

LIST OF SHELLS COLLECTED ON THE WEST COAST OF SOUTH AMERICA, PRINCIPALLY BETWEEN LATITUDES 7° 30' S., AND 8° 49' N., BY DR. W. H. JONES, SURGEON, U. S. NAVY.

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In the year 1884 the national collection was enriched by the addition of various material collected by Dr. W. H. Jones, of the U. S. Navy, while connected with the U. S. S. *Wachusett*. This acceptable contribution to the Museum included an interesting collection of molluscan forms obtained by Dr. Jones at various points on the west coast of South, Central, and North America, and at the Galapagos Islands. Though a great part of the shells were picked up on the beaches and in poor condition, yet so limited is our knowledge of the distribution of west South American species that the collection has its special value for the information it furnishes upon this point. The preparation for the exhibit of mollusks at the New Orleans Exposition and the pressure of current routine work has been such as to delay the compilation of this list at an earlier day.

Dr. Jones collected in the year 1884, at the following places, at the dates given in his notes, as follows:

Stevens Bay, Chatham Island, Galapagos group, in August; also at Manta and Bahia (Bahia Pangnapi), Ecuador, in the same month; at Payta, Peru, in September; at Pacasmayo, also in Peru, in the following month of October. Dr. Jones collected a few species in Panama Bay and on the coast of Lower California, either in the same or some preceding year, while acting as surgeon of the U. S. S. *Narragansett*. Of the Pacasmayo shells he says:

Most of them were found in sand on the side of the cliff from 10 to 20 feet above high water mark, and but little beach-washed, being mostly weather worn. The collection shows the comparative abundance of the different species. Recent [fresh] shells very scarce and but few found on the beach. Beach sandy, water deepening gradually; heavy surf; cliffs 50 to 100 feet high, of sand and cobble stones (beach-washed); in many places forming a solid rock of conglomerate.

In numerous instances Dr. Jones's collection carries the species to points much farther south than heretofore published.

The principal localities referred to in this list are, commencing at the south:

Valparaiso, Chile, latitude 33° S.

Pacasmayo, Peru, latitude 7° 30' S.

Payta, Peru, latitude 5° 15' S.

Guayaquil, Ecuador, latitude 2° 11' S.

Manta, Ecuador, latitude 1° S.

Chatham Island, Galapagos, latitude 1° S.

Bahia (Panguapi), Ecuador, latitude 3° N.

Panama, Colombia, latitude 8° 49' N.

Cape St. Lucas, Lower California, latitude 23° 4' N.

Mazatlan, Gulf of California, latitude 23° 20' N.

Guaymas, Gulf of California, latitude 28° N.

San Diego, California, latitude 33° 12' N.

CLASS PELECYPODA.

1. *Ostrea ? iridescens* Gray.

Two valves, probably of the above species; subfossil.

Manta.

2. *Anomia lampe* Gray.

One junior with both valves perfect; seventeen of the left or imperforate valve, of various sizes and colors from silvery white to bright orange.

Payta.

3. *Spondylus princeps* Brod.

Two odd valves.

Panama.

4. *Pecten ? tumbezensis* Orbigny.

Three valves (25 to 27 ribs) ovate rather than circular in outline. Probably Orbigny's species.

Payta.

5. *Pecten ventricosus* Sby.

+*P. tumidus* Sby. = *P. inca* Orb. C. B. Adams.

Several odd valves easily referable to this species.

Payta; Panama.

6. *Pecten subnodosus* Gray.

Odd valves.

Manta.

7. *Pecten purpuratus* Lam.

One large perfect valve.

Manta.

8 *Pecten (Vola) dentata* Sby.

A single valve (the flat one).

Payta.

This species extends northward to Monterey, California.

9 *Avicula sterna* Gould.

Fragment of one valve.

Payta.

10 *Mytilus unguatus* Lam.

Three perfect examples and many odd valves.

Pacasmayo.

11 *Mytilus cuneiformis* Rye.

—*M. unguatus* Lam.

Perfect examples and odd valves. Manta; Pacasmayo; Chatham Island, Galapagos.

12 *Mytilus cuneiformis* Rye., variety.

Six examples.

Pacasmayo.

13 *Modiola capax* Conrad.

One valve of a large distorted specimen 4 inches long; also the opposite valve of a small shell $1\frac{1}{2}$ inches long, obliquely measured; one perfect example with epidermis intact $1\frac{3}{4}$ inches long agrees with Carpenter's specimens as well as with the description and figures.

Payta.

14 *Modiola capax* Conrad, variety.

Possibly a hybrid between *capax* and *cuneiformis*. One example.

Payta.

15 *Arca (Byssarca) pacifica* Sby.

Odd valves, from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length.

Payta, Manta, and Bahia.

16 *Arca (Byssarca) gradata* B. & S.

One fresh valve exhibiting the beautiful sculpture of this species to perfection.

Manta.

17 *Arca (Byssarca) solida* Sby.

One valve in good condition.

Payta.

18 *Arca (Anadara) formosa* Sby.

One large valve, dimensions $5\frac{1}{2}$ by $2\frac{1}{2}$ inches.

Payta; Manta (1 valve).

19. *Arca* (*Scapharca*) *labiata* Sby.

Four valves.

Bahia.

20. *Arca* (*Byssarca*) *Reeviana* Orb.

A single perfect valve of a young example.

Manta.

21. *Pectunculus* (*Axinæa*) *inæqualis* Sby.

Two valves.

Panama; Payta; one from each place.

22. *Crassatella* *gibbosa* Sby.

Four odd valves of this exceedingly rare species, measuring from $2\frac{1}{16}$ to $1\frac{1}{16}$ inches in breadth.

Payta; it ranges northerly to the Gulf of California.

23. *Diplodonta* *obliqua* Rve.

Three odd valves.

Panama.

24. *Cardita* *laticostata* Sby.

One perfect specimen, also odd valves.

Panama.

25. *Chama* *echinata* Brod.

Several odd valves from each of the following places:

Manta; Payta.

26. *Cardium* *senticosum* Sby.

Several odd valves.

Manta; Payta.

The examples from Payta show thirty-six ribs. *C. muricatum*, the Antillean analogue of *senticosum*, has thirty-three. The Mediterranean *C. erinaceus*, a species of quite distinct aspect, also has thirty-six. *C. rastrum* Rve. (Conch Icon. Mon. *Cardium*, Pl. XVI, fig. 82), is the same as *senticosum* as implied by Reeve's substitution of the latter name for *rastrum* in the index to his monograph.

The number of ribs in *senticosum* as in other related species of the general group that I have examined varies somewhat. Carpenter's Mazatlan examples of *senticosum* show as many as forty.

27. *Cardium* *procerum* Sby.

Numerous odd valves.

Bahia; Manta; Payta.

The characteristic and striking obliqueness of this species so conspicuous in the adults is hardly noticeable in the young shells. The number

of ribs varies from twenty to twenty five. The *C. laticostatum* Sby. and the *C. Panamense* of the same author, are probably partially grown illustrations of this species, as suggested by Carpenter in his Mazatlan catalogue.

28 *Cardium* (*Fragum*) *obovale* Sby.

One valve.

Bahia.

29 *Cardium* (*Hemicardium*) *planicostatum* Sby.

Odd valves.

Payta; Manta.

This form is very close to the more northern *biangulatum* of the same author.

30 *Cryptogramma subrugosa* Sby.

= *Anomalocardia subrugosa* Sby.

Perfect examples and odd valves.

Panama.

31 *Cryptogramma subimbricata* Sby.

= *Anomalocardia subimbricata* Sby.

Odd valves.

Bahia; Payta.

Dr. Jones apparently failed to detect the first named of this genus south of Panama, though d'Orbigny credits it to Peru; *C. subimbricata*, however, he found at points farther south than before reported. They both reach north to the Gulf of California.

32 *Callista concinna* Sby.

One valve.

Bahia.

33 *Callista circinata* Born.

One valve.

Bahia.

34 *Callista circinata* Born, variety.

One valve only (Mus. No. 48547).

Payta.

35 *Venus* (*Chione*) *columbiensis* Sby.

Odd valves.

Pacasmayo; Payta.

The general facies of this form is suggestive of the *Tapes* (*Cuneus*) group so abundantly represented on the west coast, though the heavy hinge line, teeth, and muscular scars indicate its place with *Chione*. Dr. Jones's localities carry this species farther south than before reported.

36. *Venus (Chione) compta* Brod.

Valves only.

Payta; Manta.

This species was described by Broderip from specimens dredged by Hugh Cuming in the Bay of Sechura, Peru; "bottom sand and mud. depth 7 fathoms." Not often met with in collections.

37. *Venus (Chione) amathusia* Phil.

Bahia; Panama.

This beautiful species is also now carried farther south than by previous reports.

38. *Tapes (Cuneus) histrionica* Sby.

Numerous fresh specimens.

Panama.

39. *Tapes (Cuneus) grata* Say.

Dead Man's Island, Bay of Panama.

Carpenter, in his *Mazatlan Mollusca*, has pointed out the differences between this and the foregoing species which appear to be constant. I am quite sure that certain color and sculpture varieties of both of the above have been described as species by various authors, for the facies of the west coast shells of this group varies exceedingly through the character of the local stations at which they occur.

40. *Tapes (Cuneus) antiqua* King.

Several examples.

Dead Man's Island, Bay of Panama.

This species is probably the same as the *Venus costellata* Sby., and the specimens obtained by Dr. Jones recall characters in part of *T. grata* and certain aspects of the Californian *T. staminea* Conrad.

41. *Petricola ventricosa* Desh.

One perfect specimen.

Payta.

42. *Venerupis oblonga* Sby.

? = *Petricola elliptica* Sby. + *P. solida* Sby.

A variable form well represented by numerous good specimens of various sizes.

Payta; Manta (valves).

The specific name *oblonga* has precedence by priority of description over the others.

43. *Donax punctatostriatus* Hanley.

Abundant at the following places; chiefly odd valves.

Pacasmayo; Payta.

44 *Heterodonax bimaculatus* Orb.

One specimen.

Panama.

45 *Tellina punicea* Bor.

Fragments of one valve.

Payta.

46 *Tellina (Macoma) plebeia* Hauley

Portions of one valve.

Panama.

47 *Tellina (Capsa) excavata* Sby

A single valve from each of the following localities:

Payta; Chatham Island, Galapagos.

The figure of the above in Reeve's monograph, without habitat, agrees so well with the shell before me that I feel certain it was made from an example of the same form; it may be that the valves collected by Dr. Jones are a white variety of *T. Dombeyi* of Hauley.

The peculiar form of these shells has led to their being placed here and there by different authors, and *Capsa* has been a sort of catch-all for forms often quite unlike. I have used it in this instance in accordance with Adams's Genera.

48 *Semele proxima* C. B. Ad.

One valve.

Panama.

49 *Semele corrugata* Sby.

Odd valves.

Payta; Dead Man's Island, Bay of Panama.

50 *Mactra velata* Flu

Odd valves.

Chatham Island, Galapagos; Bahua; Manta; Payta.

The facies of this *Mactra* is quite characteristic and persistent.51 *Mactra angulata* Gray.

Odd valves.

Manta; Panama.

52 *Solecurtus coquimbensis* Sby

One adult (both valves), 3 $\frac{1}{2}$ inches in breadth; also an odd valve of a smaller example.

Payta.

53 *Solen rudis* C. B. Ad.

One specimen.

Panama.

54. *Parapholas acuminata* Sby.

Chatham Island, Galapagos.

One valve, beach worn; doubtfully referred to this species.

55. *Pholas* (*Barnea*) *pacifica* Stearns.

One valve.

Payta.

This species was described by me in the Proceedings of the California Academy of Sciences in 1873,* from specimens found living on the east shore of San Francisco Bay. It is the west American analogue of the east-coast *P. truncata*, which it much resembles.

It is also reported from San Pedro, California, on good authority.

Class GASTROPODA.

56. *Siphonaria costata* Sby.

A single example.

Payta.

57. *Gadinia pentagoniostoma* Sby.

A single specimen.

Manta.

58. *Bulla punctulata* A. Ad.

Numerous specimens.

Payta; Pacasmayo; Manta; Chatham Island, Galapagos.

Several specimens were obtained at the localities above named, but only a single dead shell from Pacasmayo. They all exhibit characteristics in common as well as certain differential aspects which warrant the inclusions of *B. aspersa* A. Ad. as a synonym. *B. punctulata* is certainly very close if not identical with *B. Adamsi* Mke. of the Gulf of California.

59. *Terebra* (*Myurella*) *aspera* Hinds.

One poor example.

Payta.

60. *Terebra* (*Subula*) *strigata* Sby.

= *B. elongatum* Wood.

= *T. flammea* Lesson.

= *T. zebra* Kiener.

Two specimens.

Payta.

The National Museum contains an example from Cape St. Lucas which gives the range of over 1,600 miles along the coast of the mainland as compared with the previous published localities, which include a reach of only 240 miles. It is also found at the Galapagos, according to Cuming.

* Preliminary description published in August 28, 1871.

61 *Conus brunneus* Wood

Two beach specimens.

Manta. This species indulges in many varieties, to which as many names have been given. Nevertheless with an ample geographical series the relationship of the so called species based on these aspects of variation to the form known as *brunneus* is made apparent. The examples collected by Dr. Jones correspond with "*C. varius* B., Galapagos, Cuming;" *vide* Reeve's monograph of the cones, plate XII, Fig. 224.

62. *Conus lucidus* Mawe.

One example.

Chatham Island, Galapagos.

63 *Conus purpurascens* Brod

Payta; Manta; Panama.

Several dead shells. A common and variable form widely distributed.

64 *Conus gladiator* Brod

A single junior.

Panama.

65 *Cancellaria cassidiformis* Sby.

Beach specimens.

Payta.

66 *Cancellaria clavatula* Sby.

Two examples.

Payta.

67 *Cancellaria clavatula* Sby. variety.

Payta.

68 *Cancellaria mitriformis* Sby.

Pacasmayo.

69 *Cancellaria chrysostoma* Sby.

Nine specimens of this well characterized species.

Payta.

70 *Oliva peruviana* Lam.

Four of the mottled and striped varieties.

Payta; Chatham Island, Galapagos (one example).

71 *Oliva kaleontina* Dacles

Two beach shells.

Payta.

72 *Olivella columellaris* Sby.

Twelve specimens.

Payta.

Appears to be closely related to *O. semistriata* Gray.

73. *Olivella tergina* Duclou.

Beach shells.

Payta.

74. *Marginella curta* Sby.

Ten examples, beach.

Payta.

75. *Fasciolaria grauesa* Brod.

Two adult examples in good condition.

Panama.

76. *Latirus castaneus* Gray.

Dead Man's Island, Bay of Panama.

77. *Latirus tuberculatus* Brod.

Two beach shells.

Manta.

78. *Latirus ceratus* Gray.

Beach shells.

Dead Man's Island, Panama Bay.

79. *Leucozonia cingulata* Lam.

Beach shells.

Dead Man's Island, Bay of Panama.

80. *Fusus Dupetithouarsii* Kien.

One example.

Chatham Island, Galapagos.

81. *Tritonidea lugubris* C. B. Ad.

A single specimen.

Panama.

82. *Tritonidea Janellii* Kien.= *Purpura Janellii* Kien.

Ten examples for the most part in fair condition; both adult and immature indicate that this form is an unmistakable *Tritonidea* and not a *Purpura*. It is a strongly characterized species, and quite rare in collections. Carpenter, in his "Mazatlan Shells," includes *Janellii* in the synonymy of *sanguinolenta* erroneously. I have handled hundreds of the last-named species, but have never met with an example that suggested a "connecting link" with *Janellii*.

Figure 295, plate 74, Tryon's monograph of "Cantharus," is not this species. In the same author's monograph of *Purpura* it is figured as belonging to that genus, Fig. 98, pl. 50.

Payta.

83 *Tritonidea sanguinolenta* Duclou

One immature fresh specimen.

Manta.

84 *Tritonidea gemmata* Cpr.

One fresh example of ordinary adult size.

Manta.

85 *Tritonidea pagodus* Reeve

In this instance my determination rests upon a badly worn beach specimen of what appears to be a very elongated heavy example of the above species.

This form does not = *fusiformis* Bloch, as stated in Tryon's monograph, Vol. III, p. 262.

Payta.

86 *Tritonidea elegans* Gray.

= *Tritonidea ussuriis* Reeve.

Two beach shells in bad condition.

Payta.

87 *Engina pulchra* Reeve.

= *Engina luciana* C. B. Ad.

One beach specimen.

Panama.

88 *Engina carbonaria* Reeve.

One example.

Manta.

The single specimen collected by Dr. Jones is an unusually solid example of this species, which exhibits very considerable variation. In some instances it is short, stumpy, and robust; in others, more or less elongated. Through inadvertence the late Dr. Carpenter, in making up the sets of Mazatlan and Panama shells for the Smithsonian Institution, etc., some of which were distributed years ago, labeled *Engina* or *Sistrum ferrugineum* "carbonarium," and this has led to considerable confusion; and the distribution by others in the course of exchanges of the commoner *ferrugineum* as *carbonarium* has extended the error in many collections.

89 *Nassa versicolor* C. B. Ad.

Numerous examples.

Payta; Panama.

Dr. Jones's shells exhibit the well-known and remarkable variability of this species.

90 *Nassa complanata* Powis.

Two examples.

Panama.

91. *Nassa dentifera* Powis.

One specimen.
Pacasmayo.

92. *Nassa luteostoma* B. & S.

Two specimens.
Panama.

93. *Columbella fuscata* Sby.

Numerous examples.
Payta; Manta.
Several specimens from the first and one from the last locality.

94. *Columbella Payteusis* Lesson.

= *C. spurca* Sby.

Payta; Panama.
Abundant at Payta; two examples from Panama.

95. *Columbella major* Sby.

Several specimens, beach.
Payta; Manta; Panama.

96. *Columbella strombiformis* Lam.

Six specimens, beach.
Manta.

97. *Columbella hæmastoma* Sby.

One specimen.
Manta.

98. *Strombina lanceolata* Sby.

Seven beach-worn specimens.
Payta.
The above exhibit unmistakably the strong characteristics of this species.

99. *Nitidella cribraria* Lam.

One example.
Panama.

100. *Anachis rugosa* Sby.

A single example.
Payta.

101. *Anachis fluctuata* Sby.

Numerous specimens.
Payta; Manta; Panama.

102. *Anachis coronata* Sby.

One specimen.
Panama.

103 *Anachis serrata* Cpr.

One specimen.

Panama.

104. *Anachis scalarina* Sby.

One example, beach.

Panama.

This form is regarded by some authors as a heavy, coarsely sculptured variety of *A. varia*.

105 *Anachis rugulosa* Sby

A single example from each place.

Payta; Manta.

106 *Murex (Homalocantha) varicosus* Sby

A single example 1½ inches long.

Manta.

Tryon has monographed *M. digitatus* Sby, as a synonym of *varicosus*, but gives a copy of each of Sowerby's figures, apparently copied from the Conch. Illustrations, where *digitatus* is credited to the Red Sea and *M. varicosus* has no locality. Sowerby's descriptions are published in the Proc. Zool. Soc., London, 1840, p. 145. The National collection contains other examples of what appear to be *varicosus* from Acapulco.

107 *Murex (Phyllonotus) vittatus* Brod

One specimen from each locality.

Payta; Manta.

108 *Murex (Phyllonotus) radix* Lam.

Beach shells.

Payta; Panama.

Fragments only of the basal whorl of a large individual from the first locality, and two of the stumpy, many variced forms from the latter place.

109. *Murex (Phyllonotus) regius* Swains

Manta; Panama.

An adult beach shell from each of these localities.

110 *Murex (Murexidea) buxea* Brod

= *radix* Lam. Sw.

Pacasmayo.

111 *Murex (Ocinebra) lugubris* Brod.

= *O. eximius* De Val.

Three specimens, beach.

Payta.

112. *Trophon peruvianus* Lesson.= *Purpura xanthostoma* Brod.

One junior, beach.

Payta.

A variable form. Not uncommon in a fossil condition in certain places along the South American coast.

113. *Vitularia salebrosa* King.

One specimen.

Panama.

114. *Purpura undata* Lam

(Rve, Conch. Icon., Mon. Purp., fig. 43.)

Four beach shells.

Payta.

115. *Purpura diadema* Rve.

Numerous examples.

These shells agree with Reeve's figure and description. They are very close to *P. undata* Lam. and to *P. Blainvillei* Desh.

Payta.

116. *Purpura Blainvillei* Desh.

Several specimens.

Payta; Paasmayo.

117. *Purpura biserialis* Blainv.

A common form.

Manta; Panama.

The relationship, analogy, and synonymy of the form or forms which Carpenter in his Mazatlan shells has included under the specific name of *biserialis*, I do not propose to discuss in this catalogue. To properly indicate the characters, variation, etc., of this protean species intelligibly, would require several figures and elaborate and extended diagnoses.

118. *Purpura callaoensis* Gray.

Fourteen beach specimens.

Payta.

119. *Purpura triangularis* Blainv.= *P. Carolensis* Rve.

One specimen.

Payta.

120. *Purpura melo* DuRoi.

Numerous specimens on the beaches, fresh or dead.

Payta; Panama, and Panama Bay on Dead Man's Island; Manta; Chatham Island, Galapagos.

One specimen from Manta was 2½ inches long, with an unusually elevated spire.

121. *Purpura columellaris* Lam.

Three specimens, from 1 to $2\frac{3}{8}$ inches long.

Manta.

122. *Purpura patula* Linn.

Four fresh specimens, from three-quarters to $2\frac{1}{8}$ inches long.

Chatham Island, Galapagos.

123. *Purpura patula* Linn, variety.

One fresh specimen between this and *P. columellaris*.

Chatham Island, Galapagos.

124. *Purpura planospira* Lam.

Six specimens, $1\frac{3}{8}$ to $2\frac{1}{2}$ inches in length—very heavy.

Manta.

125. *Purpura chocolata* Duclos.

Several specimens.

Pacasmayo.

Although the general facies of this species is quite characteristic, yet it often exhibits much variation. Some individuals have prominent knobs on both the body whorl and the preceding volution, others are noded only on the last whorl. Examples often occur that are smooth throughout, excepting a single strong node near the edge of the outer lip. Again some individuals are chunky, short, and heavy, others have an elevated and somewhat acute spire; the buccinoid aspect of the young shells is noteworthy.

126. *Purpura kiosquiformis* Duclos.

= *Cuma kiosquiformis* Auct.

Beach specimens.

Panama.

It is a quite variable species as remarked by Carpenter. He refers to it as scarce at Mazatlan, but both W. J. Fisher and Henry Edwards collected many examples, several of quite large size at that place. It is also found at other places on the Gulf of California. Dr. Edward Palmer collected numerous specimens at Guaymas; Fisher also found it at Boca de los Piedras, Sinaloa; both farther north than Mazatlan. There is no good reason, as far as shell characters are considered, for placing this and the preceding species in the genus *Cymia*=*Cuma*. The type of *Cymia* is the species *tectum*, which is a markedly characteristic form distinct and distinguished from all the other species that have been associated with it by authors, by the strong angular protuberance or process on the columella, which is a definite and permanent feature, never exhibited or even suggested by any of the others. Many of the so-called *Cumas* are simply *Purpuras*; others might be grouped with *Rapana*.

127. *Monoceros tuberculatum* Gray.+ *Purpura muricata* Gray.

Specimens from each of the following places :

Payta (2); Manta (2); Panama (1); Chatham Island, Galapagos.

The horn in this species is sometimes barely discernible. A specimen of this kind probably led to the description of *Purpura muricata* by the author.

128. *Monoceros brevidentatum* Gray.

Manta (1), beach; Panama (5).

129. *Cymia tectum* Wood.= *Cuma tectum* Wood.= *C. angulifera* DuRoi.

Four examples.

Manta.

The specimens of this strongly marked form collected by Dr. Jones vary in length from $1\frac{1}{8}$ to $2\frac{1}{4}$ inches, and are very solid. Exterior coloration in some instances of a brownish purple or dull chocolate brown. In one shell the lower is of a lighter color than the upper half. Specimens in the collection collected by the late Thomas Bridges are of a dull buff tint. This form is usually seen in collections under the name of *Cuma*, but Moreh's name *Cymia* should be substituted for *Cuma*, which properly belongs to a group of crustacea.

130. *Ianthina fragilis* Lam.= *I. striatula* Cpr.

One imperfect beach specimen.

Chatham Island, Galapagos.

131. *Triton olearium* Linn.

Two examples, adult.

Manta; Payta.

Both specimens are somewhat beach-worn. The larger is from Manta, and measures 5 inches in length. Not before credited to the west coast of America.

132. *Triton Wiegmanni* Anton.= *Argobuccinum nodosum* Chemn. Auct.= *T. Chemnitzii* Gray.

Beach shells, broken.

Payta.

Tryon in his "Manual of Conchology" properly attaches Anton's name to this shell as it has several months priority over Gray's. It has generally been distributed under the other names. Carpenter in his

"Mazatlan Catalogue," as well as in the Smithsonian check list (1860) of west coast shells, has listed this species with Chemnitz's name, and in the Mazatlan sets put up by Carpenter it is so named. In C. B. Adams's Panama shells Gray's name as above is adopted. Tryon gives the geographical range as from "Mazatlan to Panama," but aside from Dr. Jones's shells the national collection contains an example from Payta, which is about 850 miles farther to the south.

133. *Triton gibbosus* Brod.

One good example.

Payta.

134. *Triton lignarius* Brod.

One specimen.

Manta.

Dr. Jones's collection gives both this and the preceding species a much more southerly distribution than previously reported.

135. *Ranella ocelata* Brod.

One specimen badly beach-worn.

Dead Man's Island, Bay of Panama.

136. *Solenosteira purpuroides* Orb.

Fusus purpuroides Orb.

Purpura fusiformis Blainv.

Purpura Orbigny Reeve.

Fusus purpuroides Phil.

Buccinum fusiformis Soul.

Fusus fusiformis Hupé in Gay.

Neptunea fusiformis H. & A. Ad.

Cuma fusiformis Blainv., Auct.

Polia fusiformis Blainv., Hidalgo.

Cuma purpuroides Orb., Tryon.

Melongena purpuroides Blainv., Tryon.

Several specimens.

Pacasmayo; Payta; Manta.

This peculiar form exhibits characters that have heretofore made its generic position somewhat perplexing. Its relations are, however, with a certain group of West American shells that has until recently been included with Adams's genus *Siphonalia*. Tryon has removed some of the West Coast species to *Melongena*. Among these are *S. pallida* B. & S. and *S. anomala* Reeve, and he should have added *S. modificata* Reeve, if not *S. kelletii* Fbs., of which latter there may be some question; but the others stand or fall by whatever change is made with one. He was on the right track in placing Blainville's *fusiformis* immediately after and following *pallida* in the Manual, for a comparison of several specimens with the large series of *pallida-anomala-modificata* in the National Museum is convincing and clearly indicates the relationship. These latter have, as Dall* remarks, "been

* Trans. Wagner Inst., Vol. 3, Part I, page 122, Aug., 1890.

referred to *Rapana* by some writers, while Carpenter, Adams, and others placed it [the group] with *Siphonalia* and Tryon united it with *Melongena*. These shells normally have an operculum like *Fusus* or *Melongena*; they do not, therefore, belong with *Rapana*, which has a purpuroid operculum. They are certainly not identical with *Strepsidura* or *Siphonalia* proper. It is highly probable that they are, as supposed by Tryon, related to *Melongena*. But *Melongena* is a very well-characterized, compact group of large littoral species, having much such a habitat in warm regions as *Purpura*, which they resemble in mode of life. The group in question differs from them in its regularity of sculpture, absence of spines, smaller aperture in proportion to the whole length, small size of the species * * * and the absence of the posterior sinus near the suture, which characterizes the true *Melongena* when adult. I propose, therefore, to separate the group above discriminated from *Melongena*, as a genus, hereafter to be reduced in rank if necessary, should more exhaustive researches show its relations to be those of a subgenus rather than a genus. The type will be *Solenosteira* (*Pyrula*) *anomala* Reeve, Conch. Icon., *Pyrula*, pl. VIII, fig. 12, 1847."

137. *Cassis* (*Semicassis*) *abbreviata* Lam.

Several specimens.

Bahia (1); Manta.

Tryon credits this form to the west coast of North America; it will be seen by Jones's localities that it ranges along the South American coast as well. C. B. Adams obtained it at Panama.

138. *Malea ringens* Sby.

Two small adults, one quite heavy though only 1½ inches long.

Manta.

139. *Oniscia tuberculosa* Rve.

One specimen.

Chatham Island, Galapagos.

140. *Cypræa nigropunctata* Gray.

One beach specimen.

Manta.

Before doubtfully reported from Ecuador, but now confirmed.

141. *Cypræa* (*Aricia*) *punctulata* Gray.

A single beach shell from each of the following places:

Payta; Manta.

This species has been detected as far north as La Paz, Lower California, and in the Gulf of California at Guaymas. Panama was the most southerly point known before Dr. Jones's collection, but this carries it farther south by about 850 miles.

142. *Cypræa (Aricia) arabicula* Lam.

Payta (4); Manta (1).

Tryon's Manual credits this species to Acapulco and Gulf of California. Prof. C. B. Adams reported seven specimens on the reef at Panama.

143. *Cypræa exanthema* Linn.

Payta (1 junior); Manta (2).

Heretofore reported from Panama northward.

144. *Cypræa Sowerbyi* Kiener.

Two beach specimens.

Payta.

Reeve, in *Conch. Iconica*, gives a very fair figure of this species, but has confounded it with *C. picta* when referring to the habitat. *C. picta* is a well-known African species. Tryon credits *Sowerbyi* to the Gulf of California, but it has a more northerly range as well; the extreme southerly distribution is indicated by Dr. Jones's examples.

145. *Cypræa (Pustularia) pustulata* Lam.

One example, beach.

Panama.

146. *Strombus gracilior* Sby.

Two specimens.

Manta.

Panama is the most southerly locality previously given.

147. *Strombus granulatus* Swains.

Manta; Panama.

Dr. Jones's collection gives this species also a more southerly locality than before published.

148. *Strombus peruvianus* Swains.

One specimen from each place as follows:

Payta; Manta.

149. *Cerithium maculosum* Kiener.

Several examples, beach.

Bahia; Manta; Chatham Island, Galapagos.

150. *Cerithium stercus-muscarum* Val.

Three specimens.

Panama.

151. *Cerithium interruptum* C. B. Ad.

Six examples, very solid, knobby, and black.

Manta.

Must not be confounded with Menke's *interruptum*.

152. *Modulus disculus* Phil.

Three specimens.

Panama.

Previously credited to Acapulco and Mazatlan.

153. *Planaxis planicostata* Sby.

Eleven beach shells.

Panama.

154. *Serpulorbis squamigera* Cpr.

Manta; Payta.

155. *Bivonia compacta* Cpr.

One specimen.

Payta.

156. *Turritella Broderipiana* Rve.

=*T. marmorata* Kiener.

Several specimens.

Payta; nine from 1½ to 6 inches in length. Manta, one specimen.

One semifossil, of large size, must have been 6 inches in length when perfect.

157. *Turritella cingulata* Sby.

=*T. tricarinata* King.

One specimen.

Manta.

In some places on the coast of Chile this is a common fossil.

Sculpture variable. Often more than tri-carinate, and in some instances the keels are broken into little beads.

158. *Turritella goniostoma* Val.

var.=*T. Banksii* C. B. Ad.

Several examples.

Manta (3); Panama (18).

159. *Tectarius atyphus* n. sp.

One fresh specimen (Mus. No. 48396).

Manta.

The first example of this group detected on the west coast of the American continent.

160. *Litorina peruviana*, Lam.=*L. zebra* Wood.

One young specimen.

Payta.

161. *Litorina varia* Sby.

Two specimens.

Panama.

162. *Litorina conspersa* Phil., variety.

Two examples.

Payta.

163. *Mitrularia cepacea* Brod.=*Calyptrea cepacea* Brod., auct.

One fractured specimen.

Manta.

Carpenter, in Smithsonian Check-list (of West Coast shells), 1860, catalogues this by the latter name.

164. *Crucibulum spinosum* Sby.

Generally distributed.

Bahia (1); Payta (20); Manta (2); Chatham Island, Galapagos (1).
Extends northward to Monterey Bay, California.

165. *Crucibulum imbricatum* Sby.

Nine examples from one-half to 2½ inches diameter.

Payta; Manta (1).

166. *Crepidula aculeata* Gmelin.

Sixty-two specimens in various conditions and of all sizes, from tiny adolescent examples to strong adult shells.

Payta.

167. *Crepidula dilatata* Lam.

Beach shells.

Pacasmayo; Manta.

168. *Crepidula strigata* Brod.

Two specimens.

Pacasmayo.

169. *Crepidula arenata* Brod.

Five; four adult.

Payta.

When in a perfect state an exceedingly pretty shell, pinkish inside, fading to a light yellowish brown around the edge, and the edge mottled with dark brown.

170. *Crepidula Lessoni* Brod.

One at each place.

Bahia; Payta.

171. *Crepidula excavata* Brod

Four specimens.

Payta.

172. *Trochatella radians* Lam.

= *Trochita radians* Lam., Auct.

= *Infundibulum radians* Orb.

= *Infundibulum radians* Mont., Tryon.

Beach shells.

Bahia.

The generic name *Trochita*, which is in general use for this form, must yield to *Trochatella* of Lesson, as adopted by Fischer in his *Manuel de Conchyliologie*, 1887. Schumacher's genus *Trochita* rests upon the Chinese form, *Galerus chinensis* Lam. (Adam's Genera), a shell that is externally white or whitish and smooth under a fibrous epidermis and the type of Lamarck's genus *Calyptraea*. Tryon's use of Montfort's name *Infundibulum* in Vol. VIII of his *Manual* on page 121, no doubt arose from his confounding it with Orbigny's *Infundibulum*. Montfort's includes a group of the top-shells *Trochidae*, and is so used and properly by Mr. Pilsbry in his continuation of Tryon's work in Vol. XI, pp. 7-24, and Orbigny's is a synonym of Lesson's *Trochatella*, which rests upon a variety of this West Coast form and has precedence over Orbigny's by six years. Orbigny's name is barred in any event by the priority of Montfort's.

The generic term of *Trochatella* was subsequently used by Swainson for a section or group of the *Helicinidae*, and is therefore a synonym; in place of it Fischer has given the name *Eutrochatella*.

For reference to Schumacher in connection with the above, see his *Nouv. Syst. etc.*, p. 184, Copenhagen, 1817; and for Lesson's, see his "Voyage de la Coquille," etc.

173. *Hipponyx antiquatus* Linn.

One example from each.

Payta; Chatham Island, Galapagos.

174. *Hipponyx barbatus* Sby.

Three specimens.

Manta; Galapagos Islands.

175. *Natica (Polinices) uber* Val.

Payta (numerous); Manta (two examples); Panama, nine specimens. "Ten to twenty feet above high-water mark" [W. H. J.].

176. *Natica unifasciata* Lam.? = *N. maroccana* Chem. var.

Two specimens.

Panama.

Carpenter includes this, and no doubt properly, in his synonymy of *Natica maroccana* Chem. (Maz. Cat. sp. 570) as variety *b*. It is by no means a certainty as to whether Chemnitz's name or Lamarek's was originally applied to West American shells. There will be less confusion, however, to let these names remain as they now stand than to make a change that will probably bring us no nearer to the facts.

177. *Natica* (*Ruma*) *otis* B. & S.

One specimen, bleached, but perfect.

Payta.

178. *Sigaretus concavus* Rve.= *S. Grayi* Desh.= *S. cymbia* Mke.= *S. maximus* Phil.

Several specimens.

Payta.

Varies much, as do many of the related *Naticas*. Tryon credits this species to San Pedro, California. (Manual, Vol. VIII, p. 55.)

179. *Patella araucania* Orb.

Two examples.

Payta.

180. *Acmaea scutum* Orb.

One beach shell from each place.

Payta; Chatham Island.

181. *Acmaea Preteri* Orb.

A single specimen.

Payta.

The solitary beach shell which is here catalogued, though much rubbed, nevertheless exhibits the characteristics of this species.

182. *Turbo magnificus* Jonas.

Several specimens.

Callao; Payta; Manta.

This form suggests a smooth-surfaced variety of the more northerly *tessellatus* or *fluctuosus*.

183. *Turbo* (? *Senectus*) *squamiger* Reeve.

Several examples; beach.

Payta; Manta.

This is a rare species, and it may belong in the group *Callopoma*. The national collection series exhibits an extended range, stretching

from La Paz and the Gulf of California to Dr. Jones's southernmost locality, or from $24^{\circ} 30' N.$, to $5^{\circ} 15' S.$ latitude. Colonel Jewett collected it at Acapulco, where it was also obtained by myself in May, 1868. Mr. W. J. Fisher found it living at the Tres Marias group at the mouth of the Gulf of California.

184. *Turbo* (*Callopoma*) *fluctuosus* Wood.

- = *T. fluctuatus* Reeve.
- + *T. Moltkianus* Reeve.
- = *T. Fokkesi* Jonas.
- = *T. assimilis* Kiener + *T. tessellatus* Kiener.
- ? = *T. depressus* Cpr.
- ? = *T. funiculosus* Kien., Cpr.

Several beach shells.

Payta; Guayaquil; Manta.

An exceedingly variable shell for one of this group, but nevertheless having a common facies which, when a large series is brought together, satisfactorily indicates the reasons for the above synonymic arrangement. Tryon (Manual) gives the distribution, "West coast of America from Gulf of California northward," but Cuming obtained it at "Punta St. Elena," which is on the coast of Guayaquil in lat. $2^{\circ} 10' S.$ It will be seen that Dr. Jones's collection carries it still further south to latitude $5^{\circ} 15'.$ Carpenter, in the "Mazatlan Catalogue," credits it to Sitka, on the testimony of Wosnessenski in Middendorff; this is no doubt an error, as to its actual northerly range; though it is not improbable that a dead shell might have been obtained there, from either ballast refuse dumped overboard or from its having been dropped by some sailor belonging to a whaling ship; for the whalers formerly cruised all along the coast from Magdalena Bay, Lower California, to and through the Alaskan waters.

Carpenter also credits *T. fluctuosus* to San Diego, California; this has not been corroborated by any subsequent collector, though it is not improbable that Lieutenant Green may have detected it at this place for the species extends northerly along the outer coast of Lower California, where it has been detected at various places as well as at Cerros Island.

185. *Turbo* (*Callopoma*) *saxosus* Wood.

Several examples; beach.

Payta; Manta; Panama.

Tryon refers to *T. nitzschii* Anton ("Mitschii Anton" Sby.) and *T. venustus* Phil., as synonyms.

The National Museum collection shows the range to be from Payta as above northerly to Cape St. Lucas and up the Gulf of California to Guaymas, where it was collected by Dr. Edward Palmer several years ago.

186. *Turbo* (*Prisogaster*) *niger* Gray.

Common; numerous specimens.

Pacasmayo.

On beach and 10 to 20 feet above high-water mark.

187. *Astrarium* (*Uvanilla*) *Buschii* Phil.

= *U. inermis* Kiener.

Many examples.

Payta; Manta; Panama.

This shell is generally seen in collections with Kiener's name *inermis* Gmel. attached, but Philippi's has priority by 7 years. One of the nine specimens from Manta measured $1\frac{7}{8}$ inches in diameter and $1\frac{1}{4}$ inches altitude.

188. *Pomaulax undosus* Wood.

Beach shell.

Ballenas Bay, Lower California.

189. *Chlorostoma ater* Lesson.

= *C. atrum* Lesson Pilsbry.

Abundant.

Pacasmayo.

190. *Chlorostoma gallina* Fbs. var.

Beach shells.

Santa Margarita Island, off Lower California.

191. *Omphalius panamensis* Phil.

Three beach shells.

Payta.

Heretofore credited only to Panama.

192. *Omphalius viridulus* Gmel.

Eight examples—four from each of the following places:

Manta; Panama.

A somewhat variable species. The Manta shells are of various sizes, and exhibit greater variation in this respect than those from Panama.

In using the specific name *viridulus*, I have followed Carpenter in his Mazatlan Catalogue, as well as specimens distributed by him, and so labeled. Pilsbry has given the above name to the East Coast form, which is closely related, and to the West Coast form is assigned a *varietal* position with the name *reticulatum*. It is not unlikely that he is right, but as he has reduced to a varietal status other related forms, I retain the first name as above, until time will permit a careful comparison of the various species so combined.

193. *Omphalius aureotinctus* Fbs.= *Chlorostoma aureotinctum* (Fbs.) Auct.

Beach shells.

Santa Margarita Island, off Lower California.

194. *Tegula pelliserpentis* Wood.

Beach shells.

Panama; and from Dead Man's Island, Panama Bay.

This form though well characterized specifically, is hardly entitled to generic distinction.

195. *Nerita scabricosta* Lam.

Several specimens.

Manta; Panama.

The Manta example is of unusual size, being quite large, like Galapagos specimens.

196. *Nerita Bernhardi* Recluz.

Common at the latter place.

Manta (one); Panama.

Manta is a more southerly point than before reported.

197. *Neritina guayaquilensis* Sby.= *Neritina intermedia* Sby.

One specimen.

Payta.

C. B. Adams, in *Panama Shells*, p. 206, says: "This may, according to Recluz, be identical with *N. intermedia* Sowb. It is certainly identical with shells which have been distributed by Mr. Cuming and by Mr. Petit under the latter name. Mr. Sowerby's figures,* however, seem to represent two species."

It is quite evident to anyone familiar with the West American *Neritinae*, upon an examination of the figures and text of this group in Tryon's Monograph, that he has considerably mixed them; and Sowerby, as Adams suggests, has contributed to the confusion. The form referred to by Adams, as well as the shell collected by Dr. Jones, is that figured in Sowerby's *Conchological Illustrations*, Figs. 7, 7. Specimens agreeing with the above figures, determined by Cuming, have been distributed as Professor Adams states. The Monograph of the *Neritinae* in the "Conch. Illustrations," has precedence over the later "Thesaurus" Monograph, by eight years.

Sowerby in the former work credits *intermedia* to the "Bay of Montejo and the Gulf of Nicoya." The former is in Veragua, on the south side next west of the Bay of Panama, and the latter in Costa Rica, on the west coast, lat. between 9° and 10° N. Dr. Jones's collection extends the range southerly nearly 800 miles.

* *Thes. Conch.*, p. 520, No. 44, Pl. 114, Fig. 177.

198. *Fissurella rugosa* Sby.

Nine specimens.

Payta.

Carpenter's comments (Mazatlan list) upon the variability of this species rest on his examination of "thousands of specimens." As many as a thousand have been examined by me at various times, and I can add my testimony as corroborative of Carpenter's.

Mr. Pilsbry has recently described *F. rubropicta* from Lagoon Head, mainland of Lower California, opposite Cedros or Cerros Island. His specimens were collected by Mr. Hemphill, and the National Museum was kindly presented with three of the same lot. They are much heavier and more elevated than any specimens of *rugosa-macrotrema* in the National collection, and on the whole not as elongated, but nevertheless appear to be quite closely related. The crimson stain that suggested the name *rubropicta* is not unusual in either *rugosa* or *macrotrema*. The Museum series of *rugosa*, etc., includes a large number of selected specimens, over a hundred, and one-quarter as many of *macrotrema*, so called, from various localities on the West Coast.

199. *Fissurella virescens* Sby.

Several examples.

Payta; Manta; Panama; Chatham Island, Galapagos group.

At Payta it appears to be abundant; Manta, two examples, beach; Panama, one fresh; and five rather small specimens from the Galapagos.

The late Thomas Bridges collected a large number of the above and the following at San Juan del Sur, Nicaragua; also in Panama Bay and elsewhere on the west coast of Central America.

200. *Fissurella nigropunctata* Sby.

= *F. virescens* Sby., variety.

One specimen.

Panama.

Mr. Pilsbry in his "Manual" makes *nigropunctata* a variety of *virescens*, a conclusion that is unavoidable after a careful examination of a large series. The same author intimates other differences than color, but these are not obvious; the ample series before me show that the color spots are all there is upon which a varietal distinction can rest.

201. *Fissurella peruviana* Lam.

= *F. occidentis* Gld.

Seventeen specimens, in various conditions.

Pacasmayo.

202. *Fissurella maxima* Sby.

A single large, heavy example, nearly 4 inches in length.

Manta.

203. *Fissurella picta* Gmel. .

A single specimen, hardly typical.

Manta.

204. *Lucapinella inæqualis* (Sby.), Pilsbry.

= *Glyphis inæqualis* Sby.

One specimen.

Manta.

Mr. Pilsbry has recently separated several species heretofore assigned to *Glyphis* and other genera, and brought them together under the above name of *Lucapinella*; having detected a difference in the character of the dentition, which varies from that of the forms and groups with which they had been previously associated.

205. *Lucapinella alta* (C. B. Ad.), Pilsbry.

Glyphis alta C. B. Ad.

Five specimens.

Payta; described from Panama by the author, where he collected numerous examples.

206. *Lucapinella callomarginata* Cpr.

= *Clypidella callomarginata* Cpr.

One example (Mus. No. 48509).

Payta.

The specimen collected by Dr. Jones is perfect in every respect. The orifice has more of the keyhole shape than any of the others in the National collection. A comparison of the Museum series shows considerable variation in this character. Carpenter illustrated this in his "Report to the British Association," 1856, plate 7, by numerous figures, and we may reasonably expect to find mutations in the form of the orifice in this as well as in the *Fissurellas* proper.

A beach-worn example of what is probably the above species, was obtained years ago (1837-'40) by the United States exploring expedition, under command of Wilkes, at Valparaiso (Mus. No. 19135).

The Jones and Exploring expedition specimens extend the distribution further to the south than heretofore reported by about 1,700 miles, Mr. Hemphill's Lower California examples from San Ignacio Lagoon, being the southernmost to this date. The largest specimens in the Museum are Postpliocene fossils from San Diego, collected by Hemphill, the principal specimen measuring over 25 millimetres in length.

207. *Chiton (Corephium) spiniferus* Trembly.

= *C. tuberculiferus* Sby.

= *C. echinatus* Barnes.

+ *C. aculeatus* Barnes, Auct.

Payta.

208. *Chiton (Lepidopleurus) janeirensis* Gray.

One anterior plate.

Payta.

The above determination rests upon a single plate (anterior) in good condition.

Of the 211 species contained in the above list,* 90 are carried farther south than heretofore reported, by 64 miles, the least, to 3,195, the greatest extension in range; also one species detected not before collected or reported, and one new species and genus added to the fauna of the coast.

The increase in southerly range of these 90 is as follows:

Under 100 miles.....	1
Between 100 and 200 miles	24
Between 200 and 300 miles	4
Between 300 and 400 miles	5
Between 500 and 600 miles	11
Between 700 and 800 miles	2
Between 800 and 900 miles	32
Between 900 and 1,000 miles	1
Between 1,400 and 1,500 miles	3
Between 1,700 and 1,800 miles	5
2,520 miles	1
3,195 miles	1

ADDITIONS AND CORRECTIONS.

Following 62, on page 315, add—

62a. *Conus nux* Brod.

One example from beach. Chatham Island, Galapagos.

63a. *Conus princeps* Linn.

One beach shell of the fine-lined variety.

Payta.

Following 126, on page 321, add—

126a. *Concholepas Peruvianus* Lam.

One specimen.

The National Collection also contains examples from Callao and Valparaiso.

On page 317, number 85, read—

This form does not = *fusiformis* Blve., not Bloc, as printed.

* Including these additional species given below.