. Acad. Nat. Sci. Philadelphia, Vol. 8, 1876, pag. 199—200.
Scalaria lamellosa Tryon, Man. of Conch. Vol. 9, 1887, pag. 74—75, pl. 15, fig. 76, 77, 82—84.

Curaçao, 1 spec.
Caracasbay, 1921, 4 spec.

Not being able to find sufficient characteristic differences TRYON included under this name a number of species e. g. *commutata* Monterosato which evidently cannot be maintained in the face of MONTEROSATO's arguments and not on account of their separated habitat either. Thus *lamellosa* adds another example to the list of similar species inhabiting both the Mediterranean and the Caribbean basin.

I have no opinion as to the claim to existence of the other *Scalariae* which are swallowed up by *lamellosa* on TRYON's authority.

Janthina globosa Swainson.

Janthina globosa Swainson, Zool. Ill. 1st Sect. 1822, pl. 85.
Janthina globosa Tryon, Man. of Conch. Vol. 9, 1887, pag. 37, pl. 10, fig. 11—16.

Caracasbay, 1921, 1 spec.

Pyramidella dolabrata var. *subdolabrata* (Mörch).

Obeliscus subdolabratus Mörch, Malak. Blätt. Vol. 22, 1875, pag. 157.
Pyramidella dolabrata var. *subdolabrata* Tryon, Man. of Conch. Vol. 8, 1886, pag. 300, pl. 72, fig. 71—74.

Spanish Harbour, 20. V. 1920, 1 spec.

I rather follow here the rank as a variety of this form proposed in TRYON's Manuel instead of regarding it as a good species as was done by the author and afterwards by DALL & SIMPSON (l. c. 1900, pag. 414). Apparently there are only some minor characteristics which make the difference:

dolabrata.	*subdolabrata.*
1. Shell white with clear brown bands.	Shell dull-white-gray with faint brown bands.
2. Columella with 3 solid folds of about equal strength.	Columella with 3 folds of which the upper outdoes the two lower ones by far in strength.

Finally I must avow that I could not find the slightest trace of reticulated structure referred to by DALL & SIMPSON on the specimens of *dolabrata* and of the var. *subdolabrata* at my disposal. According to these authors this sculpture serves as a third diagnostic feature between the type and its variety, *dolabrata* being said to show a finer gratework than *subdolabrata.*

Septa tritonis var. *nobilis* (Conrad).

Triton nobilis Conrad, Journ. Acad. Nat. Sci. Philadelphia (2) Vol. 1, 1849, pag. 212.
Triton tritonis var. *nobilis* Tryon, Man. of Conch. Vol. 3, 1881, pag. 10, pl. 4, fig. 21 and 26.

Curaçao, 1 spec.
Caracasbay: 1920, 2 spec.; 1922, 2 spec.

In Smiths, Misc. Coll., Vol. 47, 1904, pag. 114—144 appeared "A historical and systematic review of the frog-shells and tritons" by W. H. DALL, whose opinion in the matter of nomenclature I followed in the discussion of this and of the other members of these families in the present collection.

Cymatium pileare (Linné).

Murex pileare Linné, Syst. Nat. Ed. X, 1758, pag. 749.
Triton pilearis Tryon, Man. of Conch. Vol. 3, 1881, pag. 12, pl. 6, fig. 31—36, pl. 7, fig. 38—39.

Caracasbay, 25. V. 1920, 1 spec.

Cymatium chlorostomum (Lamarck).

Triton chlorostomum Lamarck, Anim. s. Vert. Vol. 7, 1822, p. 185.
Triton chlorostomum Tryon, Man. of Conch. Vol. 3, 1881, pag. 13, pl. 7, fig. 47 and 48.

Caracasbay, in sponge, 10. IV. 1920, 1 spec.
Spanish Harbour, 10. IV. 1920, 1 spec.
Spanish Water, in *Porites furcata,* 5. V. 1920, 1 spec.

Bursa affinis (Broderip).

Ranella affinis Broderip, Proc. Zool. Soc. 1832, pag. 179.
Ranella affinis Tryon, Man. of Conch. Vol. 3, 1881, pag. 42, pl. 22, fig. 38—41 and pl. 23, fig. 55.

Curaçao, 1 spec.

This specimen belongs to the form which REEVE (Proc. Zool. Soc. 1844, pag. 137) described as *Ranella ponderosa,* but which according to TRYON represents the typical *affinis.*

Cassis flammea (Linné).

Buccinum flammeum Linné, Syst. Nat. Ed. X, 1758, pag. 736.
Cassis flammea Tryon, Man. of Conch. Vol. 7, 1885, pag. 271, pl. 1, fig. 47 and 48.

Caracasbay, 1921, 1 spec.
Spanish Bay, 1921, 3 spec.
Curaçao, 1923, 2 spec.

Cassis testiculus (Linné).

Buccinum testiculus Linné, Syst. Nat. Ed. X, 1758, pag. 736.
Cassis testiculus Tryon, Man. of Conch., Vol. 7, 1885, pag. 273, pl. 2, fig. 54, pl. 4, fig. 63.

Curaçao, 2 spec.
Spanish Bay, 1921, 1 spec.
Caracasbay, 1921, 2 spec.

Oniscia oniscus var. *lamarcki* (Deshayes).

Strombus Lamarckii Deshayes, Anim. s. Vert. Ed. 2, Vol. 10, 1844, pag. 12.
Oniscia oniscus var. *lamarcki* Tryon, Man. of Conch. Vol. 7, 1885, pag. 281, pl. 10, fig. 19.

Entrance to Spanish Water, 1921, 1 spec.

Dolium perdix (Linné).

Buccinum perdix Linné, Syst. Nat. Ed. X, 1758, pag. 734.
Dolium perdix Tryon, Man. of Conch. Vol. 7, 1885, pag. 264—265, pl. 3, fig. 15, pl. 4, fig. 23—25.

Spanish Bay, 1921, 5 spec.
Caracasbay, 1923, 4 spec. (of which 3 juv.).

The partridge-tun is a common species in all tropical seas.

Ovula gibbosa (Linné).

Bulla gibbosa Linné, Syst. Nat. Ed. X, 1758, pag. 726.
Ovula gibbosa Tryon, Man. of Conch. Vol. 7, 1885, pag. 250, pl. 3, fig. 81 and 82.

Caracasbay: on Gorgonids, 7. IV. 1920, 3 spec.; 29. IV. 1920, numerous spec.; 1923, 2 spec.
Spanish Bay, 1921, 7 spec.

It may be convenient to add here a figure of the radula of a specimen of the second set. The maximal length of the radula is 9,5 mm. It is composed of 150 rows of teeth.

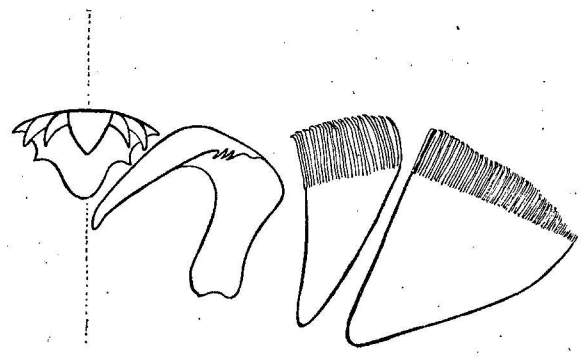

Fig. 1. Half row of teeth from radula of *Ovula gibbosa* (L.).

Ovula acicularis Lamarck.

Ovula acicularis Lamarck, Ann. du Mus. Vol. 16, 1810, pag. 112.
Ovula acicularis Tryon, Man. of Conch. Vol. 7, 1885, pag. 253, pl. 5, fig. 23—25.

Caracasbay, on Gorgonids, 10. IV. 1920, 23 spec.

The figures in TRYON's Manuel as well as those in REEVE, Conch. Icon., Vol. 15, 1865, pl. 12, fig. 53, give a correct idea of the shape of the shell, but I looked in vain for a reference to the peculiar surface-sculpture of this species. Under a lens in adequate light one detects a sculpture of a great number of shallow wave-like revolving lines crossed by somewhat coarser lines of growth. In this way results a pattern which reminds us vividly of certain tissues of cloth.

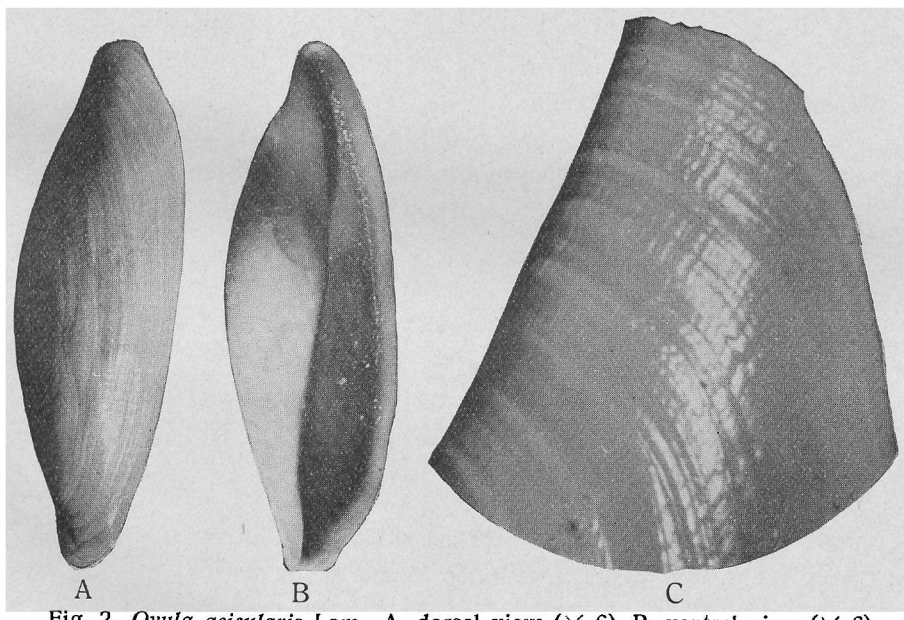

Fig. 2. *Ovula acicularis* Lam. A. dorsal view (× 6), B. ventral view (× 6), C. detail of dorsal surface to show the wave-like sculpture (about × 30).

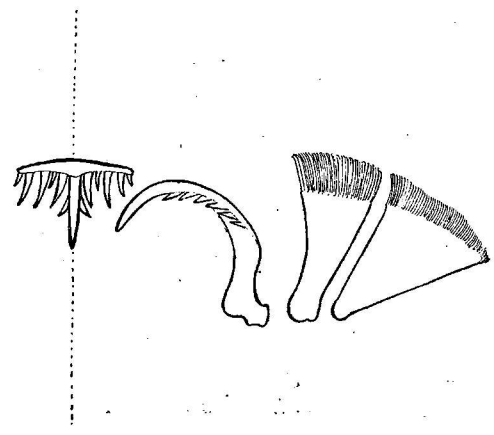

Fig. 3. Half row of teeth from radula of *Ovula acicularis* Lam.

On the different parts of the shell-surface the wave-lines are not always of the same amplitude, coarser and finer ones occurring equally on one specimen.

The biggest specimen of our set has a length of 14,5 mm. and a maximal diameter of 4 mm. I give here a figure of the radula of a specimen measuring 12,5 mm. in length. The radula itself is 3,5 mm. long and consists of 145 rows of teeth.

Cypraea exanthema Linné.

Cypraea exanthema Linné, Syst. Nat. Ed. XII, 1767, pag. 1172.
Cypraea exanthema Roberts in Tryon, Man. of Conch. Vol. 7, 1885, pag. 164, pl. 1, fig. 3—5, pl. 2, fig. 13 and 14.

Caracasbay, 1922, 1 spec.
Spanish Bay, 1922, 2 spec.

Cypraea cinerea Gmelin.

Cypraea cinerea Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3402.
Cypraea cinerea Roberts in Tryon, Man. of Conch. Vol. 7, 1885, pag. 166, pl. 2, fig. 15 and 16.

Curaçao, 1 spec.
Caracasbay: 1. V. 1920, 1 spec.; 1923, 10 spec.
Spanish Water, 18. V. 1920, 1 spec.
Spanish Bay: 1921, 1 spec.; 1923, 6 spec.

The species is very common around the coast of Curaçao. It is pretty variable in shape, some being more cylindrical and slender, others on the contrary short and very inflated. Among the latter set a couple of specimens though full-grown are not completely involute, a short spire being visible.

Cypraea spurca Linné.

Cypraea spurca Linné, Syst. Nat. Ed. X, 1758, pag. 724.
Cypraea spurca Roberts in Tryon, Man. of Conch. Vol. 7, 1885, pag. 195, pl. 19, fig. 16 and 17.

Curaçao, 2 spec.
Caracasbay: 1. V. 1920, 1 spec,; 1923, 5 spec.

It is very remarkable how exceedingly poor in cowries the Western Atlantic Ocean is in comparison with the Indian and Pacific Oceans.

Trivia nivea Gray.

Trivea nivea Gray, Descr. Catal. Shells, 1832, pag. 15.
Trivea nivea Roberts in Tryon, Man. of Conch. Vol. 7, 1885, pag. 199—200, pl. 21, fig. 80 and 81.

Spanish Harbour, 17. IV. 1920, 1 spec.
Spanish Bay, 1923, 1 spec.
Caracasbay, 1923, 1 spec.

Trivia pediculus (Linné).

Cypraea pediculus Linné, Syst. Nat. Ed. X, 1758, pag. 724.
Trivia pediculus Roberts in Tryon, Man. of Conch. Vol. 7, 1885, pag. 201, pl. 21, fig. 94—97.

Curaçao, 1 spec.
Caracasbay: 1. V. 1920, 1 spec.; 1923, 7 spec.

Strombus gigas Linné.

Strombus gigas Linné, Syst. Nat. Ed. X, 1758, pag. 745.
Strombus gigas Tryon, Man. of Conch. Vol. 7, 1885, pag. 107, pl. 1, fig. 2—4.

Spanish Harbour, 16. IV. 1920, 6 spec.
Caracasbay, 1921, 2 spec. juv.

Strombus gallus Linné.

Strombus gallus Linné, Syst. Nat. Ed. X, 1758, pag. 743.
Strombus gallus Tryon, Man. of Conch. Vol. 7, 1885, pag. 113, pl. 4, fig. 35 and 36.

Spanish Harbour, 16. IV. 1920, 1 spec.
Caracasbay, 1921, 1 spec.
Curaçao, 1923, 1 spec.

Triforis decoratus (C. B. Adams).

Cerithium decoratus C. B. Adams, Contrib. Conch. 1850, pag. 117.
Triforis decoratus Tryon, Man. of Conch. Vol. 9, 1887, pag. 182, pl. 37, fig. 4.

Caracasbay, 1923, 2 spec.

Triforis turris-thomae (Chemnitz).

Turbo turris-thomae Chemnitz, Conch. Cab. Vol. 11, 1795, pag. 310, pl. 213, fig. 3022.
Triforis turris-thomae Tryon, Man. of Conch. Vol. 9, 1887, pag. 188, pl. 39, fig. 53.

Spanish Water, in *Porites furcata*, 19. IV. 1920, 1 spec.
Caracasbay, 1923, 2 spec.

Cerithium litteratum (Born).

Murex litteratus Born, Test. Mus. Vindob. 1780, pag. 323, pl. 11, fig. 14 and 15.
Cerithium litteratum Tryon, Man. of Conch. Vol. 9, 1887, pag. 128, pl. 22, fig. 63 and 64.

Caracasbay: on stones in the surf, 6. IV. 1920, 1 spec.; 19. IV. 1920, 29 spec.; in sponge, 10. V. 1920, 1 spec.
Spanish Harbour, 11. IV. 1920, 11 spec.
Spanish Water, in *Porites furcata*, 14. IV. 1920, 1 spec.
Spanish Bay, 1923, 4 spec.

It is one of the most common West-Indian mollusks.

Cerithium eburneum Bruguière.

Cerithium eburneum Brugière, Encycl. Méthod. 1789, n^0 41.
Cerithium eburneum Tryon, Man. of Conch. Vol. 9, 1887, pag. 129, pl. 22, fig. 71—75 and 77—80.

Caracasbay, 1920, 2 spec.

Cerithium ferrugineum Say.

Cerithium ferrugineum Say, Americ. Conch. n^0 5, 1832, pag. 35, pl. 49, fig. 3.
Cerithium ferrugineum Tryon, Man. of Conch. Vol. 9, 1887, pag. 140, pl. 26, fig. 99—105.

Spanish Water, 3. IV. 1920, 15 spec.
Small and muddy lagoon near Caracasbay: 7. IV. 1920, 11 spec.; 26. IV. 1920, 4 spec.
Spanish Bay, between stones in the surf, 11. V. 1920, 17 spec.

From these four sets already it appears that *Cerithium ferrugineum* can flourish under most various circumstances, the dirty shallow lagoon with lukewarm water, poor in oxygen and rich in organic substance, presenting surroundings quite different from the low temperature and thoroughly aerated water of the waves and the surf of Spanish Bay.

Cerithium rissoidae Sowerby.

Cerithium rissoidae Sowerby in Reeve, Conch. Icon. Vol. 15, 1865, pl. 15, fig. 107.
Cerithium rissoidae Tryon, Man. of Conch. Vol. 9, 1887, pag. 140, pl. 26, fig. 6.

Caracasbay, 1923, 2 spec.

Cerithidea turrita Stearns.

Cerithidea turrita Stearns, Proc. Bost. Soc. Nat. Hist. Vol. 15, 1873, pag. 24.
Potamides turrita Tryon, Man. of Conch. Vol. 9, 1887, pag. 164, pl. 34, fig. 83.

Small and muddy lagoon near Caracasbay, 7. IV. 1920, numerous spec.
Caracasbay, in sponge, 10. V. 1920, 1 spec.

Batillaria minima (Gmelin).

Murex minimus Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3564.
Lampania minimus Tryon, Man. of Conch. Vol. 9, 1887, pag. 176, pl. 34, fig. 9—11.

Spanish Water, 3. IV. 1920, 7 spec.
Small and muddy lagoon near Caracasbay, 7. IV. 1920, 23 spec.

Modulus modulus (Linné).

Trochus modulus Linné, Syst. Nat. Ed. X, 1758, pag. 757.
Modulus lenticularis Tryon, Man. of Conch. Vol. 9, 1887, pag. 261, pl. 48, fig. 91 and 92.

Spanish Water, in *Porites furcata*, 7. IV. 1920, 12 spec.
Spanish Harbour, 10. IV. 1920, 1 spec.

Planaxis nucleus (Lamarck).

Purpura nucleus Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 249.
Planaxis nucleus Tryon, Man. of Conch., Vol. 9, 1887, pag. 277, pl. 52, fig. 36.

Caracasbay, on stones at the shore, 13. IV. 1920, 58 spec.
Spanish Bay, 1921, 5 spec.

Planaxis lineatus (Da Costa).

Buccinum lineatum da Costa, Brit. Conch. 1778, pag. 130, pl. 8, fig. 5.
Planaxis lineatus Tryon, Man. of Conch. Vol. 9, 1887, pag. 278, pl. 52, fig. 38—48, pl. 53, fig. 49—57, 59 and 63—66.

Caracasbay: 30. IV. 1920, 11 spec.; under stones on the shore, 3. V. 1920, 67 spec.
Boca Labadera, 12. V. 1920, numerous spec.
Spanish Bay, 1921, 8 spec.

Vermetus varians d'Orbigny.

Vermetus varians d'Orbigny, Voy. Amér. mérid. 1841, pag. 456, pl. 54, fig. 7—10.
Vermetus varians Tryon, Man. of Conch. Vol. 8, 1886, pag. 170, pl. 48, fig. 11, pl. 49, fig. 22 and 23.

Spanish Harbour, 17. IV. 1920, a cluster.

Vermetus decussatus (Gmelin).

Serpula decussata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3745.
Vermetus decussatus Tryon, Man. of Conch. Vol. 8, 1886, pag. 181, pl. 53, fig. 71 and 72.

Caracasbay, 10. IV. 1920, 3 spec.

Littorina angulifera (Lamarck).

Phasianella angulifera Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 54.
Littorina scabra Tryon, Man. of Conch. Vol. 9, 1887, pag. 243—244, pl. 42, fig. 11—30, pl. 43, fig. 31, 31*a* and 38.

Curaçao, 2 spec.
Spanish Water, on mangrove-roots, 13. IV. 1920, 14 spec.

I do not think that TRYON is right in dropping *angulifera* Lam. before *scabra* Linn.

Littorina ziczac (Chemnitz).

Trochus ziczac Chemnitz, Conch. Cab. Vol. 5, 1781, pag. 69, fig. 1599 and 1600.
Littorina ziczac Tryon, Man. of Conch. Vol. 9, 1887, pag. 251, pl. 45, fig. 5—7, and 92.

Spanish Bay: 11. IV. 1920, 29 spec.; 1923, 20 spec.
Curaçao, 8 spec.

Of this last set there were two specimens in the collections of the Zoological Museum under the name *carinata* d'Orb. and 6 were called *jamaicensis* Ads. TRYON united these names and a couple of others under *ziczac* Chemn.

Littorina minima (Gray).

Turbo minima Gray in Wood, Index Test. 1818, pl. 6, fig. 29.
Littorina minima Tryon, Man. of Conch. Vol. 9, 1887, pag. 252, pl. 45, fig. 11.

Curaçao, 2 spec.
Spanish Harbour, in a pond on the beach, 17. IV. 1920, 4 spec.
Caracasbay, 25. V. 1920, 2 spec.

Tectarius muricatus (Linné).

Turbo muricatus Linné, Syst. Nat. Ed. X, 1758, pag. 761.
Tectarius muricatus Tryon, Man. of Conch. Vol. 9, 1887, pag. 258, pl. 48, fig. 68.

Caracasbay, in coral, 7. IV. 1920, 1 spec.
Spanish Harbour, above high-tide mark, 17. IV. 1920, 51 spec.
Spanish Water, in *Porites furcata*, 5. V. 1920, 1 spec.
Spanish Bay, 1921, 5 spec.

Tectarius nodulosus (Gmelin).

Turbo nodulosus Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3582.
Littorina thiarella Anton, Verzeichn. d. Conch. 1839, pag. 53.
Tectarius nodulosus Tryon, Man. of Conch. Vol. 9, 1887, pag. 258, pl. 47, fig. 59—64, pl. 48, fig. 72, 74 and 75.

Curaçao, 2 spec.
Spanish Bay: 11. IV. 1920, 3 spec.; 1921, 4 spec.
Spanish Harbour: in pond on the beach, 17. IV. 1920, 54 spec.; between stones in the surf, 11. V. 1920, 2 spec.

Torinia cyclostoma (Menke).

Solarium cyclostomum Menke, Synopsis, 1830, p. 142.
Torinia cyclostoma Tryon, Man. of Conch., Vol. 9, 1887, pag. 18, pl. 5, fig. 83 and 84.

Caracasbaý, in *Maeandrina*, 7. IV. 1920, 7 spec.

Torinia bisulcata (d'Orbigny).

Solarium bisulcatum d'Orbigny, Moll. de Cuba, Vol. 2, 1842, pag. 66, pl. 19, fig. 17 and 20.
Torinia bisulcata Tryon, Man. of Conch. Vol. 9, 1887, pag. 22. pl. 6, fig. 14—16.

Caracasbay, 29. IV. 1920, 1 spec.

According to its size (max. diam. 9 mm.) the specimen rather belongs to *delphinuloides* (d'Orb.), but I do not think this a sufficient characteristic to separate the two species.

Rissoina dubiosa C. B. Adams.

Rissoina dubiosa C. B. Adams, Contrib. Conch. 1850, pag. 114.
Rissoina dubiosa Tryon, Man. of Conch. Vol. 9, 1887, pag. 374, pl. 56, fig. 52.

Caracasbay, 25. V. 1920, 1 spec.
Spanish Water, 25. V. 1920, 2 spec.

Rissoina browniana d'Orbigny.

Rissoina browniana d'Orbigny, Moll. Cuba, Vol. 2, 1853, pag. 28, pl. 12, fig. 33 and 35.
Rissoina browniana Tryon, Man. of Conch. Vol. 9, 1887, pag. 390, pl. 59, fig. 45—46.

Spanish Water, 25. V. 1920, 9 spec.

The chestnut bands are very faint and only noticeable by close examination under a lens. The little solid shell has whorls of so little convexity that the line from the top to the periphery of the body-whorl touches the shell nearly everywhere. Besides the species is characterised by a peculiar bright lustre which reminds one of the polished surface of certain species of *Persicula* and *Oliva*.

The two *Rissoinae* referred to here are another evidence of the assiduity with which Dr. VAN DER HORST made his collections paying attention to the minute forms as well.

Mitrularia equestris (Linné).

Patella equestris Linné, Syst. Nat. Ed. XII, 1767, pag. 1257.
Mitrularia equestris Tryon, Man. of Conch. Vol., 8, 1886, pag. 137, pl. 41, fig. 25—32, pl. 42, fig. 33—56 pl. 43, fig. 57—67, 70.

Caracasbay, 1921, 1 spec.

Crepidula aculeata (Gmelin).

Patella aculeata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3693.
Crepidula aculeata Tryon, Man. of Conch. Vol. 8, 1886, pag. 129, pl. 39, fig. 61—65.

Spanish Water, 21. V. 1920, 10 spec.

The shells are rather young, varying between 5 and 15 mm. maximal diameter. The characteristic prickly, somewhat tubular scales are very well developed in the majority of specimens which may serve as another proof that the force of the waves in Spanish Water is obviously not very great.

Amalthea subrufa Lamarck.

Pileopsis subrufa Lamarck, Anim. s. Vert. Vol. 6, 1822, pag. 18.
Hipponyx subrufa Tryon, Man. of Conch. Vol. 8, 1886, pag. 134, pl. 40, fig. 1.

Curaçao, 5 spec.
Caracasbay, 1923, 1 spec.

To this as well as to the next species I think it better to apply the generic name *Amalthea* of SCHUMACHER (Essai nouv. syst. 1817) which is two years older than *Hipponyx* of DEFRANCE (Bull. des Sci. Vol. 9, 1819).

Amalthea antiquata (Linné).

Patella antiquata Linné, Syst. Nat. Ed. XIII, 1767, pag. 1259.
Hipponyx antiquatus Tryon, Man. of Conch. Vol. 8, 1886, pag. 134, pl. 40, fig. 93—99.

Caracasbay, 1923, 7 spec.

It is an interesting fact that all four above-named species of *Calyptraeidae* are equally abundant on either coast of America, the Atlantic as well as the Pacific, in tropical and subtropical latitudes.

Three of them have even a much wider range being practically cosmopolitic, which betrays considerable geological age. And indeed, several representatives are traced back as far as the Cretaceous epoch.

Natica canrena (Linné).

Nerita canrena Linné, Syst. Nat. Ed. X, 1758, pag. 776.
Natica canrena Tryon, Man. of Conch. Vol. 8, 1886, pag. 20, pl. 4, fig. 58—61.

Spanish Water, 13. IV. 1920, 1 spec.
Spanish Bay, 1922, 1 spec.

Natica lactea (Guilding).

Naticina lactea Guilding, Trans. Linn. Soc Vol. 17, 1834, pag. 31.
Natica lactea Tryon, Man. of Conch. Vol. 8, 1886, pag. 49, pl. 15, fig. 45, pl. 16, fig. 52, 54—57 and 59, pl. 17, fig. 62, pl. 19, fig. 85.

Curaçao, 5 spec.
Spanish Harbour, 10. IV. 1920, 1 spec.
Caracasbay: 1. V. 1920, 1 spec.; 1923, 3 spec.
Spanish Bay, 1921, 4 spec.

Acmaea punctulata (Gmelin).

Patella punctulata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3705 and pag. 3717.
Acmaea punctulata Pilsbry, Man. of Conch. Vol. 13, 1891, pag. 37—38, pl. 5, fig. 99, 100, 1—6 and 11—13.

Curaçao, 1 spec.
Caracasbay: from stones on the shore, 13. IV. 1920, 34 spec.; 1923, 2 spec.
Spanish Water, from *Porites furcata,* 13. IV. 1920, 3 spec.
Spanish Bay: 11. V. 1920, 5 spec.; 1923, 2 spec.

Acmaea leucopleura (Gmelin).

Patella leucopleura Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3699.
Acmaea leucopleura Pilsbry, Man. of Conch. Vol. 13, 1891, pag. 40—41, pl. 5, fig. 16—26.

Curaçao, 8 spec.
Boca Grandi, 12. V. 1920, 2 spec.

Chlorostoma maculostriatum (C. B. Adams).

Monodonta maculostriata C. B. Adams, Proc. Boston Soc. Nat. Hist. 1845, pag. 6.
Chlorostoma maculostriatum Tryon, Man. of Conch. Vol. 11, 1889, pag. 184, pl. 24, fig. 88—89.

Curaçao, 4 spec.
Caracasbay: 8. IV. 1920, 3 spec.; 1921, 2 spec.
Spanish Bay, 11. IV. 1920, 2 spec.
Westpunt, 14. V. 1920, 2 spec.

Chlorostoma fasciatum (Born).

Trochus fasciatus Born, Test. Mus. Caes. Vindob. 1780, pag. 331, pl. 12, fig. 3 and 4.
Chlorostoma fasciatus Tryon, Man. of Conch. Vol. 11, 1889, pag. 186—187, pl. 29, fig. 74—77.

Curaçao, 2 spec.

Chlorostoma excavatum (Lamarck).

Trochus excavatus Lamarck, Anim. s. Vert. Vol. 7, 1822, pag. 29.
Chlorostoma excavatus Tryon, Man. of Conch. Vol. 11, 1889, pag. 187, pl. 63, fig. 3—5.

Caracasbay, on stones at the shore, 13. IV. 1920, 12 spec.
Spanish Bay, 1921, 2 spec.

Livona pica (Linné).

Turbo pica Linné, Syst. Nat. Ed. X, 1758, pag. 763.
Livona pica Tryon, Man. of Conch. Vol. 11, 1889, pag. 277, pl. 61, fig. 24.

Curaçao, 3 spec.
Spanish Water, 1920, 1 spec.
Caracasbay and Spanish Harbour, V. 1920, 9 spec.
Spanish Bay: 11. V. 1920, 10 spec.; 1922, 3 spec.
Boca Grandi, 12. V. 1920, 1 spec.
Boca Labadera, 12. V. 1920, 2 spec.
Caracasbay, 1923, 1 spec.

Most of the specimens are adult shells, our biggest measuring: 110 mm. maximal length and 95 mm. maximal height.

Livona pica seems to be equally abundant in the more sheltered bays (Spanish Water, Spanish Bay) as on the exposed shores of Caracasbay, Boca Grandi and Boca Labadera.

Liotia radiata (Kiener).

Delphinula radiata Kiener, Coq. Viv. 1834, *Delphinula*, pag. 7, pl. 4, fig. 9.
Liotia radiata Tryon, Man. of Conch. Vol. 10, 1888, pag. 111, pl. 36, fig. 9.

Curaçao, 1 spec.
Caracasbay, 8. IV. 1920, 1 spec.

Liotia tamsiana (Dunker).

Delphinula tamsiana (Dunker) Philippi, N. Syst. Conch. Cab. Vol. 2, Abt. 2, 1846, pag. 16, pl. 5, fig. 9.
Liotia tamsiana Tryon, Man. of Conch. Vol. 10, 1888, pag. 112, pl. 36. fig. 21.

Westpunt, 14. V. 1920, 1 spec.
Caracasbay, 25. V. 1920, 2 spec.

Another little *Liotia* from Boca Labadera, 12. V. 1920, has a superficial likeness to *tamsiana*, but it is too much bleached in the sun and rolled in the sand to venture a definite opinion.

Astralium imbricatum (Gmelin).

Trochus imbricatus Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3581.
Astralium imbricatum Tryon, Man. of Conch. Vol. 10, 1888, pag. 226—227, pl. 55, fig. 70.

Caracasbay, 1921, 1 spec.

Astralium undosum (Wood).

Trochus undosus Wood, Index Test. Suppl. 1821, pag. 51, fig. 1.
Astralium undosum Tryon, Man. of Conch. Vol. 10, 1888, pag. 243, pl. 58, fig. 69 and 70.

Curaçao, 1 spec.

Nerita tessellata Gmelin.

Nerita tessellata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3685.
Nerita tessellata Tryon, Man. of Conch. Vol. 10, 1888, pag. 24, pl. 4, fig. 71—74, pl. 9, fig. 69.

Caracasbay: on stones in the surf, 16. IV. 1920, 27 spec.; 1921, 5 spec.
Boca Labadera, 12. V. 1920, 2 spec.
Spanish Bay, 1921, 4 spec.

The different species of *Neritidae* which will be referred to in this paper were discussed — in connection with several others — for investigation of their *radula* by H. BURRINGTON BAKER (Proc. Acad. Nat. Sci. Philadelphia, Vol. 75, 1923).

Nerita peloronta Linné.

Nerita peloronta Linné, Syst. Nat. Ed. X, 1758, pag. 778.
Nerita peloronta Tryon, Man. of Conch. Vol. 10, 1888, pag. 24—25, pl. 4, fig. 75—77.

Curaçao, 2 spec.
Spanish Water, IV. 1920, 5 spec.
Spanish Harbour, 16. IV. 1920, 1 spec.
Caracasbay, 1. V. 1920, 4 spec.
Spanish Bay, 1921, 2 spec.

Nerita versicolor Gmelin.

Nerita versicolor Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3684.
Nerita versicolor Tryon, Man. of Conch. Vol. 10, 1888, pag. 25, pl. 4, fig. 78 and 79, pl. 5, fig. 80.

Spanish Harbour, 16. IV. 1920, numerous spec.
Caracasbay: 6. V. 1920, 8 spec.; 1921, 3 spec.
Spanish Bay, 1921, 7 spec.

Neritina virginea (Linné).

Nerita virginea Linné, Syst. Nat. Ed. X, 1758, pag. 778.
Neritina virginea Tryon, Man. of Conch. Vol. 10, 1888, pag. 39—40, pl. 12, fig. 31—45.

Caracasbay: 10. IV. 1920, 1 spec.; 1920, 54 spec.
Spanish Harbour, 17. IV. 1920, 8 spec.

Neritina pupa (Linné).

Nerita pupa Linné, Syst. Nat. Ed. X, 1758, pag. 778.
Neritina pupa Tryon, Man. of Conch. Vol. 10, 1888, pag. 42, pl. 14, fig. 72—74.

Spanish Bay, 1923, 11 spec.

Fissurella nodosa (Born).

Patella nodosa Born, Test. Mus. Caes. Vindob. 1780, pag. 429.
Fissurella nodosa Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 164, pl. 37, fig. 46—48.

Spanish Bay: 11. V. 1920, 1 spec.; 1923, 3 spec.
Boca Grandi, 12. V. 1920, 2 spec.
Caracasbay, 25. V. 1920, 1 spec.

A useful synopsis for identifying American species of *Fissurella* was composed by PILSBRY and JOHNSON, Catalogue of *Fissurellidae* of the United States (The Nautilus, Vol. 5, 1892) based on Monograph 12 of the Manuel.

Fissurella barbadensis (Gmelin).

Patella barbadensis Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3729.
Fissurella barbadensis Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 164—165, pl. 37, fig. 40—45, pl. 60, fig. 73—75.

Caracasbay: from coral, 2. IV. 1920, 3 spec.; 14. IV. 1920, 1 spec.; 1. V. 1920, 1 spec.; under stones, 18. V. 1920, 20 spec.; 1923, 4 spec.
Spanish Bay: 11. V. 1920, 4 spec.; 1921, 5 spec.
Boca Labadera, 12. V. 1920, 1 spec.
Westpunt, 1921, 2 spec.

Fissurella barbadensis var. *schrammi* (Fischer).

Fissurella schrammi Fischer, Journ. de Conch. Vol. 6, 1857, pag. 383, pl. 11, fig. 5 and 6.
Fissurella barbadensis var. *schrammi* Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 165, pl. 60, fig. 77—79.

Curaçao, 1 spec.

Fissurella fascicularis Lamarck.

Fissurella fascicularis Lamarck, Anim. s. Vert. Vol. 6, 1822, pag. 14.
Fissurella fascicularis Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 177, pl. 37, fig. 59 and 60, pl. 59, fig. 48—50.

Curaçao, 2 spec.

Lucapina adspersa (Philippi).

Fissurella adspersa Philippi, Abbild. Vol. 2, 1845, pag. 34, pl. 1, fig. 3.
Lucapina adspersa Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 199—200, pl. 62, fig. 6 and 7, pl. 38, fig. 69.

Spanish Water, from *Porites furcata*, 13. IV. 1920, 2 spec.

Lucapina cancellata (Sowerby).

Fissurella cancellata Sowerby, Conch. Ill. 1841, fig. 29.
Lucapina cancellata Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 200—201, pl. 37, fig. 58, pl. 63, fig. 1—3.

Schottegat, 22. IX. 1905, 1 spec.
Spanish Water, from *Porites furcata*, 19. IV. 1920, 2 spec.
Caracasbay, from stones on the shore, 1920, 1 spec.

The large specimen found by Dr. J. BOEKE in 1905 is a very fine one, enveloped in a broad and thin yellowish mantle which is marked all over with brown spots.

Glyphis listeri (d'Orbigny).

Fissurella listeri d'Orbigny, Moll. de Cuba, Vol. 2, 1853, pag. 197, pl. 24, fig. 37—39.
Glyphis listeri Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 206—207, pl. 37, fig. 37—39, pl. 62, fig. above 31—32.

Curaçao, 2 spec.
Caracasbay, 19. IV. 1920, 2 spec.
Spanish Bay, 11. V. 1920. 1 spec.
Westpunt, 14. V. 1920, 1 spec.

From a zoogeographical point of view this is a very interesting mollusc, it being so closely allied to the Mediterranean *G. graeca* (Linné) that PILSBRY (l. c. pag. 207) remarks: "The two forms are very closely allied, separated more on account of their different distribution than for any other reason." And indeed the characteristics by which they are generally distinguished are of so unimportant value that the recent specimens of the two regions may represent extreme forms which were connected by series of intermediate ones in the geological past when the Mediterranean and the Antillean basin were in more intimate contact with each other.

Glyphis alternata (Say).

Fissurella alternata Say, Journ. Acad. Nat. Sci. Philadelphia, Vol. 2, 1822, pag. 281.
Glyphis alternata Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 211—212, pl. 37, fig. 50—53, pl. 61, fig. 24 and 25.

Spanish Water: 3. IV. 1920, 4 spec.; from mangrove roots, 8. IV. 1920, 3 spec.; 10. IV. 1920, 3 spec.; from *Porites furcata*, 13. IV. 1920, numerous spec.; 25. V. 1920, 1 spec.

Glyphis alternata var. *dysoni* (Reeve).

Fissurella dysoni Reeve, Conch. Icon. Vol. 6, 1850, pl. 12, fig. 86.
Glyphis alternata var. *dysoni* Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 211—212, pl. 37, fig. 54.

Spanish Water: 10. IV. 1920, 4 spec.; from *Porites furcata*, 13. IV. 1920, numerous spec.

The whole material of *Glyphis alternata* at my disposal was collected on the sheltered coast of Spanish Water. Therefore we might venture the suggestion that perhaps this species prefers such localities to the more exposed beaches of the island.

Glyphis minuta (Lamarck).

Fissurella minuta Lamarck, Anim. s. Vert. Vol. 6, 1822, pag. 15.
Glyphis minuta Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 223—224, pl. 62, fig. 27.

Caracasbay, 5. V. 1920, 2 spec.

Glyphis variegata (Sowerby).

Fissurella variegata Sowerby, Thesaurus, Vol. 3, 1866, pag. 200, fig. 172 and 173.
Glyphis variegata Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 224, pl. 61, fig. 26.

Caracasbay, 5. V. 1920, 1 spec.

I separated this specimen from the preceding species only on account of the absence of a black border along the outside of the hole. The coloured stripes of the shell are very faint.

Glyphis viridula (Lamarck).

Fissurella viridula Lamarck, Anim. s. Vert. Ed. II, Vol. 7, 1836, pag. 596.
Glyphis viridula Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 226, pl. 62, fig. 22—25.

West- and northcoast of Curaçao, 7 spec.

Subemarginula octoradiata (Gmelin).

Patella octoradiata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3699.
Subemarginula octoradiata Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 273—274, pl. 29, fig. 17, 18 and 37.

Caracasbay: from *Maeandrina*, 7. IV. 1920, 1 spec.; 25. V. 1920, 7 spec.
Spanish Bay, 1923, 1 spec.

Subemarginula rollandii (Fischer).

Emarginula rollandii Fischer, Journ. de Conch. Vol. 5, 1856, pag. 356, pl. 12, fig. 10.
Subemarginula rollandii Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 274—275, pl. 64, fig. 36.

Spanish Water, from *Porites furcata*, 7. IV. 1920, 3 spec.

Subemarginula emarginata (Blainville).

Emarginula emarginata Blainville, Man. Malac. 1825, pag. 501, pl. 48-bis, fig. 3.
Subemarginula emarginata Pilsbry, Man. of Conch. Vol. 12, 1890, pag. 276, pl. 64, fig. 3 and 24—26.

Caracasbay, 1923, 1 spec.

LAMELLIBRANCHIA.

Pectunculus decussatus (Linné).

Arca decussata Linné, Syst. Nat. Ed. X, 1758, pag. 694.
Pectunculus pennaceus Lamarck, Anim. s. Vert. Vol. 6, 1819, pag. 51.
Pectunculus decussatus Lamy, Journ. de Conch. Vol. 59, 1911 (1912), pag. 119—120, pl. 3, fig. 7.

Westpunt, 1922, 1 single valve.

Arca zebra (Swainson).

Byssoarca zebra Swainson, Zool. Ill. Shells, 2nd Series, 1832—1833, pl. 118.
Arca zebra Lamy, Journ. de Conch. Vol. 55, 1907, pag. 17—19.

Caracasbay, 1923, 4 single valves.
Spanish Bay, 1923, 2 single valves.

Arca imbricata Bruguière.

Arca imbricata Bruguière, Encycl. Méth. Vers, I, 1792, pag. 98.
Arca imbricata Lamy, Journ. de Conch. Vol. 55, 1907, pag. 26—38.

Caracasbay: in coral, 2. IV. 1920, 1 spec.; 1921, 12 single valves.
Spanish Water: in *Porites furcata*, 7. IV. 1920, numerous spec.; 17. IV. 1920, 32 spec.; in *Siderastraea*, 29. IV. 1920, 7 spec.
Spanish Bay, 1921, 2 spec.

Judging from the quantities of specimens collected at the different stations, *Arca imbricata* seems to be much more frequent in the quiet Spanish Water than in Caracasbay.

Arca imbricata var. *martensi* (Dunker).

Arca martensi Dunker, Novitates Conchol. 1858—1870, pag. 112, pl. 38, fig. 1—2.
Arca imbricata var. *martensi* Lamy, Journ. de Conch. Vol. 55, 1907, pag. 29 e. v.

Curaçao, 7 spec.
Spanish Water: in *Porites furcata*, 7. IV. 1920, 7 spec.; between stones, 12. IV. 1920, 8 spec.

On the authority of LAMY (l. c. pag. 37) I separated *Arca imbricata* var. *martensi* from the typical form according to its "coquille oblongue, presque équilaterale, arrondie en avant et tronquée en arrière d'une façon abrupte .... en réalité, une de ces spécimens à coquille raccourcie et à crochets saillants" etc.

When we consider the conditions of life under which *Arca martensi* generally occurs: pinched between stones and corals which leave but narrow holes and clefts in which the shells rarely find the possibility for full development, it is not too bold a suggestion that this variety of *imbricata* represents merely a modified and more or less abnormal form adapted to habitation.

Arca cancellaria Lamarck.

Arca cancellaria Lamarck, Anim. s. Vert. Vol. 6, 1819, pag. 41.
Arca listeri Philippi, Abb. Conch. Vol. 3, 1849, pag. 187, pl. 5, fig. 1.
Arca cancellaria Lamy, Journ. de Conch. Vol. 55, 1907, pag. 55—57.

Curaçao, 1 spec.

Arca nivea Chemnitz.

Arca nivea Chemnitz, Conch. Cab. Vol. 7, 1784, pag. 191, pl. 54, fig. 538.
Arca nivea Lamy, Journ. de Conch. Vol. 55, 1907, pag. 59—65.

Spanish Water, in *Porites furcata*, 7. IV. 1920, 2 spec.
Caracasbay: in *Maeandrina*, 7. IV. 1920, 1 spec.; under stones on the shore, 3. V. 1920, 4 spec.; 1923, 1 spec and 5 single valves.
Spanish Bay, 1923, 2 single valves.

Arca plicata Chemnitz.

Arca plicata Chemnitz, Conch. Cab. Vol. 11, 1795, pag. 244, pl. 204, fig. 2008.
Arca gradata Brod. & Sowerby, Zool. Journ. Vol. 4, 1830, pag. 365.
Arca gradata Lamy, Journ. de Conch. Vol. 55, 1907, pag. 80—87.

Spanish Water, 30. IV. 1920, 1 spec.
Caracasbay, under stones on the shore, 3. V. 1920, 1 spec.

Arca adamsi (Shuttleworth) Smith.

Arca adamsi Shuttleworth MS, Smith, Journ. Linn. Soc. London, Vol. 20, 1890, pl. 30, fig. 6 and 6*a*.
Arca adamsi Lamy, Journ. de Conch. Vol. 55, 1907, pag. 104—105.

Caracasbay: in coral, 2. IV. 1920, 6 spec.; under stones on shore 3. V. 1920, 2 spec.; 1923, 2 spec. and 6 single valves.
Spanish Water: 3. IV. 1920, 13 spec.; in *Porites furcata*, 5. V. 1920, 2 spec.
Spanish Bay, between stones on shore, 11. V. 1920, 3 spec.

Arca deshayesi Hanley.

Arca deshayesi Hanley, Catal. Rec. Biv. Shells, 1842—1856, pag. 157.
Arca deshayesi Lamy, Journ. de Conch. Vol. 55, 1907, pag. 218—221.

Spanish Water: in mangrove-roots, 1920, 1 spec.; 6. V. 1920, 2 spec.
Spanish Harbour, 10. IV. 1920, 2 spec.
Caracasbay, 1921, 4 single valves.

Pinna carnea Gmelin.

Pinna carnea Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3365.
Pinna carnea Dall, The Nautilus, Vol. 11, 1897, pag. 25.

Spanish Harbour, 10. IV. 1920, 4 spec.
Caracasbay, 20. IV. and 1. V. 1920, 3 spec.

I adopted DALL's nomenclature proposed in his Synopsis of the *Pinnidae* of the Un. States and West-Indies (The Nautilus, Vol. XI, 1897) which was afterwards maintained in Bull. U. S. Fish Comm. Vol. 20, 1st part, 1900, pag. 462.

Pinna rigida Dillwyn.

Pinna rigida Dillwyn, Descr. Catal. Shells, Vol. 1, 1817, pag. 327.
Atrina rigida Dall, The Nautilus, Vol. 11, 1897, pag. 25—26.

Spanish Water: 12. IV. 1920, 1 spec.; 13. IV. and 30. IV. 1920, 4 spec.; 26. IV. 1920, 2 spec.
Wairoe, Schottegat, 1923, 1 spec.

For the East-American species *rigida* and *serrata* DALL (The Nautilus, Vol. 11, 1897, pag. 25) and DALL & SIMPSON (Bull. U. S. Fish Comm. Vol. 20, 1st part, 1900, pag. 462) introduced as a generic name *Atrina* of GRAY which — contrary to *Pinna* s. str. — bears no longitudinal sulcation or median carina and possesses an entire internal nacreous layer (not bilobed as in *Pinna*).

Perna alata (Gmelin).

Ostrea alata Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3339.
Melina alata Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, 1st part, 1900, pag. 462.

Spanish Water, 15. V. 1920, 1 spec.

To Dr. ED. LAMY of Paris I owe a very clear exposition of the actual state of synonymy of the West-Indian species of *Perna* which helped me a good deal in forming a more or less definite opinion of this and of the following species.

It is perhaps this *P. alata* which BOEKE meant on pag. 135 of his "Rapport betreffende een voorloopig onderzoek naar den toestand van de Visscherij etc. in de kolonie Curaçao" and which he figures on plate 8.

Perna listeri Hanley.

Perna listeri Hanley, Ill. Cat. Rec. Bivalve Shells, 1846, pag. 259.
Melina listeri Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, 1st part, 1900, pag. 462.

Caracasbay: in coral, 2. IV. 1920, 9 spec.; on stones in the surf, 6. IV. 1920, 1 spec.; in *Maeandrina*, 7. IV. 1920, 4 spec.; on stones at the shore, 29. IV. 1920, 2 spec.; 8. V. 1920, 6 spec.
Spanish Harbour, in *Porites furcata*, 14. IV. 1920, 2 spec.
Spanish Water: 19. IV. 1920, 2 spec.; 18. V. 1920, 2 spec.
Spanish Bay, between stones, 11. V. 1920, 2 spec.

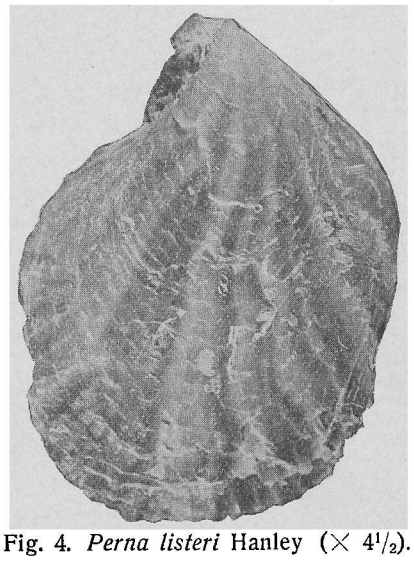

Fig. 4. *Perna listeri* Hanley (× 4½).

It is only with a certain hesitation that I bring all these lamellibranchs to the above-mentioned name. In the first place because I had perhaps — for the sake of priority — better call them *P. Lamarckeanum* d'Orb., or *semiaurita* (L.). But to avoid more confusion I simply adopted the unequivocal opinion of HANLEY.

Secondly we will see whether all the specimens are to be ranked to this species, as I united several polymorphous forms. But all agree in their similar beginning: a rather pointed white-and-pink or fawn striped shell with a peculiar high mother-of-pearl luster, flat and thin, somewhat flexuous, surface not scaly.

Fig. 579 in CHEMNITZ Conch. Cab. Vol. 7, 1784 comes close to our specimens. Moreover I give here a photograph (fig. 4) which but for the colours gives a fairly good idea.

Avicula flabellum Reeve.

Avicula flabellum Reeve, Conch. Icon. Vol. 10, 1857, pl. 5, spec. 7, fig. 7 and 8.
Avicula flabellum Dunker in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 7, part 3, 1872, pag. 20—21, pl. 6, fig. 1.

Caracasbay: 6. V. 1920, 1 spec.; 1923, 1 spec.

Pearl fishing in the West-Indies is carried on of old near the coast of Venezuela and especially on oyster-banks off the island of Margarita.

Far less important and dating of more recent years are the fisheries near one of the Lesser Antilles, Aruba, being the only Dutch colony where fishing is practised on a small scale.

For further particulars concerning the industry I may refer to the before-mentioned Report by Dr. BOEKE (Rapport betreffende een voorloopig onderzoek naar den toestand van de visscherij etc. in de kolonie Curaçao, 1907, pag. 154—156). From his investigations it appears sufficiently that the entire enterprise does not as yet compensate for the troubles and expenses, because 1. the pearl oysters are irregularly and scarcely distributed and of minor size, 2. the pearls which they produce are minute and frequently deformed or accessorily coloured, 3. the mother-of-pearl layer is often lustreless and too thin to be of economic value.

Dr. BOEKE does not inform us about the exact species which these pearl-oysters represent and neither was it mentioned by Mr. P. A. EUWENS in his paper "De paarlvisscherij bij het eiland Margarita" (De West-Indische Gids, Jaarg. 4, deel 5, 1923, pag. 515—532). We may almost be sure that the smaller ones as *A. flabellum* will be of little or no importance, but that the activity of the undertakers is directed to shells of larger size.

According to H. L. JAMESON (Proc. Zool. Soc. London, 1901, pag. 389) *A. flabellum* is probably a juvenile form of *A. radiata* Leach, the latter representing the West-Indian market-shell which reaches the same size as the well-known Ceylon and Banda pearl-oysters.

I am not sure if Dr. JAMESON is right in uniting so many different descriptions under the only species *radiata*. His opinion ".... that they were mostly based upon characters of a nature quite valueless for systematic purposes" is perhaps to severe, because the typically specific features of *Lamellibranchia* are generally less striking and less distinct than those in other groups of mollusks.

Ostrea frons Chemnitz.

Ostrea frons Chemnitz, Conch. Cab. Vol. 7, 1785, pag. 61, pl. 75, 686.
Ostrea frons Küster in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 7, Lief. 1, 1868, pag. 82—83, pl. 11, fig. 4.
Ostrea frons Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 464.

Spanish Water, 3. IV. 1920, 3 spec.
Caracasbay, on Gorgonids, 7. IV. 1920, some spec.

Ostrea virginica Gmelin.

Ostrea virginica Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3336, n^0 113.
Ostrea virginica Küster in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 7, Lief. 1, 1868, pag. 71, pl. 10, fig. 1 and 2.
Ostrea virginica Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 463.

Schottegat: bay of Asiento, 9. IV. 1905, 9 spec.; on mangrove, 13. IV. 1905, 21 spec.; bay of Asiento, 21. IV. 1905, 7 spec. only soft parts; bay of the Hoop, 1. XI. 1905, 10 spec.; bay of Groot Daflaar, 2. XI. 1905, 12 spec. only soft parts.
Spanish Water: on mangrove roots, IV. 1920, 9 spec.; above sea-level, 3. IV. 1920, numerous spec.; on a stone, 17. IV. 1920, some spec.; 25. V. 1920, numerous spec.

In the already mentioned Report of Dr. J. BOEKE edited in charge of the Colonial Department of the Dutch Government an interesting chapter is devoted to the present state of the West-Indian edible oyster and its culture (l. c. pag. 134—144). The local race is small, fragile and represents a modification of the polymorphous *O. virginica* (called *virginiana* by Dr. BOEKE). This protean species occurs along a considerable part of the atlantic coast of North and South America in so many different variations of shape, size and quality that conchologists managed to establish at least half a dozen specific names (viz. *rhizophorae* Guild., *parasitica* Gmel., *rostrata* Chenu, *puelchana* d'Orb., *arborea* Dillw., *brasiliana* Lam.) for what are in fact but local varieties called into being by various conditions of life. It is probable that the form attached to stilt- and aerial roots of *Rhizophora* along the shallow bays and lagoons of our Antillean colonies i. c. of Curaçao, is the result of two principal creating factors: particularly high density of the water and lack of suitable room because the crowds of young shells oppress each other during their development. It may be interesting to remember here a remark

of R. T. JACKSON (Mem. Boston Soc. Nat. Hist., Vol. 4, n^0. 8, 1890, pag. 321) that *O. virginica* is always attached to objects by means of its left valve whatever the position of the substratum may be.

Three excellent photographs of — as Dr. BOEKE calls them — *O. virginiana* var. *parasitica* on mangroves are reproduced in Dr. BOEKE's report on plates 5, 6 and 7.

Pecten ziczac (Linné).

Ostrea ziczac Linné, Syst. Nat. Ed. X, 1758, pag. 696.
Pecten ziczac Küster in Mart.-Chem. N. Syst. Conch. Cab. Vol. 7, Abt. 2, 1888, pag. 47—48, pl. XIII, fig. 1—3.
Pecten ziczac Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 464.

Spanish Water, 26. IV. 1920, 2 spec.

Chlamys antillarum (Récluz).

Pecten antillarum Récluz, Journ. de Conch. Vol. 4, 1853, pag. 153—154, pl. V, fig. 1.
Pecten antillarum Küster in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 7, Abt. 2, 1888, pag. 143, pl. 40, fig. 4.

Spanish Water: in *Porites furcata*, 14. IV. 1920, 17 spec. and 1 single valve; in sponge, 19. IV. 1920, 1 spec.

Chlamys ornatus (Lamarck).

Pecten ornatus Lamarck, Anim. s. Vert. Vol. 6, 1819, pag. 176.
Pecten ornatus Kobelt in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 7, part 3, 1888, pag. 87—88, pl. 22, fig. 8—9.
Pecten ornatus Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 465—466.

Caracasbay, 1923, 3 single valves.

Spondylus ictericus Reeve.

Spondylus ictericus Reeve, Conch. Icon. Vol. 9, 1856, pl. 11, n^0 40.
Spondylus ictericus Fulton, Journ. of Conch. Vol. 14, 1915, pag. 336.

Caracasbay, 1921, 4 single valves.
Spanish Bay, 1923, 1 single valve.

The shells agree very well with the figure and the description of REEVE. Besides I profited a good deal of FULTON's Synopsis: A list of the recent species of *Spondylus* etc. in Journ. of Conch., Vol. 14, n^0. 11 and 12, 1915.

Plicatula gibbosa Lamarck.

Plicatula gibbosa Lamarck, Syst. Anim. s. Vert. 1801, pag. 132.
Plicatula gibbosa Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 467.

Caracasbay, 1921, 1 spec.

Lima scabra (Born).

Ostrea scabra Born, Test. Mus. Vindob. 1780, pag. 110.
Lima scabra Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 467.

Spanish Water, April—May 1920, numerous spec.
Caracasbay, 1921, 7 single valves.
Spanish Bay, 1923, 1 spec.

Lima hians (Gmelin).

Ostrea hians Gmelin, Syst. Nat. Ed. XIII, 1792, pag. 3332.
Lima hians Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 468.

Spanish Water: in *Porites furcata*, 14. IV. 1920, 1 spec.; 5. V. 1920, 7 spec.
Caracasbay, in sponge, 10. V. 1920, 9 spec.

This species is another interesting example of a mollusk equally common to both sides of the Atlantic.

Lima lima (Linné).

Ostrea lima Linné, Syst. Nat. Ed. X, 1758, pag. 699.
Lima lima Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 468.

Caracasbay: in coral, 2. IV. 1920, 5 spec.; 10. IV. 1920, 1 spec.; 1923, 2 single valves.

Placunanomia scabra (Lamarck).

Ostrea scabra Lamarck, Anim. s. Vert. Vol. 6, 1819, pag. 205.
Placunanomia scabra Lamy, Bull. Mus. Nat. Hist. 1924, pag. 151—152.

Spanish Water: on mangrove roots, 8. IV. 1920, 1 spec.; in *Porites furcata*, 14. IV. 1920, 1 spec.; 19. IV. 1920, numerous spec.; in *Siderastraea*, 29. IV. 1920, 3 spec.; 25. V. 1920, 1 spec.
Caracasbay: under stones at the shore, 3. V. 1920, 1 spec.; in coral, 5. V. 1920, 1 spec.; in sponge, 10. V. 1920, 1 spec.

The specimens are scaly, irregular, almost white, the inside often having a peculiar soft-green lustre. It frequents both types of localities in the island, the oceanic and the lagoon-shore. I am indebted for their identification to the French Lamellibranch specialist, Dr. E. LAMY of Paris.

Mytilus hamatus Say.

Mytilus hamatus Say, Journ. Acad. Nat. Sci. Philadelphia, Vol. 2, 1822, pag. 265.
Mytilus hamatus Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 469.

Spanish Water, 3. IV. 1920, 1 spec.

Mytilus exustus Linné.

Mytilus exustus Linné, Syst. Nat. Ed. X, 1758, pag. 705.
Mytilus exustus Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 469.

Spanish Water: in mangrove roots, 8. IV. 1920, 5 spec.; above low water mark on rocks, 14. IV. 1920, numerous spec.
Spanish Bay, 1923, 3 single valves.

From Dr. BOEKE's "Rapport betreffende een voorloopig onderzoek naar den toestand van de visscherij en de industrie van zeeproducten in de kolonie Curaçao" I quote (and translate) a short note on page 143 that "Besides mangrove-oysters in the inland waters different shellfishes occur (mussels, called paloelie by the natives)". As the two species of *Mytilus*, especially the latter, are very abundant, it is probable that the musselcolonies consist chiefly of this species. They seem to have no economic value. The mussels form a characteristic part of the fauna in the Spanish Water. The specimens from our second set which spend part of their life in the air possess very thick calcareous shells — a heavy house with only little room indoor — and look very much worn thus reminding us of analogous features of the common European *Mytilus edulis* when exposed to comparable conditions of life and environment.

Lithophaga nasuta (Philippi).

Modiola nasuta Philippi, Abbild. & Beschr. Vol. 2, 1846, pag. 149, pl. 1, fig. 2.
Lithophaga nasuta Dunker in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 3a, 1882, pag. 5, pl. 1, fig. 5 and 6, pl. 2, fig. 7 and 8.

Caracasbay, 19. IV. 1920, 5 spec.
Curaçao, 1923, 1 spec.

The shells are coated with a peculiar incrusting chalk-layer which is thin and rather smooth in the anterior part, but coarse, thick and of spongy appearance on the rest. It stretches even beyond the posterior margin forming a rostrum-like continuation of the shell containing no shell-substance. In our largest specimen of 37 mm. total length 4 mm. however are purely chalksubstance, the shell itself in fact being only 33 mm. long.

DUNKER doubted of REEVE's record of *L. nasuta* in the West-Indies (Conch. Icon., Vol. 10, 1885, spec. 19) but that objection has lost its power now.

Lithophaga antillarum (Philippi).

Modiola antillarum Philippi, Zeitschr. f. Malak. Vol. 4, 1847, pag. 116.
Lithophaga nigra Dunker in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 3a, 1882, pag. 12—13.

Curaçao, 3 spec.
Spanish Water in *Porites furcata*, 14. IV. 1920, 2 spec. and one single valve.

This species does not bear any trace of incrustation on their surface at all.

Lithophaga appendiculata (Philippi).

Modiola appendiculata Philippi, Abbild. & Beschr. Vol. 2, 1846, pag. 150, pl. 1, fig. 4.
Lithodomus bisulcatus d'Orbigny, Moll. Cubana, Vol. 2, 1853, pag. 133, pl. 28, fig. 14—16.
Lithophaga appendiculata Dunker in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 3a, 1882, pag. 15—16, pl. 5, fig. 14.

Spanish Water: in mangrove roots, 8. IV. 1920, 5 spec.; in *Porites furcata*, 14. IV. 1920, 5 spec.; 18. V. 1920, 3 spec.

Here again we have to do with a generally incrusted species. In a specimen of the second set being 30 mm. total length the shell itself reaches only 25 mm., whereas the additional 5 mm. are composed of chalksubstance projecting beyond the posterior margin.

Lithophaga corrugata (Philippi).

Modiola corrugata Philippi, Abbild. & Beschr. Vol. 2, 1846, pag. 148, pl. 1, fig. 1.
Lithophaga corrugata Dunker in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 3a, 1882, pag. 17—18, fig. 13—14.

Spanish Water, in *Porites furcata*, 14. IV. 1920, 8 spec.
Caracasbay, 19. IV. 1920, 1 spec.

A very fine and easily recognisable species without incrusting chalklayer.

Modiolaria lateralis (Say).

Mytilus lateralis Say, Journ. Acad. Nat. Sci. Philadelphia, Vol. 12, pag. 264.
Modiolaria lateralis Dall, Bull. Mus. Comp. Zool. Vol. 12, 1886, pag. 236, pl. 6, fig. 7 and 8.
Modiolaria lateralis Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 471.

Spanish Water, 25. V. 1920, 1 spec.

Modiolaria marmorata (Forbes).

Mytilus marmoratus Forbes, Malac. Mon. 1838, pag. 44.
Modiolaria marmorata Jeffreys, Brit. Conch. Vol. II, 1863, pag. 122—124, pl. 28, fig. 1.

Spanish Water, 25. V. 1920, 6 spec.

DAUTZENBERG was the first who recorded this little European shell from the West-Indian basin (Mém. Soc. Zool. France, Vol. 13, 1900, pag. 233).

Gastrochaena cucullata Deshayes.

Gastrochaena cucullata Deshayes, Proc. Zool. Soc. London 1856, pag. 329.
Gastrochaena cucullata Tryon, Proc. Acad. Nat. Sci. Philadelphia 1861 (1862), pag. 482.
Gastrochaena cucullata Sowerby, Conch. Icon. Vol. 20, 1878, pl. 2, fig. 9.
Gastrochaena cucullata Clessin in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 11, Abt. 4a, 1895, pag. 10, pl. 3, fig. 7 and 8.

Spanish Water: in *Porites* and *Siderastraea*, IV. 1920, 6 spec. and one single valve; 26. IV. 1920, 1 spec.

Another little *Gastrochaena* collected April 26th 1920 has some affinities towards *G. difficilis*, but it is too young to risk an identification.

Teredo fulleri Clapp.

Teredo (Zopoteredo) fulleri Clapp, Trans. Acad. Sci. St. Louis, Vol. 25.
Teredo (Zopoteredo) fulleri Clapp, Nat. Res. Council Rep. 1924, pag. 46, pl. 13, fig. 79—85.

Spanish Water, 12. IV. 1920, 1 spec. with pallets and some separate pallets.

This species "easily recognised by the distinct groove on the outer face of the pallets" (letter Dr. R. C. MILLER) was found burrowing in mangrove roots. It is the first record at Curaçao. Besides it is known from Port au Prince, Haiti and Christiansted, St. Croix, Virgin Islands. Its scarce actual distribution and its small size will render the species economically unimportant.

Teredo reynei Bartsch.

Teredo (Neoteredo) reynei Bartsch, Proc. Biol. Soc. Washington, Vol. 33, 1920, pag. 69 - 70.
Teredo (Neoteredo) reynei Bartsch, Bull. 122 Smiths. Instit. 1922, pag. 30—31, pl. 23, pl. 33, fig. 3.

Spanish Water, 12. IV. 1920, some spec. and some single valves.
Spanish Harbour, 17. IV. 1920, some single valves.

The identification of the three species of *Teredo* discussed in this report I owe to the kindness of Dr. R. C. MILLER of Seattle U. S. A.

The specimens of *T. reynei* from Curaçao were prepared out of some mangrove roots which were altogether perforated with burrowings. They are small, the largest shell being 6 mm. diam. in the dorso-ventral as well as in the antero-posterior direction, thus remaining far below the dimensions given by BARTSCH in the above-quoted Bulletin.

The damage done by a species which pierces wooden structures by holes of a cm. and more in diam. can amount to enormous ravages. Such destructions in timber structures in Surinam (Dutch Guyana) and the Governments efforts to cure and prevent them were discussed and figured by Mr. J. W. GONGGRIJP (West-Indië, 1921, pag. 3—10 and De Indische Mercuur, 25, November 1921).

Until now there have not come complaints on deterioration by this *Teredo* from Curaçao, but its occurrence may be a warning for official and private people concerned to be on their guard.

Teredo bipartita Jeffreys.

Teredo bipartita Jeffreys, Ann. Mag. Nat. Hist. (3) Vol. 6, 1860, pag. 123.
Teredo (Lyrodus) bipartita Bartsch, Bull. 122 Smiths. Instit. 1922, pag. 25—26, pl. 21, fig. 1, pl. 33, fig. 4.

Spanish Water, 12. IV. 1920, 6 pallets.
Spanish Harbour, 17. IV. 1920, 3 pallets.

Dr. R. C. MILLER who also kindly examined this species wrote to me on the subject: "among the shells and pallets of *reynei* I have found several pallets which I consider to be those of *Teredo bipartita* Jeffreys. You will note that a good deal of variation occurs in the pallets which I have labeled *bipartita*, but I think they are all of one species, and some of the pallets compared agree closely with JEFFREYS' type which I examined in the U. S. National Museum a year or two ago. There are also probably some shells of this species among those I have labeled *reynei*; but I cannot with certainty separate the shells of *bipartita* from those of young *reynei*; I tried to find some safe criterion for doing so, but finally gave it up. Both variations and growth changes complicate the problem".

In the National Research Council Report 1924 "Marine Structures their deterioration and preservation" I find on page 36 the following information: "the species is not.... of much economic importance".

Corbula spec.

Spanish Water, 3. IV. 1920, 1 spec.

Our specimen approaches *C. cubaniana* d'Orb. as figured by DALL in Bull. Mus. Comp. Zool Vol. 12, 1886, pl. 1, fig. 3, 3*a*—3*c*.

Asaphis coccinea (Martyn).

Cardium coccinea Martyn, Univ. Conch. 1784, n°. 135, pl. 135.
Asaphis coccinea Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 476.

St. Jorisbay, IX. 1905, 2 spec.
Spanish Water, 17. IV. 1920, 2 spec.
Spanish Harbour, 6. V. 1920, 1 spec.
Caracasbay, 1921, 3 single valves.
Spanish Bay, 1921, 10 spec. and 7 single valves.

Among the natives the soft parts are estimated as an excellent food.

Tellina interrupta Wood.

Tellina interrupta Wood, Gen. Conch. 1815.
Tellina interrupta Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901), pag. 293.

Spanish Harbour, 16. IV. 1920, 1 spec.
Spanish Bay, 1921, 1 spec.

Tellina radiata Linné.

Tellina radiata Linné, Syst. Nat. Ed. X, 1758, pag. 675.
Tellina radiata Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901) pag. 293.

Curaçao, 8 spec.
Spanish Harbour, 6 spec. and 6 single valves.

Tellina fausta Donovan.

Tellina fausta Donovan, Nat. Hist. Brit. Shells, 1804, pag. 10, pl. 25, fig. 13, 14 and 180.
Tellina fausta Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901) pag. 294.

Caracasbay: 1 single valve; 8. V. 1920, 4 spec.; 1923, 1 spec. and 5 single valves.

Tellina sybaritica Dall.

Tellina sybaritica Dall, Bull. Mus. Comp. Zool. Vol. 9, 1881, pag. 134.
Tellina sybaritica Dall, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 480.
Tellina sybaritica Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901) pag. 295.

Small lagoon in mangrove vegetation near Caracasbay, 26. IV. 1920, 1 spec.

Tellina promera Dall.

Tellina promera Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901) pag. 312, pl. 2, fig. 11 and ibid. pag. 296.

Spanish Water, 26. IV. 1920, 1 spec.

Tellina similis Sowerby.

Tellina similis Sowerby, Brit. Misc. 1806, pag. 75.
Tellina similis Dall, Proc. U. S. Nat. Mus. Vol. 23, 1900 (1901) pag. 296—297.

Caracasbay, 1920, 1 spec.
Spanish Harbour, 16. IV. 1920, 7 spec.

Petricola lapicida (Gmelin).

Venus lapicida Gmelin, Syst. Nat. Ed. XIII, 1792, Vol. 6, pag. 3269.
Petricola lapicida Sowerby in Reeve, Conch. Icon. Vol. 19, 1874, pl. 3, fig. 24.

Spanish Water, 19. IV. 1920, 1 spec.

Venus listeri (Gray).

Dosinia listeri Gray, The Analyst, VIII, n^{0}. 24, 1838.
Cytherea listeri Dall, Proc. U. S. Nat. Mus. Vol. 26, 1902 (1903) pag. 372.

Caracasbay, 1923, 1 single valve.
Spanish Bay, 1923, 1 single valve.

Venus rigida Dillwyn.

Venus rigida Dillwyn, Descr. Catal. Rec. Shells, 1817.
Cytherea rigida Dall, Proc. U. S. Nat. Mus. Vol. 26, 1902 (1903) pag. 372.

Westpunt, 1922, 1 single valve.
Spanish Bay, 1923, 1 single valve.
Caracasbay, 1923, 1 single valve.

Cardium muricatum Linné.

Cardium muricatum Linné, Syst. Nat. Ed. X, 1758, pag. 680.
Cardium muricatum Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, 1900, pag. 487—488.
Cardium muricatum Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 385—386.

Spanish Water, 4. V. 1920, 1 spec.
Caracasbay, 1921, 1 spec. and 1 single valve.

Cardium subelongatum Sowerby.

Cardium subelongatum Sowerby, Proc. Zool. Soc. London 1840, pag. 108.
Cardium subelongatum Dall, Proc. U. S. Nat. Mus, Vol. 23, 1901, pag. 386.

Westpunt, 1921, 1 singe valve.
Spanish Bay, 1923, 1 single valve.

Cardium medium Linné.

Cardium medium Linné, Syst. Nat. Ed. X, 1758, pag. 678.
Cardium medium Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 488.
Cardium medium Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 386.

Caracasbay, 1923, 1 single valve.

Cardium serratum Linné.

Cardium serratum Linné, Syst. Nat. Ed. X, 1758, pag. 680.
Cardium serratum Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 489.
Cardium serratum Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 387.

Curaçao, 3 spec.
Spanish Harbour, 10. IV. 1920, 3 spec.
Spanish Water, 20. V. 1920, 1 spec.
Caracasbay, 1921, 1 spec.

Codakia orbicularis (Linné).

Venus orbicularis Linné, Syst. Nat. Ed. X, 1758, pag. 688.
Codakia orbicularis Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 491.
Codakia orbicularis Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 799.

Spanish Harbour, 17. IV. 1920, 25 spec.
Caracasbay, 1923, 4 spec. and 5 single valves.

A Catalogue and Synonymy of the recent species of the family *Lucinidae* was published by TRYON in Proc. Acad. Nat. Sci. Philadelphia, 1872, page 82—96.

Codakia orbiculata (Montagu).

Venus orbiculata Montagu, Test. Brit. Suppl. 1808, pag. 42.
Codakia orbiculata Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 491.
Codakia orbiculata Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 799.

Spanish Harbour, 10. IV. 1920, 1 spec.
Spanish Water, 25. V. 1920, 1 spec.
Caracasbay, 1923, 4 single valves.

If we accept the references to literature proposed by DALL for this little species (Synopsis of the *Lucinacea* and of the American species, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 799), it is evident that the author was not correct when he introduced *Lucina pecten* Lam. (REEVE, Conch. Icon. Vol. 6, pl. 10, fig. 38, 1850) into the synonymy of our species. Probably it is a mistake for *Lucina pecten* Lam. (REEVE, Conch. Icon. Vol. 6, pl. 7, fig. 34 and 35 *a* and *b*) which was afterwards in a note at fig. 38 rebaptized by REEVE to *L. occidentalis*.

Phacoides pensylvanicus (Linné).

Venus pensylvanicus Linné, Syst. Nat. Ed. X, 1758, pag. 688.
Phacoides pensylvanicus Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 493.
Phacoides pensylvanicus Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 807.

Spanish Water, 29. IV. 1920, 2 spec.
Caracasbay, 1921, 1 single valve.
Spanish Bay, 1923, 1 single valve.

Divaricella quadrisulcata (d'Orbigny).

Lucina quadrisulcata d'Orbigny, Voy. Amér. Mér. Vol. 5, part 3, 1846, pag. 584.
Divaricella quadrisulcata Dall & Simpson, Bull. U. S. Fish Comm. Vol. 20, part 1, 1900, pag. 494.
Divaricella quadrisulcata Dall, Proc. U. S. Nat. Mus. Vol. 23, 1901, pag. 815.

Caracasbay, 1920, 1 spec. and 1 single valve.
Spanish Harbour: 17. IV. 1920, 6 spec. and 1 single valve; 6. V. 1920, 1 spec.

Chama unicornis Bruguière.

Chama unicornis Bruguière, Dict.
Chama unicornis Clessin in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 5, 1889, pag. 15—16, pl. 2, fig. 3 and 4.

Curaçao, 1 spec.

In 1872 TRYON published a Catalogue of the *Chamidae* in Proc. Acad. Nat. Sci. Philadelphia, pag. 116—120.

Chama macrophylla Chemnitz.

Chama macrophylla Chemnitz, Conch. Cab. Vol. 7, 1786, pag. 149, pl. 52, fig. 514 and 515.
Chama macrophylla Clessin in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 5, 1889, pag. 17—18, pl. 2, fig. 1 and 2.

Spanish Water: IV. 1920, 3 spec.; on mangrove roots, 8. IV. 1920, 3 spec.; between *Siderastraea*, 8. IV. 1920, 5 spec.; 29. IV. 1920, 2 spec.
Curaçao, 1922, 3 single valves.
Caracasbay, 1923, 3 single valves.

Chama sinuosa var. *lamarckiana* (Clessin).

Chama lamarckiana Clessin in Mart.-Chemn. N. Syst. Conch. Cab. Vol. 8, Abt. 5, 1889, pag. 42, pl. 5, fig. 1 and 2.
? *Chama bermudensis* Heilprin, Proc. Acad. Nat. Sci. Philadelphia, 1889, pag. 141, pl. 8, fig. 1.

Caracasbay, 20. IV. 1920, 7 spec.

Identification of this species greatly puzzled me for a long time. The collections for comparison altogether failing, the monographs of the genus (REEVE, Conchologia Iconica, Vol. 4, CLESSIN in MARTINI & CHEMNITZ, Neues systematisches Conchylien Cabinet, Vol. 8, Abt. 5) being oldfashioned and giving repeatedly but insufficient characters, it was only with considerable hesitation that I risked to attribute

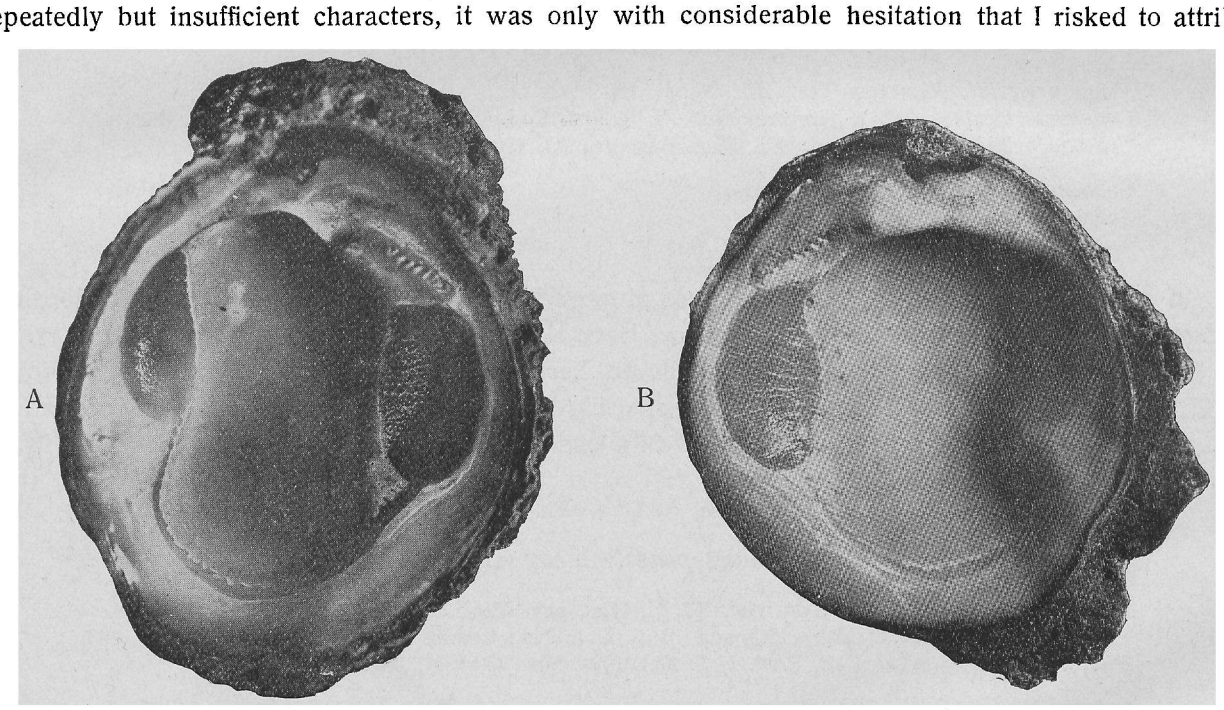

Fig. 5. *Chama sinuosa* var. *lamarckiana* (Clessin); A left valve, B right valve, both slightly enlarged.

the species to *Chama lamarckiana* Cless., at the same time being aware of its relation to the Brazilian species *Chama sinuosa* Broderip.

Indeed, in spite of its heavier structure and of the absence of the elegant foliaceous exterior lamellae which have been substituted by irregular deposits of incrusting coralline algae and sponges, the shell bears the characteristic features of *Ch. sinuosa*, viz. the posterior furrow on the free right valve radiating backward from the top and the particular rather deep fold between the muscular impressions by which the inside of every valve is excavated. (Fig. 5, *a* en *b*.)

Therefore I was glad to find an agreeing result in N. H. ODHNER's paper on Studies on recent *Chamidae* (Kgl. Svensk Vet. Akad. Handl. 1919, Vol. 59, n°. 3, pag. 77) whose experience runs: "I give as my opinion that, in all probability, the form which CLESSIN (1889) has named *Ch. lamarckiana* and which may be identical with *Ch. bermudensis* Heilprin (1890) is nothing but a form of increase of *Ch. sinuosa* ..... it shows a close agreement with large specimens of *Ch. sinuosa* except for the fact that it is extremely solid. Because of its solidity as well as of the incrustation of algae and other lime-depositing organisms, no exact idea of the original sculpture is obtainable, but a tendency to the formation of lobes in the margin is traceable and there exists a faint trace of the posterior radiating furrow that is characteristic for the species in question. Interiorly *Ch. lamarckiana* agrees with this species in having similar course of the mantle line relative to the adductor scars, as well as a similar colour (greenish white), lustre and smoothness".

In the right valve the dental sulcus is bordered towards the base by a prominent plate which is coarsely ribbed by 5—7 oblique ribs. The furrow of the attached valve into which this plate fits, shows signs of corresponding ribs ranged alternatively with those of the plate.

The muscular scars and the pallial line are of a peculiar olive-green colour most likely to be compared with candied peal.

The dimensions of the attached valves of our seven specimens are in mm.:

Height (from ligamental furrow to base) . . .	61	60	60	58	58	55	53
Antero-posterior axis	55	56	50	56	54	51	46

Dr. ODHNER kindly informed me that the Stockholm specimen measures from the uppermost point of the ligamentfurrow to the base 57 mm., whereas the antero-posterior axis is 53 mm. thus coming close to our specimens.

The top of the beak cannot be traced with certainty between the compact masses of coralline algae and lime-substance. *Chama bermudensis* is probably our species, but HEILPRIN's description is too incomplete to venture a definite opinion.

Coralliophaga coralliophaga (Chemnitz).

Chama coralliophaga Chemnitz, Conch. Cab. Vol. 10, 1788, pag. 359, pl. 172, fig. 1673 and 1674.
Cypricardia coralliophaga Reeve, Conch. Icon. Vol. I, 1843, pl. 2, fig. 12.

Spanish Water, in *Porites furcata*, 14. IV. 1920, 2 spec.

This species seems to have a circumtropical distribution; H. LYNGE mentions several localities in the Indian, Pacific and Atlantic tropical zone (Marine Lamellibranchs, Dan. Exped. to Siam 1899—1900, Kgl. Dansk Vid. Selsk. Skr. (7) Vol. 5, 1909, pag. 167).

The same author includes in the synonymy of this species *Coralliophaga dactylus* (Bruguière).

ZOOGEOGRAPHICAL REMARKS.

A careful review of the present distribution of every West-Indian mollusk in particular would be a very attractive problem, but requires lots of time and experience for the study of systematic and faunistic literature and supposes as a matter of fact the presence of an extensive collection for comparison.

These conditions actually being only partly fulfilled in this case, I restrained the survey to a simple analysis of the material discussed in the systematic part of the paper.

I am quite aware how dangerous it is to make general conclusions in consequence of a limited collection from a limited region, but nevertheless I venture to give some general remarks as I consider the material fairly representative for the area in question, whereas at the same time the following lists will show that the distribution of the littoral marine mollucs of Curaçao incontestably has a peculiar character. In how far its features agree with those concerning the whole district I cannot tell, but at any rate the differences will not be very great.

	NAME OF SPECIES	I CIRCUM-TROPIC	II W. INDIES LIMITED	III E. AMERICA from AEQUATOR to CAPE HATTERAS	IV S. BRAZIL	V MEDITERR. W. AFRICA
1	*Conus mus* Hwass				—	
2	*Conus nebulosus* Solander			—		
3	*Conus testudinarius* Martini					—
4	*Conus granulatus* Linné		—			
5	*Daphnella lymneiformis* (Kiener)	—				
6	*Olivella jaspidea* (Gmelin)				—	
7	*Oliva fusiformis* Lamarck		—			
8	*Oliva reticularis* Lamarck		—			
9	*Ancillaria glabrata* Linné		—			
10	*Marginella margarita* Kiener		—			
11	*Marginella interruptelineata* (Mühlf.)					—
12	*Marginella maculosa* Kiener		—			
13	*Marginella catenata* (Montagu)		—			
14	*Marginella chrysomelina* Redfield		—			
15	*Marginella avena* Valenciennes					—
16	*Marginella obscura* Reeve		—			
17	*Voluta musica* Linné					—
18	*Vasum capitellum* Linné	—				
19	*Mitra barbadensis* (Gmelin)		—			
20	*Mitra granulosa* Lamarck		—			
21	*Turricula dermestina* (Lamarck)	—				
22	*Latirus eppi* Melvill		—			
23	*Latirus brevicaudatus* (Reeve)		—			
24	*Leucozonia cingulifera* (Lamarck)				—	—
25	*Leucozonia ocellata* (Gmelin)				—	
26	*Melongena melongena* (Linné)		—			
27	*Pisania pusio* (Linné)				—	—
28	*Nassa ambigua* (Montagu)			—	—	—
29	*Columbella mercatoria* (Linné)				—	
30	*Columbella nitida* Lamarck				—	
31	*Columbella cribraria* Lamarck			—		—
32	*Columbella pulchella* (Blainville)		—			
33	*Columbella catenata* Sowerby			—	—	
34	*Columbella dormitor* Sowerby		—			
35	*Murex brevifrons* Lamarck	—				
36	*Murex chrysostoma* Gray		—			
37	*Murex nuceus* Mörch			—		
38	*Purpura patula* (Linné)	—				
39	*Purpura deltoidea* Lamarck				—	
40	*Purpura haem. haemastoma* (Linné)			—	—	—
41	*Purpura h. undata* (Lamarck)	—				
42	*Purpura h. floridana* (Conrad)			—	—	—
43	*Sistrum nodulosum* (C. B. Adams)				—	
44	*Coralliophila abbreviata* (Lamarck)			—	—	
45	*Scalaria eburnea* Pot. & Mich.		—			
46	*Scalaria lamellosa* Lamarck					—
47	*Janthina globosa* Swainson					—
48	*Pyramidella dolabrata* var. *subdolabrata* (Mörch)		—			
49	*Septa tritonis* var. *nobilis* (Conrad)				—	—
50	*Cymatium pilearis* (Linné)	—				
51	*Cymatium chlorostomum* (Lam.)	—				
52	*Bursa affinis* (Broderip)	—				
53	*Cassis flammea* (Linné)		—			
54	*Cassis testiculus* (Linné)					—
55	*Oniscia oniscus* var. *lamarcki* (Desh.)		—			
56	*Dolium perdix* (Linné)	—				
57	*Ovula gibbosa* (Linné)			—		
58	*Ovula acicularis* (Lamarck)			—		
59	*Cypraea exanthema* Linné			—	—	
60	*Cypraea cinerea* Gmelin				—	
61	*Cypraea spurca* Linné				—	—

	NAME OF SPECIES	I CIRCUM-TROPIC	II W. INDIES LIMITED	III E. AMERICA from AEQUATOR to CAPE HATTERAS	IV S. BRAZIL	V MEDITERR. W. AFRICA
62	*Trivia nivea* Gray		—			
63	*Trivia pediculus* (Linné)				—	—
64	*Strombus gigas* Linné		—			
65	*Strombus gallus* Linné				—	
66	*Triforis decoratus* C. B. Adams		—			
67	*Triforis turris-thomae* (Chemnitz)			—		
68	*Cerithium litteratum* (Born)				—	
69	*Cerithium eburneum* Bruguière		—			
70	*Cerithium ferrugineum* Say			—		
71	*Cerithium rissoidae* Sowerby		—			
72	*Cerithidea turrita* Stearns		—			
73	*Batillaria minima* (Gmelin)			—		
74	*Modulus modulus* (Linné)				—	
75	*Planaxis nucleus* (Lamarck)		—			
76	*Planaxis lineatus* (da Costa)	—				
77	*Vermetus varians* (d'Orbigny)				—	
78	*Vermetus decussatus* (Gmelin)		—			
79	*Littorina angulifera* (Lamarck)	—				
80	*Littorina ziczac* (Chemnitz)				—	
81	*Littorina minima* (Gray)		—			
82	*Tectarius muricatus* (Linné)		—			
83	*Tectarius nodulosus* (Gmelin)	—				
84	*Torinia cyclostoma* (Menke)		—			
85	*Torinia bisulcata* (d'Orbigny)				—	—
86	*Rissoina dubiosa* C. B. Adams		—			
87	*Rissoina browniana* d'Orbigny		—			
88	*Mitrularia equestris* (Linné)	—				
89	*Crepidula aculeata* (Gmelin)	—				
90	*Amalthea subrufa* Lamarck	—				
91	*Amalthea antiquata* (Linné)	—				
92	*Natica canrena* (Linné)				—	
93	*Natica lactea* (Guilding)				—	—
94	*Acmaea punctulata* (Gmelin)			—		
95	*Acmaea leucopleura* (Gmelin)		—			
96	*Chlorostoma maculostriatum* (C. B. Adams)		—			
97	*Chlorostoma fasciatum* (Born)		—			
98	*Chlorostoma excavatum* (Lamarck)		—			
99	*Livona pica* (Linné)		—			
100	*Liotia radiata* (Kiener)		—			
101	*Liotia tamsiana* (Dunker)		—			
102	*Astralium imbricatum* (Gmelin)				—	
103	*Astralium undosum* (Wood)		—			
104	*Nerita tessellata* Gmelin		—			
105	*Nerita peloronta* Linné		—			
106	*Nerita versicolor* Gmelin		—			
107	*Neritina virginea* Linné				—	
108	*Neritina pupa* Linné		—			
109	*Fissurella nodosa* (Born)		—			
110	*Fissurella barbadensis* (Gmelin)				—	
111	*Fissurella fascicularis* Lamarck		—			
112	*Lucapina adspersa* (Philippi)				—	
113	*Lucapina cancellata* (Sowerby)		—			
114	*Glyphis listeri* (d'Orbigny)				—	
115	*Glyphis alternata* (Say)			—	—	
116	*Glyphis minuta* (Lamarck)		—			
117	*Glyphis variegata* (Sowerby)		—			
118	*Glyphis viridula* (Lamarck)		—			
119	*Subemarginula octoradiata* (Gmelin)				—	
120	*Subemarginula rollandii* (Fischer)		—			
121	*Subemarginula emarginata* (Blainville)		—			
122	*Pectunculus decussatus* Linné		—			

	NAME OF SPECIES	I CIRCUM-TROPIC	II W. INDIES LIMITED	III E. AMERICA from AEQUATOR to CAPE HATTERAS	IV S. BRAZIL	V MEDITERR. W. AFRICA
123	*Arca zebra* (Swainson)		—			
124	*Arca imbricata* Bruguière				—	
125	*Arca cancellaria* Lamarck		—			
126	*Arca nivea* Chemnitz	—				
127	*Arca plicata* Chemnitz	—				
128	*Arca adamsi* Shuttleworth				—	
129	*Arca deshayesi* Hanley				—	
130	*Pinna carnea* Gmelin			—		
131	*Pinna rigida* Dillwyn			—	—	
132	*Perna alata* (Gmelin)		—			
133	*Perna listeri* Hanley		—			
134	*Avicula flabellum* Reeve		—			
135	*Ostrea frons* Chemnitz		—			
136	*Ostrea virginica* Gmelin				—	—
137	*Pecten ziczac* (Linné)				—	
138	*Chlamys antillarum* (Recluz)		—			
139	*Chlamys ornatus* (Lamarck)			—	—	
140	*Spondylus ictericus* Reeve		—			
141	*Plicatula gibbosa* Lamarck		—			
142	*Lima scabra* (Born)		—			
143	*Lima hians* (Gmelin)					—
144	*Lima lima* (Linné)		—			
145	*Placunanomia scabra* (Lamarck)		—			
146	*Mytilus hamatus* Say		—			
147	*Mytilus exustus* Linné				—	
148	*Lithophaga nasuta* (Philippi)		—			
149	*Lithophaga antillarum* (Philippi)				—	
150	*Lithophaga appendiculata* (Philippi)		—			
151	*Lithophaga corrugata* (Philippi)		—			
152	*Modiolaria lateralis* (Say)		—			
153	*Modiolaria marmorata* (Forbes)					—
154	*Gastrochaena cucullata* Deshayes		—			
155	*Asaphis coccinea* (Martyn)		—			
156	*Tellina interrupta* Wood		—			
157	*Tellina radiata* Linné		—			
158	*Tellina fausta* Donovan		—			
159	*Tellina sybaritica* Dall			—		
160	*Tellina promera* Dall			—		
161	*Tellina similis* Sowerby		—			
162	*Petricola lapicida* (Gmelin)		—			
163	*Venus listeri* (Gray)		—			
164	*Venus rigida* Dillwyn		—			
165	*Cardium muricatum* Linné				—	
166	*Cardium subelongatum* Sowerby		—			
167	*Cardium medium* Linné		—			
168	*Cardium serratum* Linné		—			
169	*Codakia orbicularis* (Linné)				—	
170	*Codakia orbiculata* (Montagu)		—			
171	*Phacoides pensylvanicus* (Linné)		—			
172	*Divaricella quadrisulcata* (d'Orbigny)			—	—	
173	*Chama unicornis* Brugière		—			
174	*Chama macrophylla* Chemnitz		—			
175	*Chama sinuosa* var. *lamarckiana* (Clessin)				—	
176	*Coralliophaga coralliophaga* (Chemnitz)	—				
177	*Teredo reynei* Bartsch		—			
178	*Teredo bipartita* Jeffreys			—		
179	*Teredo fulleri* Clapp		—			

The elements composing the littoral molluscan fauna of the Caribbean basin are of different zoogeographical interest. They show clearly how their distribution is bound to different conditions of origin and environment.

First of all we remark a number of circumtropic species, occuring in practically all tropical seas, viz. the first group.

Their distribution must be previous to the actual constellation of land and sea, so we may regard them as one of the oldest components of the fauna, whereas at the same time their mode of dispersion and adaptation must be very favourable.

Other species on the contrary are definitely limited to this special area, viz. the second group.

They are quite the opposite of the preceding series and may be either, geologically spoken, young species which have not had the time nor the opportunity to spread, or which are extremely sensible animals unable to support the slightest change in their environment. These endemic species form about 50 °/₀ of the present fauna.

In this connexion I may draw the attention to the apparent lack of any Curaçao-mollusc and of nearly every mollusc of the whole Caribbean area on the Pacific side of America, if it is not at the same time circumtropical, thus belonging to the former category and consequently betraying its old age, viz. *Amalthea, Crepidula* and *Mitrularia.*

The other three groups contain animals which spread from and beyond the West-Indies in different directions.

Some of them (series III) have found their way north along the arch of Antilles, Florida and the east coast of North-America to Cape Hatteras. Their distribution runs parallel with the course of the Gulfstream which enables these species to spread so far beyond the tropic of Cancer. In the material discussed here 11 species can be traced which do not reach other seas but the West-Indies and the Northern West coast of the Atlantic (viz. the nos. 2, 37, 57, 58, 67, 70, 73, 94, 130, 159, 160, 179).

A good many Antillean species are reported from the coast of Southern Brazil (series IV) several of which are bound to these two districts, viz. the nos. 1, 6, 25, 29, 30, 39, 43, 60, 65, 68, 74, 77, 80, 92, 102, 107, 110, 112, 114, 119, 124, 128, 137, 147, 149, 165, 169, 175).

It is easily to be understood that a lot of malacologists and zoogeographers are interested in a comparison of the molluscan fauna of these two regions. I will simply quote some lines from one of W. H. DALL's papers to introduce the problem in all its complexness (The Nautilus, Vol. 10, 1897, pag. 122): "the present distribution of the coastfauna antedates the present volume of the Amazonian discharge, since it would seem incredible that so many thoroughly littoral species should be able to cross the present area of some hundred miles of fresh water in either direction."

Finally we meet a much smaller number of West-Indian molluscs at the eastern side of the North Atlantic: West-Africa and the Mediterranean Sea (viz. series V). Only a couple of them, amounting to 8 species of the shells reported here, are common to both regions without occurring elsewhere (3, 11, 15, 17, 46, 54, 143, 153).

Especially this subdivision of the fauna of the West-Indies gave rise to various papers with more or less ingeneous explanations of the phenomenon.

There is an opinion which does not admit other possibilities than the distribution either by means of free swimming larvae moving by oceanic currents or by the intervenience of ships crossing the Atlantic.

Other authors though not denying the great influence of these factors cannot conceal a certain doubt if really this would prove to be a sufficient argument. Indeed it seems rather bold to let the course of insecure currents alone account for the transport of organisms across the thousands of miles which separate at present the two continents.

Thus other zoogeographers trying to secure a more solid ground along which animals could find their way to the opposite coast, suggested the former existence of a transatlantic bridge, viz. an uninterrupted continent or a row of islands separated by narrow channels.

Notwithstanding the numerous objections and contradictions from nearly every special division of science and geography this hypothesis kept firm till in modern times and even in our days the Atlantis-theory is still a favoured topic in zoogeographical literature.

New horizons however opened in recent years when WEGENER's hypothesis on the displacement of continents began to penetrate into the minds of zoologists.

Though at the present moment by far not every detail of his argumentation is clear and

incontestable, we cannot help thinking that perhaps in this direction further investigations may hope to come to a satisfying result.

The previous vicinity of the two continents granted, there may have existed a period during which interchange of species from West-Africa to East-America and vice versa took place without difficulty, a process which became more and more impossible in proportion to the enlargement of the distance until finally in our days it belongs practically to the past.

Of the three groups III, IV and V the last is of course the oldest. This may explain the small number of West-Indian shells left at the African-Mediterranean coast.

The rather small amount of species stretching northward compared to the much larger number going south may be due to the less favourable conditions to which the animals are exposed. This group (series III) may be the youngest of all considered.

If we compare the numbers of species common to combined localities

common to	common to	common to	common to
III + IV	IV + V	III + V	III + IV + V
7 species	9 species	1 species	3 species

it is clear how it is almost improbable that animals reached the Eastern Atlantic via North-America, whereas on the contrary the connexion via a path directed southward and thence eastward will come up to the truth much better.