F.W.Millett del.ad nat.

West, Newman lith.

FORAMINIFERA OF MALAY ARCHIPELAGO.

IX.—*Report on the Recent Foraminifera of the Malay Archipelago collected by Mr. A. Durrand, F.R.M.S.—Part IX.*

By Fortescue William Millett, F.R.M.S.

(*Read 17th October*, 1900.)

Plate IV.

Bifarina elongata sp. n., plate IV. figs. 1, 2.

Test elongate, straight, compressed, tapering gradually towards the aboral end. The earlier chambers small and biserial or irregularly agglomerated. The uniserial chambers inflated, with projecting margins causing the peripheral margin of the test to be lobulated; the earlier of these chambers are trilateral, the terminal ones quadrilateral. Sutures depressed. Surface ornamented with longitudinal lines of puncta. Aperture a long bordered slit at the apex of the chamber. Length 0·76 mm.

There is very little variation in this interesting form. The lines of perforations may be more or less distinct; and frequently a constriction of the cell-wall causes an inflated lobe to be formed at the projecting base of the uniserial chambers.

A stage in the transition from the biserial to the uniserial arrangement of the chambers is well indicated in the *Bolivina porrecta* of Brady, with its zigzag sutures and triangular chambers extending the full width of the test. This is carried a step further by the Malay allied examples, which in the later stages attain the true uniserial plan of growth, and serve to bind the whole together in a very natural group. Having thus to deal with dimorphous forms derived from both *Virgulina* and *Bolivina*, it is convenient

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EXPLANATION OF PLATE IV.

Fig. 1.—*Bifarina elongata* sp. n. × 75.
„ 2. „ „ „ A few of the uniserial chambers. × 75.
„ 3. „ *porrecta* Brady sp. × 90.
„ 4.—*Bolivina nobilis* Hantken. × 90.
„ 5. „ *textilarioides* Reuss. × 90.
„ 6. „ *convallaria* sp. n. × 100.
„ 7. „ *Durrandii* sp. n. × 100.
„ 8. „ *Karreriana* Brady var. *carinata* var. n. × 60.
„ 9. „ *Hantkeniana* Brady. × 55.
„ 10. „ *Schwageriana* Brady. × 65.
„ 11.—*Mimosina affinis* sp. n. × 90.
„ 12. „ *spinulosa* sp. n. × 75.
„ 13. „ „ „ var. × 90.
„ 14. „ *hystrix* sp. n. × 75.
„ 15. „ „ a portion of the cell-wall mounted in balsam and viewed by transmitted light. × 180.

to extend the subgenus *Bifarina* of Parker and Jones, so that it may include all the members of the series, and thus avoid the disadvantage of instituting a new name for forms which admittedly are scarcely separable.

In the genus *Pleurostomella* the triangular chambers with zigzag sutures are of common occurrence. Other figured forms of similar construction are *Textularia laminaris* Costa * and *Bolivina cylindracea* Schwager.† The single specimen from the North Atlantic, south-east of George's Bank, figured by Flint ‡ as *Bolivina porrecta* Brady, possesses the three different forms of chambers as in *Bifarina elongata*. It comes from a depth of 956 fathoms, and is much larger than the Malay examples, having a length of 1 mm.

Bifarina elongata is very common in the Malay Archipelago, and occurs at most of the Stations in both Areas.

Bifarina porrecta Brady sp., plate IV. fig. 3.

Bolivina porrecta Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 57. *B. porrecta* Brady, 1884, Chall. Rept., p. 418, pl. lii. fig. 22. *B. porrecta* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 300, pl. viii. figs. 7–9, 46, 47.

This is one of the commonest forms of the region, and occurs in abundance at nearly all the Stations. The walls are thin and clear, as stated by Brady of the 'Challenger' examples, but differ from them in being coarsely perforated. The aboral portion of the test is usually of a tawny colour, which becomes fainter and disappears when it reaches the triangular segments. In the specimens figured by Egger the change of form in the later chambers is not apparent.

Obtained at three 'Challenger' localities, namely:—Off Culebra Island, West Indies, 390 fathoms; off Tahiti, 420 fathoms; and in Humboldt Bay, north coast of Papua, 37 fathoms.

The 'Gazelle' Stations are Mauritius, 411 metres and 347 metres; and a rather doubtful locality, apparently on the western coast of New Guinea, "Galewostrasse" St. 104 *a*. 3 metres.

Bolivina d'Orbigny.

Bolivina punctata d'Orbigny.

Bolivina punctata d'Orbigny, 1843, Foram. Amér. Mérid., p. 63, pl. viii. figs. 6–12. *B. punctata* (d'Orb.) Woodward and Thomas, 1885, 13th Ann. Rept. Geol. and Nat. Hist. Survey of Minnesota for 1884, p. 169, pl. iii. fig. 12. *B. punctata* (d'Orb.) Sherborn and Chapman, 1886, Journ. R. Micr. Soc., vol. vi. p. 743, pl. xiv. fig. 10. *B. punctata* (d'Orb.) Malagoli, 1888, Boll. Soc. Geol. Ital., vol. vii. p. 375, pl. xiv. figs. 1–4. *B. punctata* (d'Orb.) Terrigi, 1891, Mem.

* Atti Accad. Pontaniana, vol. vii. fasc. 2, 1856, p. 290, pl. xxiii. fig. 15.
† Boll. R. Com. Geol. d'Italia, vol. ix. 1878, p. 528, pl. i. fig. 18.
‡ Rept. U.S. Nat. Mus. for 1897 (1899), p. 292, pl. xxxviii. fig. 2.

Com. Geol. d'Italia, vol. iv. p. 74, pl. i. figs. 26–28. *B. punctata* (d'Orb.) Woodward and Thomas, 1893, Geol. and Nat. Hist. Survey of Minnesota, vol. iii. p. 34, pl. c. figs. 27, 28. *B. punctata* (d'Orb.) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 298, pl. viii. figs. 1–3. *B. punctata* (d'Orb.) Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv. p. 49, pl. ix. figs. 475–478, 480. *B. punctata* (d'Orb.) Egger, 1895, Jahresber. xvi. Naturhist. Ver. Passau (p. 12) pl. i. fig. 11; and *B. antiqua* (d'Orb.) p. 11, pl. i. figs. 13, 15. *B. punctata* (d'Orb.) Morton, 1897, Proc. Portland Nat. Hist. Soc., vol. ii. p. 115, pl. i. fig. 11. *B. elongata* (Hantk.) Egger, 1899, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xxi. p. 14, pl. xvi. figs. 12, 13. *B. punctata* (d'Orb.) Flint, 1899, Rep. U.S. Nat. Mus. for 1897, p. 292, pl. xxxviii. fig. 1. *B. punctata* (d'Orb.) Wright, 1900, Geol. Mag., dec. iv. vol. vii. p. 100, pl. v. fig. 10.

This well known and widely diffused form is found in considerable abundance all over the Region, and exhibits the usual variations in length and breadth of the test, and in the number and form of the chambers. In one interesting variety there is on the surface of each chamber a clear patch quite free from puncta.

Bolivina nobilis Hantken, plate IV. fig. 4.

Bolivina nobilis Hantken, 1875 (1876), A magy. kir. földt. int. évkönyve, vol. iv. p. 56, pl. xv. fig. 4. *B. nobilis* (Hantk.) Chapman, 1892, Quart. Journ. Geol. Soc., vol. xlviii. p. 516, pl. xv. fig. 11. *B. nobilis* (Hantk.) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 299, pl. viii. figs. 35–37.

This species, as instituted by von Hantken, seems to be nothing more nor less than a delicately striated variety of *B. punctata*; and the transition from one to the other, as far as surface ornamentation is concerned, is well shown in the specimen selected for illustration, as well as in that figured by Egger. In both of these the puncta, instead of being diffused equally over the whole of the surface, resolve themselves into longitudinal rows of dots. A tendency to become dimorphous is well shown by the figured specimen, in which the aperture of the last formed chamber is situated at the apex and remote from the suture. One of the examples figured by Brady* shows two uniserial following the biserial chambers. Chapman's figured specimen from the Gault, referred to above, appears to have the like peculiarity. This variation is however unusual in the species, and not normal, as in the forms here assigned to the genus *Bifarina*.

In the Malay Archipelago this species is abundant and widely distributed.

It is stated to have been found only in 'Challenger' dredgings from the South Pacific; but amongst the 'Gazelle' Stations there is one on the West Coast of Africa.

* Chall. Rept., 1884, pl. liii. fig. 14.

Bolivina textilarioides Reuss, plate IV. fig. 5.

Textularia variabilis var. *lævigata* Williamson, 1858, Rec. Foram. Gt. Britain, p. 77, pl. vi. fig. 168. *Bolivina textilarioides* Reuss, 1862 (1863), Sitzungsber. k. Akad. Wiss. Wien, vol. xlvi. p. 81, pl. x. fig. 1. *B. textilarioides* (Reuss) Terrigi, 1883, Atti Accad. Pontif. Nuovi Lincei, vol. xxxv. p. 191, pl. iii. fig. 32. *B. textilarioides* (Reuss) Brady, Parker, and Jones, 1888, Trans. Zool. Soc., vol. xii. p. 221, pl. xliii. fig. 1. *B. textularioides* (Reuss) Burrows, Sherborn, and Bailey, 1890, Journ. R. Micr. Soc., p. 554, pl. viii. fig. 25. *Bolivina textilarioides* Murray and Renard, 1891, Chall. Rept. 'On Deep-Sea Deposits,' pp. 110, 130, pl. xiii. fig. 3 [5, 22]. *B. textilarioides* (Reuss) Chapman, 1892, Journ. R. Micr. Soc., p. 757, pl. xii. fig. 12. *B. textularioides* (Reuss) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 297, pl. viii. figs. 13–16, 110–112. *B. textularioides* (Reuss) Egger, 1895, Jahresbericht xvi. Naturhist. Ver. Passau, p. 12, pl. i. fig. 8. *B. textularioides* (Reuss) Egger, 1899, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xxi. p. 44, pl. xvi. figs. 1–3.

This variable species is represented by two well marked forms, both of which are figured by Brady in the 'Challenger' Report. In the one which is here selected for illustration, the cell-walls are quite smooth and clear, with the exception of the sutures, which are covered with opaque granular matter. In the other form, which is well figured by Terrigi, the chambers are much inflated and the surface porous.

It is abundant in the Malay Archipelago, and is found, in greater or smaller quantities, at most of the Stations.

Bolivina dilatata Reuss.

Bolivina dilatata Reuss, 1850, Denkschr. k. Akad. Wiss. Wien, vol. i. p. 381, pl. xlviii. fig. 15. *Textularia variabilis* var. *spathulata* Williamson, 1858, Rec. Foram. Gt. Britain, p. 76, pl. vi. figs. 164, 165. *B. dilatata* (Reuss) Brady, Parker, and Jones, 1888, Trans. Zool. Soc., vol. xii. p. 221, pl. xliii. figs. 3, 6. *B. dilatata* (Reuss) Malagoli, 1888, Boll. Soc. Geol. Ital., vol. vii. p. 376, pl. xiv. figs. 5–10. *B. dilatata* (Reuss) Terrigi, 1899, Mem. R. Acad. Lincei, ser. 4, vol. vi. p. 110, pl. v. fig. 7. *B. dilatata* Murray and Renard, 1891, Chall. Rept. 'On Deep-Sea Deposits,' p. 90, pl. xiii. fig. 2, 4. *B. dilatata* (Reuss) Terrigi, 1891, Mem. R. Com. Geol. d'Italia, vol. iv. p. 75, pl. i. fig. 29. *B. dilatata* (Reuss) Woodward and Thomas, 1893, Geol. and Nat. Hist. Survey of Minnesota, vol. iii. p. 33, pl. c. fig. 26. *B. dilatata* (Reuss) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 294, pl. viii. figs. 17–20. *B. dilatata* (Reuss) Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv. p. 50, pl. ix. figs. 482–486, and pl. xiv. figs. 5–10. *B. dilatata* (Reuss) Egger, 1895, Jahresbericht xvi. Naturhist. Ver. Passau, p. 10, pl. 1, fig. 6.

The examples are few and small, but are distributed over both Areas.

According to Brady it is a North Atlantic species, but there are 'Gazelle' Stations in the Indian Ocean and in the South Pacific.

Bolivina tortuosa Brady.

Bolivina tortuosa Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 57. *B. tortuosa* Brady, 1884, Chall. Rept., p. 420, pl. lii. figs. 31–34. *B. tortuosa* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 298, pl. viii. figs. 43, 44.

This form, which appears to be nothing more than a twisted variety of *B. dilatata*, is rare in the Malay Archipelago, although the specimens are characteristic and fine. It is most numerous in Area 1.

It is abundant at 'Challenger' Station No. 120, off Pernambuco, 675 fathoms. This locality is not mentioned by Brady in his Report, and the depth of water is greater than at any of the Stations recorded by him.

Bolivina robusta Brady.

Bolivina robusta Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 57. *B. robusta* Brady, 1884, Chall. Rept., p. 421, pl. liii. figs. 7–9. *B. robusta* (Brady) Egger, 1893, Abhandl. k. bayer. Ak. Wiss., Cl. II. vol. xviii. p. 294, pl. viii. figs. 31, 32.

This species, so widely distributed over the globe, yet so rarely recorded, occurs sparingly in the Malay Archipelago, at Stations in both Areas. The examples are rather feeble, and approach *B. dilatata*.

It is very abundant in the Tertiary clay of St. Erth.

Bolivina limbata Brady.

Bolivina limbata Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 57. *B. limbata* Brady, 1884, Chall. Rept., p. 419, pl. lii. figs. 26–28. *B. limbata* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 300, pl. viii. figs. 10–12.

A few specimens occur in both Areas, but they are not quite typical, the margin being more rounded than usual.

The 'Gazelle' Stations are West Africa and Mauritius.

Bolivina lobata Brady, plate I. fig. 4.

Bolivina lobata Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 58. *B. lobata* Brady, 1884, Chall. Rept., p. 425, pl. liii. figs. 22, 23. *B. lobata* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 300, pl. viii. figs. 55, 56.

In Part VII. of this Report, this species has already been figured and alluded to in relation to *Bigenerina fimbriata*.* It well illus-

* Possibly this form might as conveniently have been assigned to the genus *Bifarina*. See this Journal, *ante*, p. 6.

trates the difficulty of treating the dimorphous forms under the accepted system of classification, the simple and compound examples finding places in different genera.

It is by no means common in the Malay Archipelago.

There are four 'Challenger' Stations, all of which are near the Island of Papua. The 'Gazelle' localities are West Coast of Portugal, Mauritius, and West Australia.

Bolivina convallaria sp. n., plate IV. fig. 6.

Test elongate, straight, tapering towards the aboral end, peripheral edge lobulated; chambers numerous, inflated, with the peripheral margin rounded or acute; basal margin greatly projecting, reflected, and serrated. Sutures deeply sunk. Aperture large and variable in form. Length 0·47 mm.

This species varies greatly in the form and arrangement of the chambers and in the shape and size of the aperture. It may be described as resembling a much elongated *Bulimina marginata*, in which the chambers are loosely arranged biserially.

It is by no means common, but occurs at several Stations, mostly in Area 2.

Bolivina ænariensis Costa sp.

Brizalina ænariensis Costa, 1856, Atti Accad. Pontaniana, vol. vii. p. 297, pl. xv. fig. 1. *Bolivina ænariensis* Brady, 1882, Proc. R. Soc. Edin., vol. xi. p. 711—Table. *B. ænariensis* (Costa) Brady, Parker, and Jones, 1888, Trans. Zool. Soc., vol. xii. p. 221, pl. xliii. figs. 2–5. *B. ænariensis* (Costa) Malagoli, 1888, Boll. Soc. Geol. Ital., vol. vii. p. 377, pl. xiv. figs. 11, 12. *B. nobilis* (Hantken) Terrigi, 1891, Mem. R. Com. Geol. d'Italia, vol. iv. p. 75, pl. i. fig. 30. *B. ænariensis* (Costa) Flint, 1899, Rept. U.S. Nat. Mus. for 1897, p. 292, pl. xxxvii. fig. 8.

In the Malay Archipelago typical specimens of this species are very rare, but passage forms related to both *B. robusta* and *B. nobilis* are common. In these the margin becomes more or less rounded and the striæ more numerous and irregular.

Bolivina Durrandii sp. n., plate IV. fig. 7.

Test elongate, lanceolate, compressed; peripheral margin acute and serrated; chambers slightly inflated, inferior margin acute and projecting; sutures deeply sunk and smooth; surface of chambers ornamented with broken irregular costæ. Aperture a long fusiform slit. Length 0·45 mm.

This species is closely allied to *B. lobata* Brady, and differs principally in being more compressed and in having the peripheral margin acute. In these respects also it differs from the *B. campanu-*

lata of Egger,* a minute form which he states may be the juvenile stage of *B. lobata*.

In one variety the test becomes longer and less compact in the arrangement of the chambers, which also become more inflated, thus showing a tendency to approach *B. convallaria*.

It is one of the commonest forms in the Malay Archipelago, and is found in abundance at most of the Stations.

Bolivina plicata d'Orbigny.

Bolivina plicata d'Orbigny, 1843, Foram. Amér. Mérid., p. 42, pl. viii. figs. 4–7. *B. plicata* (d'Orb.) Halkyard, 1889, Trans. and Ann. Rept. Manchester Micr. Soc., p. 35, pl. i. fig. 13. *B. plicata* (d'Orb.) Goës, 1894, K. Svenska Vet.-Akad. Handl., vol. xxv. p. 51, pl. ix. figs. 487, 488. *B. plicata* (d'Orb.) Wright, 1900, Geol. Mag., dec. 4, vol. vii. p. 100, pl. v. fig. 7.

It is difficult to reconcile, one with the other, d'Orbigny's figures of *B. plicata* and *B. costata*. In his 'Amérique Méridionale,' plate viii. fig. 4. is described as *B. plicata*, whilst in his 'Bassin Tertiaire de Vienne' a copy of this figure with the addition of a representation of its oral aspect, appears under the name of *B. costata*. In Carpenter's 'Introduction'† these figures are copied to illustrate *B. costata*.

B. plicata is very rare in the Malay Archipelago, and the few specimens found mostly resemble those from brackish water figured by Brady.‡

Bolivina costata d'Orbigny.

Bolivina costata d'Orbigny, 1843, Foram. Amér. Mérid.. p. 62, pl. viii. figs. 8, 9. *B. costata* d'Orbigny, 1846, For. Foss. Vienne, p. 239, pl. xxi. figs. 44, 45. *B. costata* Brady, 1884, Chall. Rept., p. 426, pl. liii. figs. 26, 27.

The specimens are neither numerous nor in all respects characteristic. In contour they resemble those figured by Brady in the 'Challenger' Report, and as in them, the costæ are frequently interrupted and fail to bridge over the sutures. The aperture is however always without a thickened margin, which is, according to D'Orbigny, one of the characters of the species.

The 'Challenger' Stations are Raine Island, Torres Strait, 155 fathoms; Humboldt Bay, Papua, 37 fathoms; and off Amboyna, 15 to 20 fathoms. Goës records it from the Pacific, 730 fathoms.

Bolivina subangularis Brady.

Bolivina subangularis Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 59. *B. subangularis* Brady, 1884, Chall. Rept., p. 427, pl. liii. figs. 32, 33.

* Abhandl. k. bayer. Akad. Wiss., Cl. ii. vol. xviii. 1893, p. 301, pl. viii. figs. 53, 54.
† Page 196, pl. xii. fig. 22.
‡ Ann. and Mag. Nat. Hist., ser. 4, vol. vi. 1870, p. 302, pl. xii. fig. 7.

An unsatisfactory species at the best, and seemingly compounded of *B. plicata* and *B. costata*.

It occurs sparingly at a few Stations, mostly in Area 1.

'Challenger' Stations are, Philippine Islands, 95 fathoms; and off Raine Island, 155 fathoms.

Bolivina Hantkeniana Brady, plate IV. fig. 9.

Bolivina Hantkeniana Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 58. *B. Hantkeniana* Brady, 1884, Chall. Rept., p. 424, pl. liii. figs. 16–18. *B. Hantkeniana* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 296, pl. viii. figs. 40–42.

The Malay examples of this species are very fine, and are subject to the usual variations of form and ornamentation, but they are mostly of the broadly oval modification, and are all more or less costate. The aperture is very large, and is provided with the tongue characteristic of the group.

The species occurs in considerable abundance at Station 2, and is found sparingly at some other Stations, but it is confined almost exclusively to Area 1.

'Challenger' Stations are Tahiti, 420 and 620 fathoms; off Kandavu, 210 and 255 fathoms; off New Hebrides, 130 fathoms; and off Aru Island, 800 fathoms.

The sole 'Gazelle' Station is West Australia, 359 metres.

Bolivina Karreriana Brady.

Bolivina Karreriana Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 58. *B. Karreriana* Brady, 1884, Chall. Rept., p. 424, pl. liii. figs. 19–21. *B. Karreriana* (Brady) Egger, 1893, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 299, pl. viii. figs. 38, 39.

In the Malay Archipelago the typical form of this species is very rare, although it occurs in both Areas.

With regard to its distribution, Brady writes, "This pretty species is abundant on the *Hyalonema*-ground, south of Japan, 345 fathoms. It occurs also in the South Pacific, at two points off Tahiti, 420 fathoms and 620 fathoms respectively; and in the South Atlantic, off Pernambuco, 675 fathoms."

'Gazelle' Stations are Mauritius, 411 metres; West Australia, 359 metres; and Fiji, 2432 metres.

Bolivina Karreriana var. *carinata* var. n., plate IV. fig. 8.

This variety differs from the type in having the peripheral margin acute or carinate, and the aperture is in every case provided with a more or less projecting tongue. It is much larger than the typical form. Length 0·80 mm.

Although described as a variety of *B. Karreriana*, it is equally allied to *B. Hantkeniana*, and may be treated as a passage form between the two.

It is by no means uncommon, and occurs at several Stations in both Areas.

Bolivina Schwageriana Brady, plate IV. fig. 10.

Bolivina Schwageriana Brady, 1881, Quart. Journ. Micr. Sci., vol. xxi. n.s. p. 58. *B. Schwageriana* Brady, 1884, Chall. Rept., p. 425, pl. liii. figs. 24, 25.

Of this very rare form, hitherto known only from the 'Challenger' examples, there are some fine specimens from Stations in both Areas. They differ from the type in possessing a few delicate costæ near the peripheral margin, but in all the aperture is provided with a projecting tongue.

All that is known of its distribution elsewhere may be summed up in Brady's words (Chall. Rept., p. 426): "The figured specimens were obtained, amongst others, from Humboldt Bay, Papua, 37 fathoms; besides which, a few somewhat doubtful examples have been found at Station 185, off Raine Island, Torres Strait, 155 fathoms."

Bolivina reticulata Hantken.

Bolivina reticulata Hantken, 1875 (1876), A magy. kir. földt. int. évkönyve, vol. iv. p. 56, pl. xv. fig. 6. *B. reticulata* (Hantken) Brady, 1884, Chall. Rept., p. 426, pl. liii. figs. 30, 31. *B. reticulata* (Hantken) Egger, Abhandl. k. bayer. Akad. Wiss., Cl. II. vol. xviii. p. 295, pl. viii. figs. 33, 34.

This form is rather rare in the Malay Archipelago, although it occurs at Stations in both Areas. Some of the specimens have the peripheral margin rounded, as in the fossil examples; in others it is acute, as figured by Brady.

Mimosina gen. n.

Test typically spiral, conical or trochoid; chambers arranged bi- or tri-serially about the longitudinal axis. Aperture compound, consisting of two distinct orifices; one of them usually being a slit at the base of the inner wall of the final chamber; the other an opening varying in shape and situated near the apex of the chamber; the two orifices frequently being connected internally by means of a bent tube or septum. Shell-wall cellular or spongy.

This is a collection of forms which, but for certain characters they possess in common, might not only be assigned to the genera *Verneuilina*, *Bulimina*, and *Ehrenbergina*, but to recognised species in each of these genera. These distinguishing characters are the compound aperture and the cellular structure of the shell-wall. Something analogous to the first of these may be found in certain

members of the group of *Pulvinulina elegans* for which has been instituted the genus *Epistomina*; whilst something resembling the second may be found in the cell-walls of *Lagena Hertwigiana* and *Nodosaria intercellularis.*

Taken in the abstract these form a very natural group, and it becomes a question whether it is more convenient or even more zoologically accurate to treat them as a distinct genus, or to scatter them amongst already existing genera. It must be noted that they are not represented merely by a few obscure examples whose peculiarities might be ascribed to local influences, but all the forms here described are found in the greatest profusion all over the Malay Region. It is one of the problems of zoology that species so well marked and existing in such astonishing abundance should not hitherto have been observed in our existing oceans, nor in any of the geological formations.

Mimosina affinis sp. n., plate IV. fig. 11.

Test ovate; chambers globular, arranged tri-serially and rapidly increasing in size; sutures depressed. Sutural orifice a slit, usually cribrate; superior orifice a curved depression with the extremities rounded. Length 0·35 mm.

This is an isomorph of *Bulimina affinis* d'Orbigny, having little to distinguish it beyond the compound aperture and the structure of the shell-wall. The specimens are remarkably uniform in appearance, where there is any tendency to variation it is in the direction of *Mimosina spinulosa.*

It is the most abundant species of the genus, occurring in great profusion at nearly all the Stations in both Areas.

Mimosina spinulosa sp. n., plate IV. fig. 12.

Test elongate, trifacial, tapering towards the aboral end, margins acute; chambers slightly inflated, the marginal angle acute and slightly overlapping the preceding chambers, arranged tri-serially; sutures more or less depressed. Sutural orifice a narrow slit; superior orifice large and triangular or semilunar. Length 0·50 mm.

This is an isomorph of *Verneuilina.* It is very variable not only in length, but in the form and extent of inflation of the chambers, as well as in the degree of acuteness of the peripheral margins.

It is abundant, but less so than the other forms.

Mimosina spinulosa var., plate IV. fig. 13.

In this variety the marginal angles of the chambers are developed into lobes terminating in a spine. The chambers are more inflated and less regularly arranged, and the test is often contorted.

It is more abundant than the typical form, and the distribution is the same.

Mimosina hystrix sp. n., plate IV. fig. 14.

Test oblong ovate; tri-serial in the earlier stage, subsequently becoming bi-serial. Chambers inflated, those of the bi-serial portion provided with a spine at the rounded peripheral margin; sutures sunk. Aperture: both orifices circular or oval with a bordered margin. Length 0·50.

In some respects this form resembles *Ehrenbergina hystrix* Brady, but there is no real affinity. It differs from the other species in its dimorphous character as well as in the form and position of the sutural orifice.

It is abundant, but more local than the other species.

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Minimis partibus, per totum Naturæ campum, certitudo omnis innititur quas qui fugit pariter Naturam fugit.—*Linnæus.*

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