

NOTES ON A COLLECTION OF MARINE SHELLS FROM THE
ANDAMAN ISLANDS, WITH DESCRIPTIONS OF NEW SPECIES.

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PLATE XIII.

EARLY in 1896, through the kind instrumentality of Mr. F. W. Townsend, of Manora, Karachi, we received from Mr. G. H. Booley, of Port Blair, two small Andamanese collections, the marine portion mostly having been dredged by himself, although no data or particulars of exact locality have come with the specimens. There were likewise a few *Helices*, *Melania*, and other terrestrial or fluviatile species, which, however, are not enumerated in the present paper.

The Andaman Islands have been frequently searched for Mollusca, and the leading and more conspicuous species would seem now pretty well known to Malacologists; few attempts, however, at cataloguing the molluscan fauna have been made. Many new forms have been of late years described from this region by Mr. G. B. Sowerby, Messrs. Geoffrey and Henry Nevill, and others, whilst, among the smaller species, the Marquis de Folin has enumerated many novelties.

The most important contribution of recent years has, perhaps, been that of Mr. E. A. Smith,¹ in which seventy-five species, collected by Lieut.-Col. L. Worthington Wilmer, are catalogued, six of them being described as new. About twenty-five of these are here recorded as being in Mr. Booley's collection, including three of the six new species described by Mr. Smith, viz.: *Pleurotoma Wilmeri*, *Fusus abnormis*, and *Turritella infraconstricta*.

We hope to receive further consignments from Mr. Booley, and, in time, to be able to offer lists of productions of these prolific Islands to the members of the Malacological Society; in the meantime, we would mention that our catalogue contains over ninety species, six being considered new.

The species already recorded in Mr. Smith's paper are distinguished by an asterisk.

1. HYDATINA (APLUSTRUM) APLUSTRE, L. (= *Amplustre Thalassiarchi*, Mart.). Extends to Mauritius. One juvenile example.
2. * ATYS CYLINDRICA, Helbling. A large example.
3. TORNATINA cf. OLIVULA, A. Ad.
4. TEREBRA CINEREA, Born. According to Tryon, a variable species, of which the name *cinerea* should be taken as the aggregate.

¹ Proc. Zool. Soc. London, Nov. 5, 1878, pp. 804-821, 1 plate.

Amongst the Andaman Island forms may be enumerated, besides the type, *T. bacillus*, Desh., *lactea*, Desh., and *apicina*, Desh.

5. *CONUS CAPITANEUS*, L. Only in young condition.

6. *PLEUROTOMA ACUTIGEMMATA*, Smith. The author of this species has examined our specimen, and considers it undoubtedly his shell. Tryon places this as a synonym of *P. jubata*, Hinds, but had never seen either an example or a figure.

7. *PLEUROTOMA (CRASSISPIRA) NIVEA*, Phil. A very pretty species, described originally from Formosa. Two specimens.

8. *PLEUROTOMA TIGRINA*, Lam. Two specimens, in juvenile condition, but fine.

9. *PLEUROTOMA CONCINNA*, Dkr. A fine example, with operculum, of this very beautiful species. Dunker described it from China. Our specimen is 28 mm. in length, of pale-fawn colour, very elegantly spirally carinated, the canal and portion of the basal region suffused with pale carnation.

10. *PLEUROTOMA (DRILLIA) BOOLEYI*, n.sp. Pl. XIII, Figs. 6, 7.

D. testa fusiformi, eleganter attenuata, solidiuscula, anfractibus 10, ochraceo-brunneis, ad suturas impressis, ventricosulis, longitudinaliter obtuse rotundi-costatis (costis infra juxta suturas evanidis, apud medium anfractuum binodulosis), spiraliter liri-striatis, liris ad medium fortioribus, et apud basim numerosis, apertura ovato-oblonga, labro extus effuso, sinu lato, columella recte, canali parum producto. Long. 19, lat. 6 mm.

Though a shell of no particularly marked character, we cannot exactly match it with any other known *Drillia*. The colour is a pleasing ochraceous-brown, the spire graceful, attenuate in the upper whorls, the rounded ribs crossed with liræ, the two central ones becoming nodulous at the juncture with the ribs, the mouth is oval-oblong, sinus broad, outer lip effuse, columella straight.

11. *PLEUROTOMA (DRILLIA) OCHROLEUCA*, n.sp. Pl. XIII, Figs. 4, 5.

D. testa attenuata, fusiformi, solida, læte ochracea, apice albo, anfractibus 9, supernis albidis simplicibus, cæteris ochraceis, infra suturas spiraliter unicarinatis, carina albo-gemmata, infra hæc, transversim canaliculatis, in penultimo et antepenultimo anfractu tri vel quatuor transversis gemmularum albarum nitidis ordinibus decoratis, ultimo undecim ordinibus, gemmulis rotundis, albidis, lævibus, apertura oblonga, angusta, labro extus paullum incrassato, valde ad suturam, sinu conspicuo, cuneato, margine columellari recto. Long. 22, lat. 6 mm.

A pretty, brightly-coloured species, with some affinity to *D. digitalis*, Reeve, and *D. granularis*, Smith. It is ochraceous-yellow, adorned with closely-arranged, spiral, white gemmules. The whorls are nine, the apical white and simple, the lower whorls impressed at the sutures, below which is a spiral keel, and this is followed by a transverse depressed sulcation. The first three rows of gemmules

following on the penultimate and last whorls seem almost confluent, producing the appearance of longitudinal riblets. The mouth is narrow, oblong, outer lip somewhat thickened, sinus conspicuous, and columellar margin straight.

12. **PLEUROTOMA* (*DRILLIA*) *VARIABILIS*, Smith. We have seen three or four specimens, larger than those figured by Mr. Smith, and somewhat differently marked.

13. **PLEUROTOMA* (*DRILLIA*) *WILMERI*, Smith. Two or three specimens, fine, and typical of this very beautiful species, figured in the paper already referred to (Proc. Zool. Soc. 1878).

14. *PLEUROTOMA* (*SURCULA*) *BIJUBATA*, Reeve. Quite typical.

15. *CLATHURELLA HINDSII*, Reeve. A curiously sculptured species, described (Proc. Zool. Soc. 1843, p. 186) as from the Philippine Islands. It is nearly allied to *C. carinulata*, Souverbie, from New Caledonia.

16. *CLATHURELLA REEVEANA*, Desh. This, according to Tryon and Mr. Andrew Garrett, is the *C. concinna*, Dunker. One specimen only.

17. *DAPHNELLA BOHOLENSIS*, Reeve. Almost typical. Apparently of extended distribution: we have seen specimens from very widely distant localities.

18. *CANCELLARIA OBLIQUATA*, Lam. In fine condition.

19. *CANCELLARIA WILMERI*, Sby. A small but interesting species, discovered by Lieut.-Col. L. W. Wilmer, and described by Mr. G. B. Sowerby in Proc. Zool. Soc. 1881, p. 637. It is endemic, so far as at present known, in Andamanese seas.

20. *OLIVA AUSTRALIS*, Duclos.

21. *OLIVA PANNICULATA*, Duclos. Pl. XIII, Fig. 14. Mr. J. M. Williams, who has kindly compared our shell with specimens in his own fine collection, pronounces it to be "a small but very nice specimen of *panniculata*."

22. *ANCILLA BOOLEYI*, n.sp. Pl. XIII, Fig. 13.

A. testa oblongo-fusiformi, tenui, parum nitente, anfractibus 6, apice mamillato, parvo, cæteris lævissimis, pallide cinereo-albis, infra suturas rufis flammis depictis, ultimo anfractu rufis flammis fulgetrinis ad $\frac{3}{4}$ diametri decorato, et apud basim rufo-strigato; apertura ovato-oblonga, paullum effusa, labro simplice, columella planata. Long. 14, lat. 5 mm. sp. maj.

An interesting *Ancilla*, though amongst the smaller species of this circumscribed genus. It somewhat recalls an *Agaronia* in the disposition of its markings, being oblong, thin, six-whorled, pale ashy-white, marked below the sutures and over the greater portion of the last whorl with rufous spots, or zigzag markings. The mouth is ovate-oblong, lip simple. We name it after its discoverer, Mr. G. H. Booley, of Port Blair.

23. *MITRA* (*CHRYSAME*) *CORIACEA*, Reeve. This species is very uncommon. It is distinguished by its deeply impressed sutures, and

strongly spirally beaded whorls, here and there stained with reddish-fawn spots. It is placed, but very erroneously, by Tryon as a synonym of *M. lugubris*, Swn.

24. MITRA (CANCILLA) CRENIFERA, Lam. A typical form of this widely distributed species.

25. MITRA (CANCILLA) RUFILIRATA, Ad. & Reeve.

26. MITRA (SWAINSONIA) OCELLATA, Swn. This pretty species is very nearly allied to *M. Mariæ*, Ad., long known from the Andaman Islands, though no specimen has as yet been sent by Mr. Booley. It is, however, always distinguishable from the latter both in form and the disposition of its markings. Our specimen is nearly typical. We consider it more than a mere variety of *M. fissurata*, as suggested by the late Mr. Tryon in his *Man. Conch.*, ser. I, vol. iv, p. 131, where, placing this and *M. fissurata* rightly in *Swainsonia*, he relegates the nearly allied *M. incisa*, Ad. & Reeve., and *M. Mariæ*, A. Ad., to the typical group *Mitra*, placing the latter as a mere synonym of the former. We cannot agree with him; and when he adds that both are probably the young of *M. variegata*, Reeve, we feel that any attempts at argument would be useless, so diametrically opposed are our views.

27. MITRA (COSTELLARIA) ARENOSA, Lam. In juvenile condition only. We may mention that, having lately examined thousands of specimens from the Loyalty Islands of the form known as *M. exasperata*, Chemn., we found it to vary in every degree, and to pass from the distinct brown and white *M. Hadfieldi*, M. & S., with its transverse bands and paucity of ribs, into the typical and many-ribbed *M. arenosa*, Lam., so that no doubt was left on our minds but that these forms are really all one and the same species.

28. *MITRA (CALLITHEA) ACUPICATA, Reeve. A most beautiful variety, which seems to connect the typical Philippine form of this species with *M. Zebuensis*, Reeve, also from the Philippines, and *M. prætexta*, Sby., by some considered a variety of *M. Zebuensis*. The contrast in colour presented between the warm, brown painting and the white body of the shell is extremely attractive and characteristic.

29. MITRA (COSTELLARIA) LUBENS, Reeve. We have this also from the Loyalty Isles, as well as the Philippines. Why Tryon considers it a variety of *M. militaris*, Reeve, and also introduces the distinct *M. compta*, A. Ad., as a synonym, it is impossible to say.

30. MITRA (PUSIA) AUREOLATA, Swn. A fine-coloured specimen.

31. MITRA (PUSIA) CROCATA, Lam. Quite typical.

32. MITRA (IMBRICARIA) ISOMERES,¹ n.sp. Pl. XIII, Fig. 9.

I. testa cylindræa, apud apicem obesa, crassiuscula, dolioliformi, anfractibus 8, supernis, apicali incluso, arctis, compressis, subturritis,

¹ ἰσομέρης, 'having an equal share,' in allusion to its affinities.

pallidis, ad suturas impressis, infra, juxta suturas, spiraliter bi- vel triliratis, et longitudinaliter clathrato-striatis, ultimo anfractu versus basim attenuato, producto, spiraliter undique regulariter minutipunctato, punctis arctis, superne pallide gilvo, ad medium et infra cinereo-brunneo, vel gilvo, delicatissime albo-fissurato lineis divaricatis, fulgetrinis, penultimo bino punctorum ordine, et, simul ac in ultimo, infra suturas rufi-maculato, ultimo apud medium spiraliter albo-maculato, maculis ad lævum rufo-marginatis, simili macularum ordine versus basim succineto, apertura angusta, oblonga, labro recto, paullulum incrassato, columella quadriplicata, plicis acutis, basi attenuata. Long. 18, lat. 8 mm.

This is one of the most puzzling species we have ever examined. Combining, as it does, the characters of *Mitra*, Lam., s.g. *Swainsonia*, H. & A. Ad., with the genus *Imbricaria*, Schum. (*Conelix*, Swn.), we hesitated for some time as to its location. We ultimately decided, on account of the following characters, to place it in the latter genus:—

- (a) The shortly cylindriform shape.
- (b) Straight outer lip.
- (c) Columellar plications, precisely those of the *Imbricariæ*.
- (d) Its close approximation especially to *I. Vanikorensis*, Reeve (Pl. XIII, Fig. 10), in form and upper whorls, and in regular spiral punctate markings.
- (e) The base and slightly produced canal of *Imbricaria*.

On the other hand, the following characters more closely agree with *Swainsonia*:—

- (a) Markings. Almost identical with those of *Mitra Mariæ*, A. Ad. (Pl. XIII, Fig. 8), and *M. ocellata*, both from the Andaman Isles, the latter occurring also at Singapore.
- (b) Distance between the suture of the penultimate whorl and the commencement of the lip.

At first it occurred to us that it might possibly be a hybrid between *Mitra Mariæ* and *Imbricaria Vanikorensis*, but this is hardly likely. The latter, to begin with, has never been yet found in the Andaman Isles. Nor do we consider it a monstrosity. It remains to add a very beautiful form to an already circumscribed genus; though we have always been at a loss to entirely comprehend why the genera *Cylindromitra* and *Imbricaria* have been so completely separated from *Mitra*. We think it would be more reasonable to only allow them subgeneric rank, as formerly, and as such we venture to include this species.

[N.B. We may remind malacologists that in 1888 one of us described a *Cypræa* (*C. amphithales*), from South Africa, which exactly combined the characters of two subgeneric types — *Cypræovula Capensis*, Gray, with *Luponia Algoensis*, Gray. Several specimens, some in live condition, have come to hand in recent years, and it is impossible to say with certainty with which subgenus this interesting shell should be located; though we incline to *Cypræovula*. The

only question is, should these subgenera (or genera) not be united, when such links are found to exist between them?]

33. *LATIRUS* (*PERISTERIA*) *PULCHELLA*, Reeve. One specimen, hardly full-grown.

34. *LATIRUS* (*PERISTERIA*) *MARQUESA*, A. Ad. Quite characteristic.

35. *PHOS RUFOCINCTA*, Smith. Not in very good condition.

36. **PHOS TEXTUM*, Gmel. Probably this species, but not full-grown.

37. **NASSA* (*ARCULARIA*) *GLOBOSA*, Quoy. Of the variety known as *clathrata*, Kiener.

38. **NASSA* (*ALECTRION*) *BIFARIA*, Baird. Considered by some a variety of *N. hirta*, Kien.

39. **NASSA* (*ALECTRION*) *ELEGANS*, Kien. Apparently distinct from *N. glans*, L.

40. **NASSA* (*ALECTRION*) *MONILIS*, Kien. A well-known species.

41. **NASSA* (*ZEUXIS*) *MARRATII*, Smith. A remarkably pretty and distinct species; variably coloured, and more or less smooth.

42. **NASSA* (*NIOTHA*) *ALBESCENS*, Dunker. Common and typical. Known by its darker apex and white body-whorls.

43. *NASSA* (*NIOTHA*) *EUCOMISTA*,¹ n.sp. Pl. XIII, Fig. 11.

N. testa ovato-fusiformi, concinna, pallide brunneo-ochracea, anfractibus 7, duobus apicalibus, pellucidis, cæteris undique decussatis, gemmulatis, apud suturas compressis, apertura ovato-oblonga, labro niveo, nitido, intus denticulato, margine columellari infra parietem uniplicato, duobusque plicis apud basim instructo. Long. 18, lat. 8.50 mm.

An extremely neat species, allied to *N. cremata*, Hinds, and *N. stigmæmaria*, A. Ad. The whorls are seven, two being apical and glassy, the remainder are small, with the exception of the last, which increases rapidly, the sutures are channelled, and the decussation over the whorls is extremely regular, close, and precise, presenting a turned or chased appearance of great beauty. The mouth is ovate oblong, lip white, shining, hardly callous, denticled within, and at the columellar margin once-plaited just below the suture, and also slightly two-plaited at the base.

44. *NASSA* (*NIOTHA*) *MARGARITIFERA*, Dunker. We have what is probably a variety of this species.

45. **NASSA* (*NIOTHA*) *STIGMARIA*, A. Ad. A characteristic and very attractive Andaman species, which varies a good deal.

46. **NASSA* (*HEBRA*) *SISTROIDEA*, Nevill. Perhaps a variety of *N. subspinosa*, Lam. Our two specimens are not mature. Mr. E. A.

¹ εὐκόμιστος, 'well-tended or groomed.'

Smith considers the peculiarities of the nodulous projections on the whorls to establish its specific distinction.

47. *COLUMBELLA FABULA*, Sby. This shell is, according to Mr. Tryon, a variety of *Columbella pardalina*, Lam., which occurs throughout the Eastern Archipelago.

48. *COLUMBELLA VERSICOLOR*, Sby. One good-sized specimen. It is of remarkably wide distribution.

49. *COLUMBELLA (ATILIA) NYMPHA*, Kiener.

50. **COLUMBELLA (ATILIA) PUELLA*, Sby. Remarkably brightly coloured, pure white, with ochraceous maculations.

51. *COLUMBELLA (CONOIDEA) FLAVA*, Brug. A common species, but not in good condition. The distribution extends throughout the whole Indo-Pacific province.

We are indebted to Mr. S. Pace for having kindly examined the few Columbellidæ of this collection.

52. **MUREX (MURICIDEA) CIRROSUS*, Hinds. One or two very beautiful varieties, the length of the canal varying in individuals. We have compared the specimens dredged by Lieut.-Col. L. Wilmer, now in the British Museum, and they are identical.

53. **MUREX (MURICIDEA) RUSTICUS*, Reeve. Figured by Mr. E. A. Smith (l.c.). Our specimens exactly agree with Lieut.-Col. Wilmer's, now in the National collection.

54. *SISTRUM CONCATENATUM*, Blvllé.

55. *SISTRUM FRAGUM*, Blvllé. Perhaps a variety of the preceding.

56. **SISTRUM MARGARITICOLUM*, Brod. A variable shell, and one which much doubt has surrounded; nevertheless it is quite recognizable and well characterized. Of very wide distribution, from Lord Hood's Island and Mauritius to the extreme East Indies.

57. *SISTRUM MUSIVUM*, Kien. A highly-coloured form.

58. **RHIZOCHILUS ABNORMIS*, Smith. Described by its author as *Fusus? abnormis*, and its peculiarities well differentiated (l.c., p. 811). It is also figured. Probably an inhabitant of corals; all the specimens we have seen, however, are alike in form and in the very short aperture. The fine squamose liræ are very characteristic.

59. **LOTORIUM (SIMPULUM) STRANGEL*, Ad. & Angas. Two specimens, well-coloured and characteristic.

60. *LOTORIUM CLAVATOR*, Lam.

61. *LOTORIUM (EPIDROMUS) NITIDULUM*, Sby.

62. *RANELLA (APOLLON) TUBERCULATA*, Broderip. Quite typical.

63. **TRIFORIS SCULPTUS*, Hinds. The headquarters of this conspicuous species are the Malay Peninsula.

64. *CERITHIUM RUBUS*, Martyn (= *C. EXIMIUM*, Sby.). Extends from Ceylon along the Indian coast.

65. *VERTAGUS ATTENUATUS*, Phil., 1848. This species, described subsequently by Adams and Reeve in the "Voy. 'Samarang,'" 1850,

as *V. longicaudatus*, is conspicuous for its elegant form and long canal. Its headquarters are the Philippine Islands.

66. **VERTAGUS KOCHI*, Phil. A species of wide distribution, extending from the East African coast to the Malay Archipelago.

67. **TURRITELLA INFRACONSTRICTA*, Smith. Three or four specimens of this distinct form, described in 1878, from Lieut.-Col. Wilmer's collection.

68. *TURRITELLA LEPTOMITA*,¹ n.sp. Pl. XIII, Figs. 12, 12a.

T. testa pergracili, attenuata, pallide cinerea, anfractibus 14, apud suturas multum constrictis, tricarinatis, una carina apud medium, duabus inter se proximis juxta supra suturas, anfractu ultimo quadricarinato, undique arcissime et tenuissime obliquiliratis, liris delicatissimis, fimbriatis, carinis anfractus ultimi contiguus, apud basim brunneo-ochraceo suffuso, spiraliter delicate lirato, interstitiis arcte clathratulis, fimbriatis, apertura rotunda, labro simplice. Long. 21·50, lat. 5·50 mm.

A most delicate shell, long, attenuate, slender, of a very pale ash-colour, with brown staining at the base, the whorls thrice keeled (the last whorl being furnished with four carinæ). The whorls are entirely surrounded with very close and delicately fimbriolate raised oblique striæ, the mouth is round, outer lip simple.

69. *LITTORINA MAURITIANA*, Lam. Another species of wide range, including Mauritius and the Australian and New Zealand coasts.

70. *RISSOINA (ZEBINELLA) CÆLATA*, A. Ad. Probably identical with *R. striata*, Quoy. A large and conspicuous species.

71. *CAPULUS (THYCA) CRYSTALLINA*, Gould. One or two specimens. They are parasitic, mainly on Asteroids.

72. *NATICA RAYNOLDIANÆ*, Récluz. This species extends from Ceylon to the Malay Peninsula, and as far east as the Fiji Isles.

73. *NATICA (MAMILLA) SIMILÆ*, Desh. The distribution of this shell is also very wide, it being found in New Zealand.

74. *SCALARIA ALATA*, Sby. }
75. *SCALARIA SIMILIS*, Sby. } Both very scanty in material.

76. *OBELISCUS SULCATUS*, A. Ad.

77. *O. TEREHELLUM*, Müll.

78. *O. TERES*, A. Ad.

79. *MORMULA RISSOINA*, A. Ad. A curious species, rissoid in form, with the plait of an *Odostomia*.

80. *DARONIA SUBDISJUNCTA*, H. Ad. Pl. XIII, Figs. 1-3. With some hesitation we unite the handsome specimen from the Andamans with this species, of which there is a single small dead specimen in the British Museum from the collection of H. Adams; there

¹ λεπτόμιτος, 'composed of superfine threads.'

being also an unnamed example from the Andaman Islands collected for Lieut.-Col. Wilmer. Our specimen measures, alt. 8 mm., diam. 15 mm., and is clothed with a brown epidermis.

81. *CHRYSOSTOMA NICOBARICUM*, Gmel.

82. *LIOTIA VARICOSA*, Lam.

83. *THALOTIA ELONGATA*, Wood. New Caledonia seems to be the headquarters of this species, which evidently possesses a wide area of range.

84. **FORSKALIA PULCHERRIMA*, Sby. Very beautiful, and peculiar to the Andaman Isles. It also occurred in Lieut.-Col. Wilmer's collection.

85. **CLANCULUS MICRODON*, Ad. On this species vide Mr. E. A. Smith's remarks (l.c.).

86. *MONILEA CALLIFERA*, Lam. (= *M. Masoni*, Nevill). A very interesting form.

87. *EUCHELUS ALVEOLATUS*, Ad. A pretty form, though small.

88. *EUCHELUS EDENTULUS*, Ad. In sculpture much resembling the large *E. indicus*, A. Ad.

89. *PECTEN SENATORIUS*, Gm. The headquarters of this species are the Red Sea.

90. *HEMICARDIUM UNEDO*, L.

91. *VENUS (DIONE) PHILIPPINARUM*, Hanley.

92. *LIICONCHA TRIMACULATA*, Lam.

93. *CIRCE PECTINATA*, L.

94. *DOSINIA JUVENIS*, Chemn.

95. *TELLINA (TELLINELLA) VULSELLA*, Chemn.

96. *TELLINA BLAINVILLEI*, Rve.

97. *MACOMA INFLATA*, Sby. The Pelecypoda are very few in number, and none of them call for special remark.

EXPLANATION OF PLATE XIII.

- FIGS. 1-3. *Daronia subdisjuncta*, H. Ad.
 ,, 4, 5. *Drillia ochroleuca*, n.sp.
 ,, 6, 7. ,, *Booleyi*, n.sp.
 ,, 8. *Mitra Mariæ*, A. Ad.
 ,, 9. *Imbricaria isomeres*, n.sp.
 ,, 10. ,, *Vanikorensis*, Reeve.
 ,, 11. *Nassa eucomista*, n.sp.
 ,, 12. *Turritella leptomita*, n.sp.
 ,, 12a. ,, ,, (sculpture enlarged).
 ,, 13. *Ancilla Booleyi*, n.sp.
 ,, 14. *Oliva panniculata*, Duclos.
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