

MOLLUSCA OF H.M.S. 'CHALLENGER' EXPEDITION.—Part XVIII.

By the Rev. R. BOOG WATSON, B.A., F.R.S.E., F.L.S.

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[Read March 15, 1883.]

Order OPISTHOBRANCHIA, *Milne-Edwards*.Family TORNATELLIDÆ, *Fleming*.Genus ACTÆON, *de Montfort*.

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| 1. <i>A. (Actæonina) edentulus</i> , n. sp. | 4. <i>A. austrinus</i> , n. sp. |
| 2. <i>A. (A.) chariüs</i> , n. sp. | 5. <i>A. amabilis</i> , n. sp. |
| 3. <i>A. turritus</i> , n. sp. | 6. <i>A. (Buccinulus) cinereus</i> , n. sp. |

1. ACTÆON (ACTÆONINA) EDENTULUS, n. sp.

St. 149 c. Jan. 19, 1874. Lat. 49° 32' S., long. 70° E. Bal-four Bay, Royal Sound, Kerguelen. 60 fms. Mud.

Shell.—Fragile, ovate, white, with a thin chestnut epidermis, a bluntish scalar spire, a largish mouth, inner lip untoothed. *Sculpture*. Longitudinals—there are very many close-set minute lines of growth, with here and there one much stronger than the rest which cuts in like a fault on the spirals, interrupting their continuity. Spirals—there are many regular, but not sharp-cut nor stippled furrows which corrugate even the interior surface of the shell: about 70 of these are on the body-, about 20 on the penultimate whorl. They are strongest toward the middle of the body-whorl, and somewhat faint toward the upper suture; the flat surface between them, which is about thrice their breadth, is more or less distinctly scored by a very faint furrow. *Colour* opaque white, covered with a thin glossy chestnut *epidermis*, which is a little darker below the suture and on the base. *Spire* rather high, roundedly and bluntly conical, scalar. *Apex* slightly eroded, but evidently blunt, large, and slightly inverted. *Whorls* 5½, somewhat convex, of rather rapid but regular increase; the last is long and cylindrical, with a rounded produced base. *Suture* oblique, strong; axially impressed rather than channelled. *Mouth* long, transversely pear-shaped, narrowing very gradually above, open and rounded below. *Outer lip* a little patulous above, a good deal so on the base: it rises from the body-whorl at a right angle, but immediately bends downwards and runs forward to the base quite straight and parallel to the axis; across the base it is

slightly emarginate. *Inner lip*: a thin narrow white glaze crosses the body and borders the pillar, which is narrow, concave, with a rounded, slightly twisted, and feebly margined edge. There is no tooth. H. 1. B. 0.5. Penultimate whorl, height 0.2. Mouth, height 0.65, breadth 0.31.

This fine species is only represented by one somewhat broken specimen. In regard to the genus *Actæonina* of d'Orbigny, I may offer a few remarks. The name dates from 1850 ('Prodrome,' i. p. 353), and was intended for some fossil forms, regarding which any one desirous of further information may consult Morris and Lycett, "Mollusca from the Great Oolite," Palæont. Soc. vol. i. p. 102, v. pp. 11, 12, xviii. pp. 14, 15, Supplement, pp. 26-28, and 106, 107, pl. xxxi. f. 9, 13; Pictet, 'Paléontologie,' 2nd ed. iii. pp. 102-106, lx. pp. 13-22; Chenu, 'Manuel,' i. p. 225. I am not called on to discuss the forms which have been embraced in this genus; they seem to be a somewhat miscellaneous assemblage; but I feel quite sure the 'Challenger' shell may very well come in under the convenient definition of Pictet (*l. c. supra*), "*Actéonina*—leur forme normale est celle d'Actéons sans dents."

Deshayes, in his 'Anim. s. Vertéb.' Paris, ii., substitutes for *Actæonina* the name *Orthostoma* as of earlier date. Agassiz, in his 'Index universalis' (Soleure edit.), p. 764, quotes for this name "Gray, Moll. 1840;" but the name *Orthostoma* belongs to Conrad (Geol. Rep. N. York, p. 115), 1838, and was proposed for a "Genus Nautilcorum," which fact of itself would exclude it from rivalry with *Actæonina*, apart altogether from the fact that the name had been already proposed in 1831 by Ehrenberg for a genus of Vermes, and by Serville in 1834 for some of the Coleoptera.

2. ACTÆON (ACTÆONINA) CHARIÏS, n. sp.

St. 78. July 10, 1873. Lat. 37° 26' N., long. 25° 13' W. Off San Miguel, Açores. 1000 fms. *Globigerina*-ooze.

Shell.—Small, ovate, thin, translucent white, with flatly rounded whorls, a short subscalar very bluntly tipped spire, a largish roundish mouth, sinuated outer lip, and edentulous pillar. *Sculpture*. Longitudinals—there are numerous, unequal sinuous, hair-like, obsolete lines of growth. Spirals—the whole surface is scored with flattish rounded threads and shallow furrows of half their breadth between; these become feeble in the

middle of the whorls; the furrows are not stippled. *Colour* translucent white and glossy. *Spire* conical, scarcely scalar. *Apex* extremely blunt, being suddenly truncated and flattened; the extreme tip is very slightly inverted. *Whorls* $4\frac{1}{2}$, constricted above, flatly rounded in the middle, and very faintly constricted below; the last is a very little tumid, with a rounded and slightly produced base. *Suture* strong, slightly oblique, impressed and slightly channelled. *Mouth* roundly pear-shaped, very bluntly pointed above. *Outer lip*: there is a strong shallowish and wide sinus above; below this the lip-edge (straight in its direction) is prominent, with a very slight emargination on the patulous and rounded base-line. *Inner lip*: an excessively thin and narrow glaze crosses the body, which is scarcely convex; the line of junction with the pillar and out to the point of the shell is roundly concave: the lip-edge on the pillar is narrow and sharp, and there is behind it a small furrow. H. 0.1. B. 0.05. Penultimate whorl, height 0.02. Mouth, height 0.05, breadth 0.03.

This species is very slightly like *A. exilis*, Jeffr., still more *A. bovetensis*, Seguenza, but is obviously different from both.

3. ACTÆON TURRITUS, n. sp.

St. 24. March 25, 1873. Lat. $18^{\circ} 38' 30''$ N., long. $65^{\circ} 5' 30''$ W. St. Thomas, N. of Culebra Island, Danish W. Indies. 390 fms. Coral-mud.

Shell.—Strongish, oblong, pale yellow, translucent, somewhat glossy, with a high conical coarsely tipped spire and rounded striated whorls. *Sculpture*. Longitudinals—there are many feeble lines of growth. Spirals—the surface of the shell is scored with narrow, shallow, irregular, unequal, distant furrows formed by hardly continuous stippings which are round on the upper and oblong on the last whorl; between these furrows there often occurs a weaker one formed in the same way; on the base they are small and crowded; toward the upper suture they are strong, the first in particular is so. *Colour*: the shell itself is translucent white, but is covered with a very thin yellow membranaceous *epidermis*. *Spire* high, conical, and scalar. *Apex* very coarse and blunt, slightly immersed, but not inverted. *Whorls* 6, rounded above, cylindrical below; the last is short and slightly tumid. *Suture* very little oblique, strong and somewhat channelled. *Mouth* oval to pear-shaped. *Outer lip* leaves the body at a right angle; it is regularly arched throughout, patulous in

front. *Inner lip*: a thin defined glaze crosses the body and runs direct down the pillar with a straight sharp edge, behind which is a minute chink; the tooth, which is close up to the body, is very slight and blunt. H. 0·31. B. 0·18. Penultimate whorl, height 0·08. Mouth, height 0·17, breadth 0·1.

This species is represented by only one specimen, of which the outer lip is somewhat broken. The spire is extremely high and scalar. In this respect and in the rounded form of the whorls it somewhat resembles *A. (Solidula) suturalis*, A. Ad.; but the apex is much blunter and the sculpture much finer than in that species.

4. *ACTÆON AUSTRINUS*, n. sp.

St. 162. April 2, 1874. Lat. 39° 10' 30" S., long. 146° 37' E. Off East Moncœur Island, Bass Strait. 38 to 40 fms. Sand.

Shell.—Small, thin, ovate, strongly striated, with a high conical spire, blunt tip, and tumid body-whorl. *Sculpture*. Longitudinals—the lines of growth are very faint and somewhat markedly oblique. Spirals—the whole surface is scored with strong equal furrows which are about half the breadth of the interstices: these furrows are not stippled, but are delicately and regularly cut across on the lines of growth by fine threads: there are about 20 of these furrows on the body and about 9 on the penultimate whorl. *Colour* porcellaneous, with a glossy surface. *Spire* rather high, conical, subscalar. *Apex* rather large, blunt and flattened, with a very slight inversion of the extreme tip. *Whorls* nearly 5, very little convex; the last is rather large and somewhat tumid. *Suture* rather oblique, slight, scarcely impressed. *Mouth* oval, pointed above, a little oblique in its direction. *Outer lip* sharp and thin, with its edge crenulated by the sculptural spirals; in direction it is straight above, well curved on the base, where it is very slightly emarginate. *Inner lip*: very slightly convex on the body, it passes gradually into the short concave pillar, at the base of which there is only the faintest trace of a tooth; its edge is sharp and patulous, with a minute chink behind it. H. 0·18. B. 0·1. Penultimate whorl, height 0·06. Mouth, height 0·11, breadth 0·07.

This species slightly resembles *A. pusillus*, Forb., from the Mediterranean and North Atlantic; but the spirals in that species are stronger and are pit-marked, the suture is much stronger and more channelled, and the body-whorl is more barrel-shaped.

5. *ACTÆON AMABILIS*, n. sp.

St. 73. June 30, 1873. Lat. $38^{\circ} 30'$ N., long. $31^{\circ} 14'$ W. West of Azores. 1000 fms. *Globigerina*-ooze. Bottom temperature $39^{\circ} 4$.

St. 85. July 19, 1873. Lat. $28^{\circ} 42'$ N., long. $18^{\circ} 6'$ W. Off Palma, Canaries. 1125 fms. Volcanic sand.

Shell.—Small, ovate, white, with flattened whorls, a subscalar spire, a very blunt apex, a pear-shaped smallish mouth, and a very slight tooth on the pillar. *Sculpture*. Longitudinals—there are very faint hair-like lines of growth. Spirals—there are on the last whorl about 20, on the penultimate whorl about 8 rather strong and equal furrows stippled with roundish-oval pits; they become more crowded and weaker toward the middle of the base: just below the suture the first is minutely and slightly beaded, and it with the next one or two is strong and crowded; the flat surface which parts them is somewhat broader than the furrows. *Colour* translucent and subglossy white. *Spire* conical, high, scarcely scalar. *Apex* blunt and truncated; the extreme tip is very slightly inverted. *Whorls* 5, very slightly shouldered just below the suture: round the top there is a very slight constriction; below this the whorl is conical, and in profile flat on the sides; the last whorl is a very little tumid with a produced base. *Suture* very little oblique, strongish and well marked, but not channelled. *Mouth* pear-shaped, pointed above, a little oblique in direction, patulous or very slightly guttered in front of the pillar-point. *Outer lip* straight and parallel to the axis, and a little contracted above, arched and patulous in front. *Inner lip* slightly convex on the body, on which there is a thin but distinct glaze with a defined edge. There is a slight angulation at the junction of the body and the pillar, near the base of which is a very faint tooth amounting to no more than a slight swelling; the pillar itself is very slightly oblique, and is straight, narrow, with a sharp edge, behind which is a very slight and shallow furrow. H. 0.16. B. 0.1. Penultimate whorl, height 0.04. Mouth, height 0.08, breadth 0.05.

This species is a little like *A. austrinus*, Wats.; but compared to that the form is slimmer, the whorls are more laterally compressed and less convex, the shell is smaller, and the apex is more truncated. It a good deal resembles *A. levidensis*, S. Wood, but has a shorter body-whorl and mouth; the rise of the whorls in the spire is more scalar, and the apex is stumpier with a coarser tip.

6. ACTÆON (BUCCINULUS) CINEREUS, n. sp.

July 29, 1874. Levuka, Fiji. 12 fms.

Shell.—Strong, oblong, pointed at both ends, white, with three spiral bands of cindery spots; a high, conical, sharp-pointed spire, barely convex spirally striated whorls, a slight suture, a long narrow mouth emarginate in front, and a strongly twisted double-toothed pillar. *Sculpture*. Longitudinals—there are fine, approximate, hair-like, obsolete lines of growth. Spirals—there are on the body-whorl about 25, on the penultimate about 8, shallow square-cut furrows formed of small contiguous oval pit-marks: the flat raised surface of the shell between these is from one to three times as wide as the furrows. On the first two whorls these furrows are wanting; on the third whorl only one appears close below the suture. *Colour* porcellaneous and glossy white, with 3 narrowish bands of grey, made up of small, cindery, somewhat longitudinally arranged spots: these bands, absent on the earlier whorls, first make their appearance on the fifth, from which to the seventh there is only one band immediately above the suture; its upper edge is somewhat indefinite, flame-like expansions of it extending upwards here and there. On the body another similar band occurs at the periphery; and a third is on the base, originating just above the upper pillar-tooth; the two latter are more defined than the first: the cindery spots forming these bands are entirely absent in the furrows. *Spire* short and conical. *Apex* small and sharp, the minute tip being distinctly prominent and not in the least twisted or inverted. *Suture* slight, being scarcely impressd; in the earlier whorls it is very horizontal, but latterly it is oblique. *Mouth* long, narrow, curved-in toward the axis of the shell, sharply pointed above, channelled in front of the pillar-point. *Outer lip* sinuated above; the lip-edge is roundly prominent at the periphery, where it is patulous, hardly curved, and in direction oblique. On the base it is extremely patulous, a little pointed, very curved and retreating; at the point of the pillar it is very strongly emarginate. *Inner lip*: the glaze on the body is not very thick, and has a defined edge which does not extend beyond the mouth; near the point of the base it is swelled into a small, narrow, blunt oblique tooth, and at the point of the pillar it forms a very strong, twisted, oblique double tooth which dies out very speedily, and does not connect itself with the mouth-edge; the furrow above the double tooth is very strong. H. 0.4. B. 0.14. Penultimate whorl, height 0.06. Mouth, height 0.28, breadth 0.08.

This very pretty little species is very like *A. glaber*, Rve., but has a higher and sharper spire, a much feebler, less channelled suture, and lacks the sculpture on the upper whorls, which in *A. (B.) glaber* are harshly pitted up to the very apex. These three smooth apical whorls are very peculiar, and distinguish the 'Challenger' species from *A. (B.) strigosus*, Gould, from Japan, the coarse apex of which is strongly sculptured. In that species, too, the upper tooth on the pillar is very feeble*. My note on the British-Museum *Buccinuli* was that some of them seemed not well individualized, especially in the case of the various specimens of *A. glaber*, Rve., *A. affinis*, A. Ad., and *A. fumatus*, Rve., and, further, that *A. cinereus*, Wats., seemed to agree with two specimens of *A. glaber* on different tablets, the one from Fiji, the other from "Sandy Cape." Mr. Edgar Smith, who kindly compared the species for me, confirms this opinion. Writing on May 2, 1882, he says:—"We have this shell marked *A. glaber*, var., from Japan; but it is probably distinct from that species."

Genus RINGICULA.

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| 1. <i>R. pusilla</i> , n. sp. | | 3. <i>R. peracuta</i> , n. sp. |
| 2. <i>R. assularum</i> , n. sp. | | |

1. RINGICULA PUSILLA, n. sp.

September 7, 1874. Torres Straits. 3-11 fms.

September 8, 1874. Flinders Passage, Torres Straits. 7 fms.

September 8, 1874. Wednesday Island, Torres Straits. 8 fms.

Shell.—Minute, ovate, subelongate, pointed, spirally striate from end to end, with slightly canaliculate and submarginated suture and a large mouth. *Sculpture*. Longitudinals—there are very slight hair-like lines of growth. Spirals—the whole shell is scored with strongish deepish distant little furrows, which are rather more remote above than below the periphery; the first one below the suture is a little stronger than the others. *Colour* glossy translucent white. *Spire* rather high, conical, regular scalar. *Apex* small, rounded, the small tip being very little

* This observation of mine does not agree with that of Lischke, who in his 'Japanische Meeres-Conchylien,' 2ter Theil, p. 104, pl. v. f. 13, 14, says, "von den beiden Falten der Spindel ist die obere mässig." As he describes the lower one, however, as "sehr Kräftig," one may recognize from his figure that both expressions rather exaggerate the features they describe, and that his description of the upper tooth as "middling" is not materially different from my "feebler."

prominent. *Whorls* 5, subcylindrical, slightly convex, the penultimate is rather high. *Suture* canaliculate and submarginated. *Mouth* large, the teeth being small, suboblique. *Outer lip* somewhat obliquely drawn in and produced on the base, where it is round, patulous, and slightly sinuated; about the middle it is prominent and toothed; above it is narrowly and shallowly sinuated close to the body. *Inner lip* rather thinly and narrowly thickened, with a small tooth in the middle; the two pillar-teeth are oblique, parallel, and nearly equal, the lower being the larger. H. 0·067. B. 0·038. Mouth, height 0·034, breadth 0·027.

This species resembles *R. Goujoni*, de Folin, more than any I know; but the shell is shorter here, with a lower spire and a less exerted tip. The suture in that species is very much less canaliculate, the mouth is smaller, and the spirals are much less numerous and are more remote.

2. RINGICULA ASSULARUM, n. sp.*

September 8, 1874. Flinders Passage, Torres Straits. 7 fms.

Shell.—Small, somewhat lozenge-shaped, the left slope of the spire and the right base, the right slope of the spire and the left base being roughly parallel, smooth and without spiral furrows, with an obtuse spire, a small but blunt apex, and a mouth much contracted by the callus of the lips. *Sculpture*. Longitudinals—there are very slight rounded lines of growth. Spirals—none, except one feeble furrow toward the front of the base. *Colour* glossy white, with a faint bluish tinge. *Spire* short, conical, very slightly subscalar. *Apex* very small, rounded, prominent, and a little elevated on one side. *Whorls* 5, conical, convex; the first, which is very small, is a little depressed, but at its origin stands up prominent on one side; the last, viewed as the shell lies on its face, is two thirds of the whole length. *Suture* strongly marked, but not impressed, nor canaliculate nor marginated. *Mouth* small, oblique, very much narrowed by the teeth of both lips. *Outer lip* very much thickened, with a large prominent blunt tooth on the inner side above the middle: there is a shallow sinus above at the junction of the lip with the body, and a very small one at the point of the pillar. *Inner lip*: there is a thick toothed pad on the body; of the two pillar-teeth

* *Pace* Captain Flinders, I have allowed myself to borrow from Plautus's rendering "*facere assulas foribus*" of our idiomatic English phrase, "to knock the door in *flinders*."

the lower, though stronger, is slightly less prominent than the upper. H. 0.11. B. 0.07. Mouth, height 0.064, breadth to outside of callus on both lips 0.058.

This species is not unlike a small *R. auriculata*, Menard; but the spire is more depressed, the apex is slightly flatter, and the extreme tip is hardly so small.

3. RINGICULA PERACUTA, n. sp.

St. 24. March 25, 1873. Lat. $18^{\circ} 38' 30''$ N., long. $65^{\circ} 5' 30''$ W. N. of Culebra Island, St. Thomas, Danish W. Indies. 390 fms. Coral-mud.

St. 56. May 29, 1873. Lat. $32^{\circ} 8' 45''$ N., long. $64^{\circ} 59' 35''$ W. Off Bermudas. 1075 fms. Grey ooze. Bottom temperature $38^{\circ} \cdot 2$.

St. 122. September 10, 1873. Lat. $9^{\circ} 5' S.$, long. $34^{\circ} 50' W.$ Off Pernambuco. 350 fms. Mud.

Shell.—Ovate, with a somewhat high conical small pointed spire, smooth and glossy, spirally furrowed below the periphery, with a marginated suture and a largish mouth. *Sculpture*. Longitudinals—the whole surface is pretty regularly scored with distinct, but not sharp, shallow furrows on the lines of growth. Spirals—just below the suture is a fine furrow fictitiously strengthened by the shining through of the superior whorl; from the periphery to the point of the base there are rather remote spiral furrows, which seem to vary as usual in number and in distinctness. *Colour* glossy white, with faint bluish tinge. *Spire* rather high, conical, scarcely subscalar. *Apex* sharp; for though the extreme tip is a little tumid, it stands well up and is rounded. *Whorls* 5, conical, slightly convex; the last is a little tumid above, but a little way behind the outer lip it becomes contracted and flattened. *Suture* distinct. *Mouth* rather large, not very oblique. *Outer lip* very oblique to the axis of the shell, slightly thickened, toothed and prominent in the middle, with large open sinus above, and a very slight one in front. *Inner lip*: there is a rather slight callus with a small tooth about the middle; the pillar-teeth, which are very far from parallel, are nearly equal. H. 0.18. B. 0.1. Mouth, height 0.1, breadth 0.07.

R. grandinosa, Hds., from the W.-African coast, is not unlike this species, but is smaller; the body-whorl in particular is much smaller, while the penultimate is larger; it is without sculpture

on the base, and the upper whorls are strongly spiralled. *R. acuta*, Phil., from the Red Sea, is smaller, with a less swollen body-whorl and more tumid base; the whorls of the spire are less tumid and less exerted. *R. Someri*, de Folin, from the Cape Verde Islands, which is like in general aspect, is a much smaller, thicker, and more spiralled shell, with a less tumid body-whorl and more regularly conical spire, the slope of the whorls being more flattened; the apex, too, is much finer. *R. semistriata*, D'Orb., from Cuba, is shorter, broader, and less spiralled. *R. auriculata*, Menard, which is perhaps as like as any, has not the contracted base, and its extreme tip is 0.004 in. broad, while here the tip is 0.008 in., or half as much.

I have called this species *peracuta*, because, though certainly not very sharp, it is much more so than *R. acuta*, Phil.

On a new Peritrichous Infusorian, *Gerda caudata*.

By FREDERICK W. PHILLIPS, F.L.S.

[Read April 5, 1883.]

THE infusorian here recorded was found by me in water from a pond at Hertford Heath, in company with large numbers of that rather rare Rotifer *Æcistes pilula*. It is most nearly allied, and is now provisionally attached, to the genus *Gerda* (the first genus of the subfamily Vorticellina), which is thus diagnosed in Mr. Saville Kent's recently published 'Manual of the Infusoria':—

"Animalcules solitary, elongate, subcylindrical, recumbent upon, or simply adherent to, submerged bodies; not possessing a distinct sucker or specialized organ of attachment as in the genus *Scyphidia*; oral system including a peristomal border, vestibulum, and ciliary disk as in the ordinary *Vorticellæ*; increasing by longitudinal fission."

The genus at present is limited to two species. The first, *Gerda glans*, was discovered by Claparède and Lachmann in vegetable débris near Berlin, and is thus described:—

"Body elongate, subcylindrical, highly contractile, three or four times as long as broad, the wider posterior region during contraction of a cup-like form; surface of the integument transversely striate; oral aperture narrow; pharyngeal cleft deeply pro-



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