

PRELIMINARY REPORT ON THE MOLLUSCAN SPECIES COLLECTED
BY THE UNITED STATES SCIENTIFIC EXPEDITION TO WEST
AFRICA, IN 1889-'90.

BY

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By an act of Congress provision was made to defray the expense of sending a scientific expedition to the west coast of Africa for the purpose of observing the total eclipse of the sun, occurring on December 22, 1889. In accordance with the recommendations of a board appointed by the Chief of the Bureau of Navigation to devise plans, etc., the details of the expedition were arranged. Through the courtesy of Prof. David P. Todd, of Amherst College, Massachusetts, in charge of the expedition, arrangements were made whereby Mr. W. Harvey Brown and Mr. Arthur H. Brown, of the U. S. National Museum, were appointed acting and assistant naturalists, to accompany the expedition in the interest of the Museum, for the purpose of making collections of natural history objects, especially fishes and mammals.

The expedition sailed from New York on October 16, 1889, on the United States steamer *Pensacola*.

I am indebted to Prof. Todd for the following data as to the points touched at by the expedition, and the dates of arrival and departure:

Localities.	Arrived.	Departed.
Horta, Fayal, Azores.....	Nov. 2, 1889	Nov. 3, 1889
Porto Grande, St. Vincent, Cape Verde.....	Nov. 10, 1889	Nov. 12, 1889
Free Town, Sierra Leone.....	Nov. 18, 1889	Nov. 20, 1889
Elmina Gold Coast.....	Nov. 26, 1889	Nov. 28, 1889
St. Paul de Loando, Angola.....	Dec. 6, 1889	Jan. 6, 1890

Here the naturalists were in the interior for nearly a month. After leaving the latter place on the 6th of January, the next point reached was Cape Town, and the arrivals and departures were as follows:

Localities.	Arrived.	Departed.
Cape Town, South Africa.....	Jan. 17, 1890	Feb. 6, 1890
St. Helena, South Atlantic.....	Feb. 20, 1890	Mar. 10, 1890
Ascension, South Atlantic.....	Mar. 16, 1890	Apr. 8, 1890
Bridgetown, Barbados.....	Apr. 28, 1890	May 10, 1890
Bermuda.....	May 18, 1890	May 19, 1890

At the latter place the naturalists did not land, owing to quarantine restrictions. The expedition arrived home at New York on the 23d of May, 1890.

As far as Cape Town the collections were made conjointly by the acting and assistant naturalists; at Cape Town Mr. Arthur H. Brown was detached from the expedition to go into the interior.

Class PELECYPODA.

Order PRIONODESMACEA.

Suborder OSTRACEA.

Genus **OSTREA** Linné.

1. *Ostrea mordax* Gould.

One specimen. Ascension Island (Mus. No. 125410).
A single characteristic example.

2. *Ostrea frons* Linné.

Odd valves, beach. Porto Grande (Mus. No. 125318).

Also occurs at various places in east and west Florida, Florida Keys, West Indies, and Barbados.

Suborder PECTINACEA.

Family SPONDYLIDÆ.

Genus **SPONDYLUS** Linné.

3. *Spondylus gæderopus* Linné.

Three valves, beach. Porto Grande (Mus. No. 125583).

4. *Spondylus imbutus* Reeve.

One example, dredged. Ascension Island (Mus. No. 125411)

A small, fresh specimen of the above was obtained from a depth of 40 fathoms.

Family PECTINIDÆ.

Genus **PECTEN** Müller.

5. *Pecten miniaceus* Reeve.

Three odd valves. Fayal (Mus. No. 125284).

A very pretty species.

Suborder MYTILACEA.

Family AVICULIDÆ.

Genus **PERNA** Bruguiere.

6. *Perna perna* Linné.

? = *P. dentiferus*, var. Krauss.

Three specimens, valves. Ascension Island (Mus. No. 125403).

The *dentiferus* of Krauss is probably a variety of the Linnean species; it has a somewhat aviculoid shape.

7. Perna Chemnitziana Orbigny.

Several specimens, Porto Grande (Mus. No. 125355).

Variable in form, and perhaps connecting with the previous species.

Family MYTILIDÆ.

Genus **MYTILUS** Linné.

8. Mytilus edulis Linné.

One specimen, Cape Town; (Mus. No. 125379).

A solitary example of small size, only 18 millimeters in length, of this common and widely distributed form.

9. Mytilus magellanicus Chemnitz.

Several specimens. Cape Town (Mus. No. 125368).

The shells collected at this place by the expedition that I have labeled as above, upon comparison with examples of the same size from New Zealand and Kerguelen Island, prove to be identical. The larger individuals measure 39 to 40 millimeters, from that to 9 millimeters or less in length.

10. Mytilus atropurpureus Dunker.

Many fresh specimens. Fayal (Mus. No. 125300).

These fine living examples show a rich purple seminacreous iridescence on the interior surface of the valves, unusually brilliant for marine mussels.

11. Mytilus ovalis Lamarck.

Several examples. Porto Grande (Mus. No. 125330).

Genus **LITHOPHAGUS** Muhlfeldt.

12. Lithophagus aristatus Solander.

= *L. caudigera* Lamarek.

Two specimens. Porto Grande (Mus. No. 125,400).

Genus **DREISSENSIA** Van Beneden.

13. Dreissensia africana Van Ben.

Numerous examples, living. Ashantee (Mus. No. 125334).

Many specimens of the above, separate, and a large colony attached to a twig, numbering probably as many as a hundred individuals.

Family UNIONIDÆ.

Genus **UNIO** Retz.14. *Unio gaboonensis* Kuster.

A few examples. Cunga (Mus. No. 125417).

Specimens of this species were detected in a pond near this place.

Suborder **ARCACEA**.

Family ARCIDÆ.

Genus **ARCA** Lamarek.Section **ARCA** Lamarek.15. *Arca Noë* Linné.

One right valve, beach. Porto Grande (Mus. No. 125348).

This is a widely distributed form. I have collected it on the west coast of Florida; it is found on the Atlantic coast of North America as far north as Hatteras; it occurs in the Florida Keys, the West Indies, the Bermudas, Carthagena, and probably throughout the Antillean-Caribbean region, as well as in Europe.

16. *Arca tetragona* Poli.? = *A. navicularis* Brugniere.

Porto Grande (Mus. No. 125352); Ascension Island (125402).

A curious and variable form, offering extraordinary inducements to manufacturers of species. Two of the examples are from the latter locality.

Section **BARBATIA** Gray.17. *Arca lactea* Linné.? = *A. striata* Reeve.

One specimen (Mus. No. 125406); Ascension Island.

Reported also from the Polynesian Islands.

Section **ANADAREA** Gray.18. *Arca holoserica* Reeve.

One right valve, beach. Porto Grande (Mus. No. 125351).

This widely distributed form also occurs in the Australasian and Indo-Pacific seas.

Section **SCAPHARCA** Gray.19. *Arca rhombea* Born.

Three odd valves, beach. Porto Grande (Mus. No. 125340).

Section **SENILIA** Gray.20. *Arca senilis* Linné.

Many valves, beach; one live specimen. Porto Grande (Mus. Nos. 125329, 125366); Ashantee (Mus. No. 125335); Free Town (Mus. No. 125408).

Valves only from Porto Grande and Free Town. The only live example of this strongly characterized form is the Ashantee specimen. Externally it resembles a *Cardita* rather than an Ark-shell.

The Free Town (Sierra Leone) examples, valves only, are in a semi-fossilized state, the surface somewhat decomposed. The general facies is much modified and somewhat misleading through weathering; this action of the elements, however, has exposed the hinge area, which exhibits the development and final growth of the hinge teeth. The various stages may be seen between the upper line of the hinge and the under side of the beak or umbo, in close linear grooving. These caused me at first to think that such valves belonged to some other species.

Genus **PECTUNCULUS** Lamarck.

21. Pectunculus violescens Lamarck.

+ *P. stellatus* Lamarck.

Three odd valves, beach. Porto Grande (Mus. No. 125309).

Order TELEODESMACEA.

Suborder CARDITACEA.

Family CARDITIDÆ.

Genus **CARDITA** Bruguiere.

22. Cardita ajar Bruguiere.

One left valve, beach. Porto Grande (Mus. No. 125347).

Suborder LUCINACEA.

Family LUCINIDÆ.

Genus **LORIPES** Poli.

23. Loripes lacteus Linné.

Several odd valves. Porto Grande (Mus. No. 125301).

Family DIPLODONTIDÆ.

Genus **DIPLODONTA** Turton.

24. Diplodonta rotundata Montfort.

One right valve. Fayal (Mus. No. 135289).

This species occurs at many places on the shores of the Mediterranean to moderately deep water; its distribution extends northerly into British waters.

Suborder **CARDIACEA**.

Family **CARDIIDÆ**.

Genus **CARDIUM** Lamarck.

25. *Cardium ringens* Chemnitz.

Four odd valves, beach. Porto Grande (Mus. No. 125341); Ashantee (Mus. No. 125339).

Three perfect valves of as many individuals were found at the latter place. The Porto Grande specimen was a single right valve, beach.

Suborder **VENERACEA**.

Family **VENERIDÆ**.

Genus **VENUS** Linné.

26. *Venus striata* Gray.

One right valve, Ashantee (Mus. No. 125321).

27. *Venus rugosa* Deshayes.

One left valve, beach. Porto Grande (Mus. No. 125350).

Genus **CYTHEREA** Lamarck.

Subgenus **CALLISTA** Möreh.

28. *Callista chione* Lamarck.

One left valve of a young shell. Fayal (Mus. No. 125286).

Genus **DOSINIA** Scopoli.

29. *Dosinia fibula* Reeve.

+ *Dosinia torrida* Reeve.

Several valves, beach. Porto Grande (Mus. No. 125391).

The following African species are described and figured in Reeve's Monograph of *Artemis*=*Dosinia*.

A. fibula Reeve, *A. africana* Gray, *A. radiata* Reeve, *A. Orbignyi* Dunker, *A. torrida* Reeve. To these should be added *A. isocardia* Dunker, and *A. hepatica* Philippi.

Of the foregoing *fibula* and *torrida* are the same without doubt. *Orbignyi*, *africana*, and *hepatica* are also one and the same. The three last are characterized by their authors as exhibiting more or less coloration in the region of the beaks, and upon the inner side of the valves, while *torrida* and *fibula* are white only. While all of these five alleged species vary much in outline, there is no special difference

otherwise than the color character above mentioned, and that is of little importance. Reeve says of his *torrida*, which it will be observed is one of the all-white forms, that it is "concentrically sculptured with fine cord-like striae, after the manner of *A. Orbignyi*." The roundness or sharpness of the striae varies more or less in all. The depression of the lunule also varies somewhat, but is usually rather deeply sunken. In all, the closeness, definition, or sharpness of the concentric striae, is greater toward the anterior and posterior edges of the valve than in the central portion or area. The hinge characters are the same in all, and the interior of the valves are alike in the shape or outline, angle and depth of the sinus, and muscular scars. The valves in all of these, whether young or old, large or small examples, are heavy, solid, and thick, with thick hinge margins and long and rather deeply scarp-ed ligamental area.

The foregoing critical comparison, it will be noticed, practically unites the five so called species, the only differences being those of color, and the greater or less roundness, evenness, or sharpness of the concentric line. Now, variation in these characters, it is well known, is a local matter dependent upon or affected by local causes or conditions, such as the character of the sea bed at the spot from which the specimens were obtained. Where the sea bed is nearly clear sand without mud, gravel, etc., the shells are whiter, more evenly and regularly sculptured, with a more porcellaneous surface than from localities where gravel, mud, and clay prevail. The presence of mud, particularly clayey mud, has much to do with the coloration or staining of the shell.

Any person who has collected the hard-shell clam *Venus mercenaria* of the Atlantic seaboard, at many or different places throughout the range of said species, or the *Maetra* or *Mya* of the same faunal region, must have noticed the relation of color to the character of the sea bed. Convexity is another somewhat variable factor, some examples being more tumid than others.

Reeve's *radiata* is no doubt a distinct form, though *isocardia* is doubtfully distinct, and may hereafter, with abundant material for comparison, be regarded as a synonym.

30. *Dosinia Orbignyi* Dunker.

= *D. africana* Gray.

= *D. hepatica* Philippi.

Many odd valves. Porto Grande (Mus. No. 125385). Separable from *jibula*, etc., only by the color stain—no doubt the same species.

31. *Dosinia isocardia* Dunker.

One left valve, beach. Porto Grande (Mus. No. 125388).

Suborder TELLINACEA.

Family DONACIDÆ.

Genus DONAX Linné.

32. *Donax rugosus* Linné.

Numerous examples. St. Paul de Loando (Mus. Nos. 125413, 125414, 125415, 125416, 125418, 125419). Porto Grande (Mus. No. 125399).

The large number of this attractive form collected at St. Paul has enabled me to select an extensive and beautiful series. The valves are sometimes white with purple rays and zones, again white, or yellowish orange, with broad rays of purple; sometimes light purple with darker purple rays and zones, and some examples exhibit a purplish ground with a glaze of sienna yellow, overlaying and toning the color beneath. The interior of the valves is often white, or white rayed with purple or pink and frequently dark purple with the edge of the valves white rimmed. One beautiful example is of a clear delicate pink, tinged slightly with yellow, bounded toward the ventral edge by a broad band of deep rose pink.

Family TELLINIDÆ.

Genus **TELLINA** Linné.

33. *Tellina madagascariensis* Gmelin.

Odd valves. Porto Grande (Mus. No. 125365).

One right and two left valves of this rather solid species; these valves are of a light rose-pink color intensified toward the beaks, and the surface is sculptured by fine incremental and closely set radiating lines.

34. *Tellina incarnata* Linné.

One left valve. Fayal (Mus. No. 125285).

Suborder MACTRACEA.

Family MACTRIDÆ.

Genus **MACTRA** Linné.

35. *Mactra Adansonii* Philippi.

One right valve. Porto Grande (Mus. No. 125356).

This is a very pretty and externally quite nummactra-like species, with color markings and a general facies recalling *Mactra stultorum* of the Mediterranean Sea.

Class GASTROPODA.

Subclass ANISOPLEURA.

Superorder EUTHYNEURA.

Order OPISTHOBRANCHIATA.

Suborder TECTIBRANCHIATA.

Family BULLIDÆ.

Genus **BULLA** Linné.

36. *Bulla striata* Bruguiere.

Many specimens. Porto Grande (Mus. No. 125303).

Several examples; solid, heavy beach shells; a widely distributed form. Inhabits the Mediterranean, Adriatic, and Black seas; and Drouet has recorded it from the Azores. * * * Also at Faro in Algarve, where McAndrew procured it (Jeffreys).

Family APLYSIIDÆ.

Genus **APLYSIA** Linné.

37. *Aplysia* sp.

Two examples in alcohol. Porto Grande, St. Vincent.

Order PULMONATA.

Suborder STYLOMMATOPHORA.

Family LIMACIDÆ.

Genus **ZONITES** Montfort.

38. *Zonites cellarius* Müller.

One specimen (Mus. No. 125298). Fayal.

The above species also occurs in the British Isles, and is found from Finland to Algeria and Sicily, according to Jeffreys; also in Madeira and the Canaries.

Family HELICIDÆ.

Genus **PATULA** Held.

39. *Patula rotundata* Müller.

Two specimens (Mus. No. 125295). Fayal.

Ranges from the most northern extremity of Great Britain to the Channel Isles; from Russia and Finland to Sicily and the Azores. (Jeffreys.)

Section LEPTAXIS.

40. *Helix* (*Leptaxis*) *caldeirarum* M. and D.

Three specimens, dead. Fayal at Horta (Mus. No. 125293). The examples, though dead, were in fair condition.

Section CARACOLINA Beck.

41. *Helix* (*Caracolina*) *barbula* Charp.

Two specimens, dead (Mus. No. 125294). Fayal. Found also in Portugal.

Section FRUTICICOLA Held.

42. *Helix* (*Fruticicola*) *similaris* Férussac.

Numerous specimens (Mus. No. 125109). Green Mountain, Ascension Island.

The above is represented by many examples, banded and otherwise, pale to dark horn color. This is another widely distributed form that has almost, if not quite, "put a girdle around the earth." The National collection contains numerous examples from Barbados, Mexico, Brazil at Rio Janeiro, Pegu, and upper Burmah and Bombay in India; the Sandwich Islands, at Singapore and the islands of Mauritius and Java in Polynesian and Indo-Pacific waters, and from Canton, Hong-kong and Whampoa in China. It has also been found at the Seychelles.

Section EUPARYPHA Hartman.

Helix (Euparypha) *pisana* Müller.

Numerous examples. Fayal (Museum No. 125278); Cape Town (Museum No. 125393).

A widely distributed species, occurring in England, France, Portugal, in the Canary Islands, and probably elsewhere, as well as at the localities first given herein. The Fayal specimens exhibited the usual varietal facies and indicate its abundance on the island. From the Cape, also, there are several characteristic examples.

Section POMATIA Beck.

Helix (Pomatia) *aspersa* Müller.

A few examples (Mus. Nos. 125283, 125287). Fayal.

A widely distributed form; a part of the above quite solid, and elevated.

"From the McRay Firth district to the Channel Isles. Its range extends southward from France to Sicily as well as to Spain, Algeria, and the Azores" (Jeffreys).

Genus BULIMUS Scopoli.

Section COCHLICELLA Ferrussac.

45. *Bulimus* (*Cochlicella*) *ventricosus* Draparnaud.

= *B. ventrosus* Ferrussac.

not *B. ventricosus* Chemnitz.

One specimen, dead (Mus. No. 125281). Fayal.

B. ventricosus occurs in France, the Canary Islands, and also in the Bermudas.

Family STENOGYRIDÆ.

Genus ACHATINA Lamarck.

46. *Achatina* *balteata* Reeve.

Four specimens (Mus. No. 125307). Free Town, Sierra Leone.

Only one example of the above was an adult. This form, with its fine sculpture, is apparently related to the coarsely sculptured *A. reticulata* Pfr., from Zanzibar and that region, through *A. lactea* Rye., also belonging to the same general locality, and suggesting an intermediate and connecting variety.

47. *Achatina variegata* Roissy.

= *A. perditæ* Lamarek.

Several adult examples (Mus. No. 125377). Free Town.

Subgenus **LIMICOLARIA** Schumacher.

48. *Achatina (Limicolaria) flammea* Bruguiere.

Three specimens (Mus. No. 125383). Free Town.

49. *Achatina (Limicolaria) numidica* Reeve.

Two specimens (Mus. No. 125384). Free Town.

Family **SUCCINEIDÆ**.

Genus **SUCCINEA** Draparnand.

50. *Succinea St. Helenæ* Lesson.

Several living examples (Mus. No. 125404). Fayal.

The specimens were found on the leaves of plants near the top of Diana's Peak. The shells are of a beautiful deep amber color, and probably belong to the above species. The other form reported from here, *S. bensoni*, was not in the collection.

Superorder **STREPTONEURA**.

Order **CTENOBRANCHIATA**.

Suborder **ORTHODONTA**.

Superfamily **TOXOGLOSSA**.

Family **TEREBRIDÆ**.

Genus **TEREBRA** Bruguiere.

51. *Terebra strigillata* Linné.

A single specimen (Mus. No. 125389). Porto Grande.

52. *Terebra senegalensis* Lamarek.

One beach shell (Mus. No. 125332). Porto Grande.

53. *Terebra chlorata* Lamarek.

Several beach specimens (Mus. No. 125354). Porto Grande.

54. *Terebra inconstans* Hiids.

A single example, beach (Mus. No. 125322). Porto Grande. A widely distributed form.

Family CONIDÆ.

Genus **CONUS** Linné.

55. *Conus guinacus* Hwass.

One beach shell, imperfect (Mus. No. 125579). Porto Grande.

Family CANCELLARIIDÆ.

Genus **CANCELLARIA** Lamarek.

56. *Cancellaria similis* Sowerby.

One specimen, fair condition (Mus. No. 125344). Porto Grande.

Superfamily RHACHIGLOSSA.

Family OLIVIDÆ.

Genus **OLIVA** Brugniere.

57. *Oliva flammulata* Lamarek.

Two beach shells in fair condition (Mus. No. 125364). Porto Grande.

Genus **OLIVANCILLARIA** Orbigny.

58. *Olivancillaria nana* Lamarek.

Several specimens (Mus. No. 125343.) Porto Grande.

Numerous examples of this pretty little shell, generally ornamented with linear, zigzag markings; sometimes not showing these, but unicolored, buff or dark chocolate brown.

Genus **AGARONIA** Gray.

59. *Agaronia acuminata* Lamarek.

Two beach shells, Porto Grande (Mus. No. 125581).

Family MITRIDÆ.

Genus **MITRA** Lamarek.

60. *Mitra fusca* Swains.

Several examples, Horta, Fayal (Mus. No. 125279).

Many good fresh specimens were obtained here. In Tryon's Monograph of the *Mitridæ*, he says: "*M. adansonii* Phil., described from Gaboon, in Guinea, West Africa, appears to agree fairly with this species."

61. *Mitra barbadensis* Gmel.

One young perfect specimen, Ascension Island (Mus. No. 125405). Heretofore credited to the Florida Keys and Barbados.

62. *Mitra plumbea* Lamarek.

One example, Porto Grande (Mus. No. 125386). In Tryon's Monograph this is included in the synonymy of *Mitra ebenus*. I should not place it in such a position.

Family FASCIOLARIIDÆ.

Genus **LATIRUS** Montfort.

Subgenus **LEUCOZONIA** Gray.

63. *Leucozonia triserialis* Lamarek.

One beach shell, Porto Grande (Mus. No. 125331).

Family BUCCINIDÆ.

Genus **PISANIA** Gray.

64. *Pisania variegata* Gray.

One adult, beach; two juniors, fresh. Porto Grande (Mus. No. 125580).

Florida Keys, West Indies, Bermuda. Southerly to Trinidad on the American side.

Genus **COMINELLA** Gray.

65. *Cominella limbosa* Lamarek.

= *C. Woldemari* Kiener.

One specimen from each locality. Porto Grande (Mus. No. 125582); Cape Town (Mus. No. 125326).

Family COLUMBELLIDÆ.

Genus **COLUMBELLA** Lamarek.

66. *Columbella rustica* Linné.

Common, fresh, living. Porto Grande (Mus. No. 125316).

The *C. rusticoides* of Heilprin, which ranges on the American shores of the Atlantic from Cedar Keys to Cuba, may be regarded as a synonym of the above.

67. *Columbella rustica* Linné.

variety, *Azorica* Dronét.

Numerous examples. Fayal (Mus. No. 125282).

Subgenus **NITIDELLA** Swainson.

68. *Nitidella cribraria* Lamarek.

Common; Porto Grande.

Upon comparison I can perceive no difference between the foregoing and American examples. This species has a remarkable geographical range. Among the Florida Keys and in the Antillean region, at Panama, on the west coast of South America, northerly to Lower California, and at various places in the Gulf of California.

Family MURICIDÆ.

Subfamily MURICINÆ.

Genus MUREX Linné.

Subgenus PHYLLONOTUS Swainson.

69. *Phyllonotus rosarium* Chemnitz.

One beach shell; Porto Grande.

Genus OCINEBRA Leach.

70. *Murex (Ocinebra) angularis* Lamarek.

A single, somewhat dubious example; Porto Grande (Mus. No. 125358).

Subfamily PURPURINÆ.

Genus PURPURA Bruguiere.

71. *Purpura hæmastoma* Linné.

= *P. undata* Lamarek.

= *P. Forbesii* Dunker.

Numerous living and beach examples. Fayal (Mus. No. 125276); Porto Grande (125305, 121370); Ashantee (125310, 125320, 125337); St. Helena (125407).

From Fayal many specimens, some tuberculated, others without knobs. The Porto Grande examples were adults and juniors of the typical form; two of the specimens were quite large, triangular, and knobby. From Ashantee numerous living specimens of the short-spined, rather triangular form, the *undata* of Lamarek and narrower examples — *P. Forbesii* Dunker; others with the spire of the average height, with two rows of knobs more or less conspicuous, varying in this feature as do the west coast American colonies of *biserialis*. A single individual of this widely distributed and mutable form was detected at St. Helena; it is not a characteristic example, having in the white aperture and the inconspicuous transverse ribbing and knobs of the bodywhorl a similar phase of variation from the general aspect of *hæmastoma*, that is exhibited by *P. Blainvilliei* Deshayes + *P. Calluön-sis* Blainville of the west coast of South America, when compared with the ordinary facies of *P. biserialis* Blainville of the same coast to the northward. The St. Helena form is very close to a variety of *hæma-*

stoma in the National collection (No. 95953), from Abrolhos Island, coast of Brazil.

72. *Purpura cingulata* Lamarek.

Two specimens; Cape Town (Mus. No. 125324.)

Only two examples of this remarkably variable and interesting species were obtained; the larger 17.5 millimeters in length, with barely the hint of a keel on the upper part of the basal whorl, which otherwise is finely sculptured with closely set, fine incised lines or grooves, and the upper or apex whorls keeled and cancellated. The small example is only 4 millimeters long, equal to the two and one-half upper whorls of the larger shell. The National collection contains another and somewhat larger specimen of this nearly smooth variety, as well as one individual with a single broad keel upon the upper part of the basal volution, connecting, it will be seen, the plain form with the usual broadly ribbed and channeled typical specimens.

73. *Purpura neritoidea* Linné.

Three beach specimens. Porto Grande (Mus. No. 125369). These are of the typical knobby form.

Genus **SISTRUM** Montfort.

74. *Sistrum nodulosum* C. B. Adams.

One adult, one junior; beach. Porto Grande (Mus. No. 125362). Common at many places in the Antillean region and on the Florida Keys, etc.

75. *Sistrum Brownii* nom. prov.

One specimen. Porto Grande (Mus. No. 125357).

Of the same general facies as *S. nodulosum*, but varying in sculptural characters; the National collection contains a similar example from the west coast of Florida.

Suborder **STREPTODONTA**.

Superfamily **PTENOGLOSSA**.

Family **JANTHINIDÆ**.

Genus **JANTHINA** Lamarek.

76. *Janthina rotundata* Leach.

= *Janthina communis* Lamarek.

Five examples. Fayal, one specimen (Mus. No. 125297); Porto Grande (Mus. No. 125311), four examples of rather small size, but characteristic.

Superfamily GYMNOGLOSSA.

Family PYRAMIDELLIDÆ.

Genus **PYRAMIDELLA** Lamarek.**77. Pyramidella dolabrata** Linné.

Four specimens. Porto Grande (Mus. No. 125349). The above has heretofore been credited to the West Indies, Barbados, the Florida Keys, and west Florida.

Superfamily TENIOGLOSSA.

Family TRITONIIDÆ.

Genus **RANELLA** Lamarek.**78. Ranella argus** Gmelin.

Two living specimens. Cape Town (Mus. No. 125376). This species also occurs in New Zealand, and has been credited to the west coast of South America.

Family CYPRÆIDÆ.

Genus **CYPRÆA** Lamarek.**79. Cypræa spurca** Linné.

Two beach shells. Porto Grande (Mus. No. 125342). Inhabits Antillean and Mediterranean waters.

Family STROMBIDÆ.

Genus **STROMBUS** Linné.**80. Strombus bubonius** Lamarek.=*S. fasciatus* Gmelin.=*S. coronatus* DeFrance.

One living specimen; one fossil Postpliocene example. Porto Grande (Mus. No. 125308).

Family CERITHIIDÆ.

Genus **CERITHIUM** Brugniere.**81. Cerithium atratum** Brugniere.

One beach specimen. Porto Grande (Mus. No. 125328).

82. Cerithium vulgatum Brugniere.=*C. tuberculatum* Linné.

Two beach shells. Porto Grande (Mus. No. 125327.) Common everywhere in the Mediterranean, Adriatic, and Ægean seas, as well

as on the coasts of Spain and Portugal, and the Canaries, from the shore to 50 fathoms. (Jeffreys.)

Family PLANAXIDÆ.

Genus **PLANAXIS** Lamarck.

83. *Planaxis lineatus* Da Costa.

Five specimens, living. Porto Grande (Mus. No. 125346).

Occurs in the Viti Islands and at many places in Polynesian waters.

Family VERMETIDÆ.

Genus **VERMETUS** Mörch.

84. *Vermetus Adansonii* Daudin.

One large mass and two small examples. Porto Grande (Mus. No. 125306).

The "mass," upon the under side, has been perforated by *Lithodomi*. It includes also some of the following forms.

Genus **PETALOCONCHUS** Lea.

85. *Petaloconchus interliratus* nom. prov.

Two masses. Porto Grande (Mus. No. 125378).

The two clumps of *Petaloconchus* above referred to include examples of the preceding species, *V. Adansonii*. While in external facies very like the foregoing, the interior upon close inspection will be found to have an elevated, thread-like ridge following the coiling spirally.

Family LITTORINIDÆ.

Genus **LITTORINA** Férussac.

86. *Littorina striata* King.

Many specimens; living. Fayal at Horta (Mus. No. 125296), Porto Grande (Mus. No. 125363).

87. *Littorina pulchella* Dunker.

Numerous examples, fresh. Ashantee (Mus. No. 125338). Porto Grande (Mus. No. 125325).

Several specimens of this rather globose and somewhat angulated form were obtained; it resembles some of the West Mexican species.

88. *Littorina scabra* Linné.

var. *lineata* Gmelin.

Common, living. Ashantee (Mus. No. 125336). Numerous living examples of this well-known species were found "sticking to bushes,

at the mouth of the Etry river." The specimens are of the variety *lineata* Gmelin and agree perfectly with Indo-Pacific examples, of which first and last I have handled a great number. One variety of the large Antillean Floridian *L. angulifera* Lamarek, brown-colored, approaches closely to the ordinary aspect of *scabra*, but I have never met with examples of the Indo-Pacific *scabra* that exhibited the light pink and yellow or varied color aspects of the Antillean form, nor have I observed in the large quantity of the Antillean-Floridian forms collected and otherwise examined, certain varietal features that are exhibited by the Polynesian *scabra*.

89. *Littorina cingulifera* Dunker.

One example fresh. No locality, probably Cape Town (Mus. No. 125394).

Genus **TECTARIUS** Valenciennes.

90. *Tectarius miliaris* Q. and G.

= *T. echinata* Anton.

One specimen; Ascension Island (Mus. No. 125420).

Family **FOSSARIDÆ**.

Genus **FOSSARUS** Philippi.

91. *Fossarus ambiguus* Linné.

Many examples; Porto Grande (Mus. No. 125371).

Several specimens of both the coarsely ribbed and finely striate forms of this little shell were in the Eclipse collection. They were found attached to other shells and in the crevices of masses of *Vermetus*, etc.

Family **AMPULLARIIDÆ**.

Genus **AMPULLARIA** Lamarek.

Subgenus **LANISTES** Montfort.

92. *Lanistes ovum* Peters.

Numerous specimens, Cunga, Dec. 25, 1889; (Mus. No. 125585).
Abundant in a pond near Cunga.

Family **CALYPTREIDÆ**.

Genus **TROCHATELLA** Lesson.

93. *Trochatella radians* Lamarek.

= *Trochita radians*, Lamarek, Auct.

= *Infundibulum radians*, Orbiguy.

= *Infundibulum radians*, Montfort, Tryon.

One, beach shell. Porto Grande (Mus. No. 125312).

The above example, though imperfect, is in a sufficiently good condition, and of sufficient size as to leave no doubt as to the determination. It measures maximum 4.25, minimum diameter 29 millimeters.

It has not before been reported outside of Peru and Chile.

Family AMALTHEIDÆ.

Genus **AMALTHEA** Schumacher.

94. *Amalthea barbata* Sowerby.

= *Hipponyx barbatus* Sowerby.

A single specimen. Porto Grande (Mus. No. 125390).

Not before reported away from the west coast of the Americas.

Family NATICIDÆ.

Genus **NATICA** Lamarek.

95. *Natica porata* Reeve.

One specimen. Fayal (Mus. No. 125291).

Superfamily DOCOGLOSSA.

Family PATELLIDÆ.

Genus **Patella** Linné.

96. *Patella rustica* Linné.

Common. Fayal (Mus. No. 125277).

A good series of this species of various sizes, points to the two following of Drouét's, as probable synonyms.

97. *Patella Moreleti* Drouét.

Example. Fayal (Mus. No. 125299).

This species is probably nothing more than a variety and junior of *P. rustica* Linné.

98. *Patella Gomesii* Drouét.

One specimen, beach. Fayal (Mus. No. 125290).

The above example though a beach shell is in tolerable condition; it agrees with Drouét's figure and description. *P. Gomesii* suggests a variety of the Linnean species *rustica*.

99. *Patella Argenvillii* Krauss.

Numerous examples. Island of Saint Helena (Mus. No. 125412); Cape Town.

Several fine living specimens of this limpet were detected at St. Helena. It has somewhat the appearance of *P. granularis*, but the

close-set radiating costae characteristic of both species, are not broken up into granules. The two Cape Town shells are large adult examples and well represent this characteristic species.

100. *Patella plumbea* Lamarek

= *P. plicata* Born.

= *P. lugubris* Reeve (Fig. 32)

One example; Porto Grande (Mus. No. 125353).

Born's species seems to be simply a strongly sculptured variety of *plumbea*, and Reeve's *lugubris* from the island of St. Vincent, I regard as another varietal aspect of the Lamarekian species.

101. *Patella pruinosa* Krauss.

One beach shell, imperfect; Cape Town (Mus. No. 125370).

102. *Patella granularis* Linné.

= *P. denticulata*, Martin.

Many examples living; Cape Town (Mus. No. 125396).

Numerous specimens, both mature and adolescent.

103. *Patella Baudonii* Dronét.

Several specimens; Cape Town (Mus. No. 125375).

Described by Dronét from the Azores. The examples collected by Mr. Brown indicate a close relationship to *P. Argenvillei* and may ultimately prove to be only a varietal form of said species.

104. *Patella oculus* Born.

Three specimens; two juniors, in alcohol; Cape Town.

A strongly characterized species.

105. *Patella cochlear* Gmelin.

One specimen, alcohol; Cape Town.

Superfamily RUPIDOGLOSSA.

Family PHASIANELLIDÆ.

Genus PHASIANELLA Lamarek.

106. *Phasianella capensis* Dunker.

Two good specimens; Porto Grande (Mus. No. 125302).

107. *Phasianella pulla* Linné.

Two examples in good condition; Porto Grande (Mus. No. 125304).

108. *Phasianella neritina* Dunker.

Three specimens; Cape Town (Mus. No. 125382) a pretty well-marked species.

Family TROCHIDÆ.

(Genus **MONODONTA** Lamarek.

Section **OSILINUS** Philippi.

109. **Osilinus Tamsi** Dunker

?=*O. Sauleyi* W. & B.

?+*M. punctulata* Lamarek.

Common living; Porto Grande (Mus. No. 125586).

Variable in umbilical character and otherwise; sometimes elevated, conical, and again frequently depressed; often exhibiting two or three obtusely rounded ribs following the periphery spirally, with a shallow groove between. Some examples are closely spirally lirate, and others are without lira. Specimens are frequently met with that are obtusely angulated. Some individuals are ornamented with light zigzag markings, others have only a few distant light spots on a dark ground; these point intimately toward *punctulata*. Apex when eroded, yellowish.

Section **OXYSTELE** Philippi.

110. **Oxysteles sagittifera** Lamarek.

Three living specimens; Cape Town (Mus. No. 125373.)

Genus **GIBBULA** Risso.

111. **Gibbula nassaviensis** Chemnitz.

?=*Gibbula umbilicatus* Montagn, variety.

Three specimens; Porto Grande (Mus. No. 125359).

The three shells of the foregoing species, collected as above, are in good condition. In the National collection under the same name I find numerous examples that were identified by the late Dr. Stimpson (Mus. No. 18686). Upon turning to the author I find his description altogether too brief, and the figures too indefinite to make a satisfactory determination thereby. Neither upon following his name through the synonymy is a satisfactory result obtainable as to the identity of the shell he has named. The umbilical character is of no value whatever in this instance, for some individuals are distinctly umbilicated, others are not, and again others are partially perforated. The shells, considered apart from the confusion of names and conjectures as to the meaning of authors, appear to be an extra limital and dwarfed aspect of *umbilicaris* Linné=*T. umbilicatus* Montagn.

Philippi makes *nassaviensis* a synonym of his *occulta*; and A. Adams includes *nassaviensis* preceded by a ? in the synonymy of *Gibbula*

tumidus of Montagu. The National Museum series contains specimens from the Cape of Good Hope (No. 43098).

Family TURBINIDÆ.

Genus **ASTRALIUM** Link.

112. *Astraliium tuber* Linné.

One specimen; no locality given; probably Barbados.

Occurs in Florida, at Jupiter Inlet and the Keys, as well as at numerous places in the Antillean region.

Family NERITIDÆ.

Genus **NERITA** Brugniere.

113. *Nerita neritoides* Reeve.

Numerous specimens, living; Ashantee (Mus. No. 125319).

The foregoing appears to be quite an abundant form. Sowerby's *morio* and Philippi's *carbonaria* are apparently the same.

114. *Nerita ascensionis* Chemnitz.

Common; many examples, living; Ascension Island (Mus. No. 125401).

A pretty shell, apparently abundant.

Superfamily ZYGORANCHIA.

Family HALIOTIDÆ.

Genus **HALIOTIS** Linné.

115. *Haliotis striata* Lamarek.

One good specimen. Fayal (Mus. No. 125280).

Family FISSURELLIDÆ.

Genus **FISSURELLA** Brugniere.

116. *Fissurella alabastritis* Reeve.

+ *F. glaucops* Reeve.

Three beach shells. Porto Grande (Mus. No. 125392).

117. *Fissurella mutabilis* Sowerby

Two living specimens. Cape Town (Mus. No. 125372).

The above agree perfectly with named examples received from the Albany Museum.

Subclass ISOPLEURA.

Order POLYPLACOPHORA.

Family LEPTOCHITONIDÆ.

Genus **Leptochiton** Gray.

118. *Leptochiton cyaneopunctatus* Krauss.

? = *lentiginosus* Sby.

One specimen. Cape Town (Mus. No. 125380). A single small example, so close to Krauss's figure and description that I attach his name to it, though the color varies somewhat from his diagnosis. It also exhibits some of the characters of Gray's *C. capensis*.

Family ISCHNOCHITONIDÆ.

Genus *Lepidopleurus* Risso.

119. *Lepidopleurus purpurascens* C. B. Adams.

Barbados.

Class CEPHALOPODA.

Order DIBRANCHIATA.

Suborder OCTOPODA.

Family OCTOPODIDÆ.

Genus *OCTOPUS* Lamarck.

120. *Octopus? vulgaris* Lamarck.

One specimen, alcohol. Ascension Island, March 25, 1890; dredged 20 to 30 fathoms.

Suborder SEPIOPHORA.

Family SEPIIDÆ.

Genus *SEPIA* Lamarck.

121. *Sepia officinalis* Linné.

One fine example. St. Paul de Loanda (Mus. No. 117941; in alcohol).

Suborder PHRAGMOPHORA.

Family SPIRULIDÆ.

Genus *SPIRULA* Lamarck.

122. *Spirula fragilis* Lamarck.

Fayal (Mus. No. 125292). Beach specimens; a widely distributed form; pelagic.

SUMMARY.

Pelecypods	35
Gastropods, marine	69
Gastropods, land.....	13
	— 82
Cephalopods.....	5
	—
Total number of species	122