

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

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*Families and Genera.*PYRAMIDELLIDÆ, viz. *Aclis*, *Fenella*, *Dunkeria*?NATICIDÆ, viz. *Natica*.CASSIDEA, viz. *Oniscia*.TRITONIDÆ, viz. *Triton*, *Ranella*, *Nassaria*.ACLIS, *Lovén*.1. *Aclis mizon*, n. sp.3. *Aclis sarissa*, n. sp.2. *Aclis hyalina*, n. sp.1. ACLIS MIZON, n. sp. (*μείζων*, rather large.)St. VII. p. Feb. 10, 1873. Lat. 28° 35' N., long. 16° 5' W.
Teneriffe. 78 fms. Coral.

Shell.—Broadly subulate, high, conical, umbilicated, thin, glassy, feebly ribbed longitudinally. *Sculpture*. Longitudinals—on the penultimate whorl there are about 40 feeble unequal rounded riblets, which run obliquely from left to right across the whorl; they die out on the last whorl, which, towards the mouth, presents a slightly malleated surface; on the upper whorls these riblets are fewer but more equal and distinct, but gradually die out towards the apex; they are parted by furrows rather broader than themselves; on the base they are very feebly present; the whole surface is further covered with faint irregular hair-like lines of growth. *Spirals*—there are a few very feeble, flatly-rounded, barely raised threads on the last whorl; these are rather more distinct on the base. The edge of the base is slightly and hesitatingly angulated; the lip of the umbilicus is much more distinctly and sharply so. *Colour* thin transparent white, so as to be almost glassy. *Spire* conical, long and fine. *Apex* small, quite regular, and perfectly rounded, with a minute flattening down of the extreme point of the first whorl, merely sufficient to prevent its being prominent. *Whorls* 15–16, of very gradual and regular increase, rounded, but the equal curve is slightly flattened for the first two fifths of the whorl's height; the base is flatly rounded and rather produced. *Suture* linear, regular, impressed.

Mouth rather small, rhomboidal, having an acute angle above and at the point of the pillar, and an obtuse angle at the corner of the base and at the top of the pillar. *Outer lip* very thin and sharp; it joins the body just at the circumbasal angulation, and springs at once very much forward, so as to form with the body a small, shallow, but acute-angled sinus; with a slight and regular forward curve it thus advances to the angulation of the base, from which it runs straight, flat, and slightly patulous to the point of the pillar, which it joins at a bluntly-acute angle, forming a slight but not at all incised canal. *Pillar* is not at all oblique, but is very slightly concave. *Inner lip* is entirely discontinuous across the body, and first makes its appearance in a small and slight porcellaneous pad, which closely encircles the base of the pillar; its sharp-edged, narrow, and slightly patulous face forms the entire pillar. *Umbilicus* lies behind the thin pillar-lip, and is a distinct, little, pervious, funnel-shaped pore, sharply defined by the intrabasal carination. H. 0.62. B. 0.2. Penultimate whorl, height 0.083. Mouth, height 0.12, breadth 0.088.

I doubt very much whether this species really belongs to this genus. From Sars's *Hemiactis* it seems, judging from his diagnosis and excellent drawings, to be distinguished by the thinness of the spire and by the minuteness of the apex, the size of the umbilicus, and the smallness of the mouth; in doubt, therefore, I accept Dr. Gwyn Jeffreys's advice, and classify it as an *Actis*, a convenient, because somewhat vague group. I have said that the shell is broadly subulate. The measurements show very plainly that it is so only relatively to its fellows in the genus.

2. *ACTIS* *HYALINA*, n. sp.

St. 122. Sept. 10, 1873. Lat. 9° 5' S., long. 34° 50' W. Off Pernambuco. 350 fms. Mud.

Shell.—Broadly subulate, high, conical, umbilicate, ribless or very faintly ribbed on the earlier whorls, thin, glassy. *Sculpture*. Longitudinals—there are very many, close-set, faint, irregular angulations of the surface, which, besides, is covered with very fine hair-like striæ; these under a lens look very sharp and regular, but under the microscope are seen to be rounded and irregular, made up of little inconstant curves, with changing swellings and depressions. Spirals—the surface is faintly malleated in a somewhat orderly fashion; but besides the larger system of malleations there is a second system a good deal smaller and more irregular,

and the raised edges of these very slight depressions run in very numerous irregular and variable spiral lines, which are so slight as only to be visible in a changing light. On the base the longitudinal striæ are rather stronger, and the spiral system feebler than on the spire. The edge of the base is rounded, but there is a change of course at that part which produces a very slight angulation. The lip of the small umbilicus is thickened and angulated. *Colour* glossy on the surface; the shell is milkily transparent, glassy, and thin. *Spire* conical, with a very slightly concave profile, long and fine. *Apex* small, rounded, but with a very slight contraction and prominence on one side, in consequence of the extreme tip being not entirely suppressed. *Whorls* 12, of gradual and regular increase, convex; the base is rounded, slightly tumid, and produced. *Suture* linear, regular, rather sharply though minutely impressed. *Mouth* small, oval. *Outer lip* leaves the body a little below the contraction of the base; from this point it advances forwards so as to form with the body a small but acute-angled sinus; it sweeps round, not patulous, with a very regular curve to the point of the pillar, which it joins at a bluntly-acute angle, and forms there a slight but not at all incised canal. *Pillar* is very slightly oblique and a little concave. *Inner lip* is entirely discontinuous across the body, and first appears in a minute thin abrupt edge, which surrounds the base of the pillar; its very thin, narrow, and slightly patulous face forms the entire pillar. *Umbilicus* lies behind the thin pillar-lip, and is a minute deep funnel-shaped pore, sharply defined by its angulated and thickened basal lip. H. 0.42. B. 0.15. Penultimate whorl, height 0.062. Mouth, height 0.094, breadth 0.064.

This species is very closely related to *A. mizon*, W., and in any classification they will certainly go together. From that species this differs not only in the ribs, which are probably a very variable feature, but, besides, the shell is proportionally broader, the spire is less attenuated, the base is rounder and more tumid, the suture is more *linearly* impressed and less open, the whorls are more regularly rounded and of more rapid increase, the apex is larger, and the extreme tip is more projecting.

3. *ACLIS SARISSA*, n. sp. (*sarissa*, a pike.)

St. 122. Sept. 10, 1873. Lat. 9° 5' S., long. 34° 50' W. Off Pernambuco. 350 fms. Mud.

Shell.—Subulate, conical, smooth, white, glossy, with rounded

whorls and a somewhat impressed suture. *Sculpture*. Longitudinals—there are a few very minute and faint lines of growth. Spirals—there are a few irregular and very slight transverse angulations, which are connected with a very subdued and almost invisible malleated surface, which may be seen in a changing light. *Colour* white, probably transparent in fresh specimens; the surface, which is glassy, is very smooth. *Spire* conical, but not quite regularly so, being slightly convex in the middle and very faintly concave above and below. *Apex*, for the genus and relatively to size, blunt, almost slightly tumid, round, but with the faintest conceivable prominence on one side of the extreme tip. *Whorls* 9, of regular increase, though the last is a little disproportionally large, well rounded; the last, which is slightly tumid, has a very faint trace of angulation below the suture and at the edge of the base, which is flatly rounded and projecting, with a slightly thickened and angulated carination round the umbilicus. *Suture* linear, impressed, and very slightly oblique. *Mouth* oval, bluntly angulated above, effuse on the base and slightly so on the outer lip. *Outer lip* is slightly pinched in at its union with the body; from this point it runs out to the right with a free curve, but, speedily turning to the left, its course is straight, and here it is prominent, and it becomes increasingly patulous as it curves quickly round to join the pillar. *Pillar* is not at all oblique, but is slightly concave. *Inner lip* crosses the body on a thin but sharply-edged pad; it is thin, sharp, and scarcely patulous on the front of the pillar. *Umbilicus*: there is a small funnel-shaped trough between the pillar-lip and the angulated edge of the base, but this contracts immediately to a mere chink. H. 0.153. B. 0.053. Penultimate whorl, height 0.026. Mouth, height 0.039, breadth 0.03.

This species is like *A. Walleri*, Jeffr., but certainly distinct; the shell is broader, the whorls, which are fewer (9 instead of 11), are rounder, being less flattened, constricted above and less bulgy below, the spire, which is less regularly conical, is not so attenuated, the apex is not nearly so fine, and the surface of the shell is smoother, the longitudinals being less visible, while the malleated structure, which also exists in *A. Walleri*, is here even less visible.

FENELLA, *A. Ad.*

I have put this genus here rather for convenience than from

having any definite view of its true place. Mr. Adams considers it most nearly connected with *Rissoa* (subgen. *Alvania*); but his description of the animal does not justify this estimate; and, so far as I am aware, its true place is undetermined.

FENELLA ELONGATA, n. sp.

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

St. 78. July 10, 1873. Lat. $37^{\circ} 24'$ N., long. $25^{\circ} 13'$ W. Off San Miguel, Azores. 1000 fms. *Globigerina*-ooze.

Shell.—Small, high, narrow, conical, with deep wide sutures and rounded whorls and base, translucent white. *Sculpture*. Longitudinals—on the last whorl there are 12–13 narrow and sharply-rounded, but not high, ribs, parted by furrows about four times their width; they cross the whorls with a slight sinistral obliquity, and are abruptly interrupted on the last whorl by the edge of a basal tabulation, where the entire base is levelled up beyond the summit of the ribs, which thus all but disappear. On the earlier whorls the ribs are rather fewer in number, and are somewhat closer set; on the third they are crowded, on the second and first they are absent. There are besides these very numerous, close-set, rounded, microscopic threads on the lines of growth; these, as usual, are most distinct on the base. Spirals—there are on each whorl three very narrow rather prominent threads, which rise into tubercles in crossing the longitudinal ribs. The highest, which is the strongest, is about two fifths of the whorl's height below the suture, the costal tubercles on it are sharp and prominent, and it forms a distinct though not strong carina; on the last whorl the edge of the basal tabulation, which exactly meets the outer lip, forms a fourth thread, and between all the spirals there is a faint trace of one intermediate, like a shadow; on the tabulation of the base there are three or four very feeble and faint rounded threads. *Colour* glossy, transparent white. *Spire* very high and narrow, perfectly conical, but having its outlines broken by the strong sutural contractions which constrict the top and bottom of each whorl. *Apex* small and regularly attenuated, but blunt and quite round, the extreme end being slightly impressed. *Whorls* $12\frac{1}{2}$, of very gradual and regular increase, with a sloping shoulder below the suture, roundly bulging and slightly contracted into the suture below: the projection of the

spiral threads gives the curve of the whorls a slight angulation, which is strongest at the carinal or highest of the three threads; the base is rounded and scarcely at all projecting. *Suture* lies in the bottom of a deep and broad angular constriction, and is well marked above by a minute round thread. *Mouth* small, gibbously oval, slightly pointed above and in front of the pillar. *Outer lip* thin, advancing very little at its junction with the body, and there a little contracted, slightly patulous in all the rest of its sweep. *Pillar* very perpendicular, concave and narrow. *Inner lip* is carried across the body as a thin glaze; it spreads out a very little just at the base of the pillar, up which it advances with a very narrow and slightly angulated, but not at all reverted edge. H. 0.36. B. 0.1. Penultimate whorl, height 0.05. Mouth, height 0.05, breadth 0.048.

This is a little shell of remarkable beauty. Its generic place has been very difficult to determine. Its outer lip is a little chipped, which has added to the difficulty. There are none of the microscopic spirals which characterize *Turritella*. There is no such siphonal canal as would justify its being classed as a *Cerithium*. The longitudinal sculpture separates it from *Mesalia*. Mr. Edgar Smith recommended *Fenella*, where it is now placed, because nothing more satisfactory suggests itself. Mr. A. Adams's diagnosis of the genus * " . . . labro simplici, acuto, non reflexo, incrassato aut varicoso," implies that the outer lip is not reflected, but is *either* thickened *or* varicose. In none of the species described is this feature mentioned; and Mr. E. Smith assures me that among the *Fenellas* of the British Museum, "of which we have several species and many specimens, I do not find any thickening or varix on the labrum." It seems probable, therefore, that Mr. Adams's thought was "non reflexo, incrassato nec varicoso," and that "aut" slipped in by accident and transformed his meaning. Still, a slight difficulty remains, since the aperture is not quite "*integra antice*," as the old lines of growth indicate, in spite of the chipped lip; but the indication of an "emargination" is too slight, as is said above, to allow the shell being placed under *Cerithium*.

DUNKERIA, *Carp.*

DUNKERIA FALCIFERA, n. sp.

St. 56. May 29, 1873. Lat. 32° 8' 45" N., long. 64° 59' 35" W.

* Ann. & Mag. Nat. Hist. 1864, xiii. p. 40; Journ. de Conch. 1868, p. 47, pl. iv. fig. 5.

Bermudas. Bottom temperature $38^{\circ}2$. 1000–1075 fms. Grey ooze.

Shell.—Small, high, conical, tapering a little abruptly to a fine point, with rounded whorls and base, longitudinally and spirally ribbed. *Sculpture*. Longitudinals—in the last two whorls there are 14–15 rather narrow and sharpish ribs; they slowly increase in number as one follows them up the spire; on the two subembryonic whorls they suddenly increase to about 30. At the top of each whorl they are small, sharp, and strongly convex towards the left; lower down on the whorl they are straight; they are parted by flattish furrows two to three times their breadth; on the last whorl they are oblique and somewhat irregular in form and arrangement, on the base they disappear. Besides these the whole surface of ribs and furrows is scored with microscopic rounded and very distinct threads. Spirals—on each whorl there are five small rounded spiral threads; the highest and strongest lies at about two fifths of the whorl's breadth below the suture, and forms an angular shoulder on the whorl, whose chief projection is at this point; the rest are pretty equally distributed on the whorl; the fourth is weaker than the two above it, and the fifth, which is still smaller, lies exactly at the suture. All of these, but especially the first, rise into little sharpish knots as they cross the ribs; on the subembryonic whorls they disappear. *Colour* glossy, translucent white. *Spire* high and conical, but the upper fourth of the shell tapers a little abruptly to a very fine point; its outlines are broken by the strong sutural constriction. *Apex*: the extreme tip is broken. *Whorls*: there are eight below the missing embryonic one, of rapid growth in height and breadth; they have a sloping shoulder below the suture down to their point of chief breadth at the carination; from this to the third spiral, where is also a slight carination, they have a straightish outline; below this they contract on an equable curve into the suture; the base is roundly conical. *Suture*: its place is strongly defined by the constriction at the top and bottom of each whorl and by the lowest spiral, which forms its upper edge, but it is much interrupted and obscured by the curved points of the ribs, which bend round convergingly into it. *Mouth* gibbously oval, being almost semicircular to the right and obliquely straight on the body and pillar. *Outer lip* thin, advancing strongly at its junction with the body, from which point it retreats with a rapid open curve, which produces the sickle-like

form of the ribs from which the species is named; across the base it is slightly flattened and patulous, with a faint open canaliculation towards the point of the pillar. *Pillar*, with a minute but distinct twist, is very oblique both backwards and to the left; the line of it runs very straight across the body and out nearly to the point of the pillar, where it curves round to join the basal lip. *Inner lip*: a thinnish porcellaneous glaze crosses the body and spreads a little outside of the mouth and round the base of the pillar, to which it also forms a very narrow, thin, and flatly patulous edge, which is angulated both to the inside and the out. H. 0.26. B. 0.09. Penultimate whorl, height 0.044. Mouth, height 0.055, breadth 0.05.

This very beautiful little shell has some features of resemblance to the last (*Fenella elongata*, W.). The twist on the pillar-lip, though very slight, is unmistakable; and this feature makes the absence of the extreme tip of the apex the more to be regretted, as its character would have determined whether this species ought not more properly to have been classed among the *Odostomias*. *Dunkeria*, however, has an elasticity which makes it very suitable for a doubtful classification. Dr. Philip Carpenter, in the Mazatlan Catalogue, p. 433, in establishing the subgenus, says that it "combines the characters of *Chemnitzia* and *Aclis*, presenting the mouth of the former with the rounded whorls of the latter. It agrees with all the other sections of the family in having its limits badly defined."

NATICA, Adanson.

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| 1. <i>N. philippinensis</i> , n. sp. | 7. <i>N. leptalea</i> , n. sp. |
| 2. <i>N. atypa</i> , n. sp. | 8. <i>N. xantha</i> , n. sp. |
| 3. <i>N. pseustes</i> , n. sp. | 9. <i>N. prasina</i> , n. sp. |
| 4. <i>N. suturalis</i> , n. sp. | 10. <i>N. fertilis</i> , n. sp. |
| 5. <i>N. radiata</i> , n. sp. | 11. <i>N. apora</i> , n. sp. |
| 6. <i>N. amphiala</i> , n. sp. | |

1. NATICA PHILIPPINENSIS, n. sp.

St. 210. Jan. 25, 1875. Lat. 9° 26' N., long. 123° 45' E. Philippines. 375 fms. Mud. Bottom temperature 54°1.

Shell.—Rather depressedly but conically globose, umbilicate, with rounded prominent whorls, thickish, slightly ribbed and spirally striate, yellowish, with a brownish band above the periphery. *Sculpture*. Longitudinals—the upper whorls are closely

crossed by numerous riblets, whose front edge is sharp; they are strongly convex in front, especially near the top of the whorl; on the last whorl these become feeble, especially at the periphery; besides these there are slight, close-set, rounded striæ on the lines of growth. Spirals—the whole surface is scored by faint irregular and unequal furrows and microscopic lines; there is a twisted, prominent, but blunt umbilical carina. *Colour* porcellaneous white under the yellow epidermis, with a broad buff band which extends from the periphery halfway to the suture. *Epidermis* yellow, thin, glossy, but roughened by longitudinal folds. *Spire* short, but raised. *Apex* very small, prominent, but the extreme tip scarcely rises into view. *Whorls* 6 (of which the first three are embryonic and of a faint brownish purple), tumid, well rounded, of rapid increase. *Suture* nearly horizontal, deep, almost channelled. *Mouth* not much oblique, a little gibbously semicircular, slightly more than three fourths of the whole height of the shell, open, slightly and bluntly angulated at the point of the pillar, pure white within, but with a slight ruddy tinge, deepening to a rusty stain towards the edge of the lip, where the buff spiral band lies. *Outer lip* a little contracted above, and there faintly flattened; it curves very equably throughout its whole sweep; it is open, but with a straight sharp edge, and projects bluntly at the extreme point of the shell, where the umbilical carina joins it. *Inner lip* pure white, straight, oblique, flat, and obsoletely channelled within, with a slightly thickened rounded edge; it is joined above to the outer lip by an expanded but not very large nor thick callus; below this, where it leaves the body-whorl, it is thin and hollowed out, but below the middle of the umbilicus it is thickened by a prominent umbilical callus; below this it is slightly more reverted and thicker than above, and it is very obtusely angulated towards the point of the pillar. *Umbilicus*, which is defined by the basal carination, is deep; in consequence of the thinning and hollowing out in the inner lip above and of a strong furrow between the umbilical callus and the basal carina, it looks as if it were large, but it is contracted by the low-lying and strongish spiral callus within. H. 0.67. B. 0.6. Penultimate whorl, height 0.16. Mouth, height 0.505, breadth 0.407.

This species is very like the young of *N. rufa*, Born, from Singapore; but it is higher in the spire; the umbilical pad, which is white, not brown as in that other, is also smaller, lower in position, and

separated distinctly from the pad at the upper angle of the mouth; the radiating wrinkles on the upper whorls are much stronger and more regular, and the embryonic apex is very much smaller, sharper, and more distinctly defined. *N. vittata*, Gm., which in other respects is quite different, has the same pillared umbilicus with carinated edge, which is, indeed, not unusual in the genus.

2. *NATICA ATYPHA*, n. sp. (*ἄτυφος*, unpretending.)

St. 188. Sept. 10, 1874. Lat. $9^{\circ} 59'$ S., long. $139^{\circ} 42'$ E. W. of Cape York, S.W. of Papua. 28 fms. Mud.

Shell.—Depressedly conically globose, umbilicate, spire little exerted, smooth, of a pale, faintly ruddyish white, with an obscure, broad, rusty band above the periphery. *Sculpture*. Longitudinals—there are many slight, hair-like, faintly sinuous lines of growth, which towards the suture are gathered into puckerings, and become stronger towards the umbilicus. Spirals—the whole surface is very faintly superficially and unequally furrowed, and is also slightly microscopically and regularly scratched. Within the umbilicus, but finally running out with a twist to the point of the pillar, is an indistinct and blunt circumumbilical carina. *Colour* ivory-white, with a faint tinge of buff, hardly glossy; from the periphery to within one third of the whole distance to the suture there extends a broad, pale ruddyish-purple band, whose colour deepens on the spire to the apex. *Epidermis*: none visible. *Spire* short, the separate whorls being little prominent. *Apex* rather large and tumid, but depressed. *Whorls* $4\frac{3}{4}$, the first $1\frac{3}{4}$ of which are embryonic; they are well rounded and tumid, of slow and regular increase. *Suture* nearly horizontal, but more oblique towards the mouth, not deep, but slightly channelled. *Mouth* slightly oblique, nearly semicircular, but a little pointed above, about three fourths of the total height, open, slightly angulated at the umbilical carina, pure white within, but with a very faint tinge of rust at the band. *Outer lip* open, thickish and blunt, a little flattened above where it leaves the body-whorl; its curve is very equable throughout. *Inner lip* porcellaneous white, straight, little oblique, reverted, thickish, with a minute ledge within the edge of the mouth; its upper corner has a largish, slightly projecting pad, with a slight shallow channel between it and the edge of the outer lip; below this pad the inner lip slightly retreats, but at the large white pad which fills the upper part of the um-

bilicus it advances very prominently, with a strongly defined edge; below this pad it retreats sharply to the pillar, forming a nick on the left side of the pillar; below this it is again thickened and expanded at the umbilical carination. *Umbilicus* funnel-shaped, narrowed rather than defined by the umbilical carina; it is half concealed and within reduced to a mere pore by the heavy twisted umbilical pad. H. 0.43. B. 0.45. Penultimate whorl, height 0.11. Mouth, height 0.35, breadth 0.26.

This species resembles *N. phytelephas*, Rve., from Australia; but in that species the spire is not so much exerted, the umbilicus is open, circular, pervious, and spirally lirate. It is perhaps nearest to *N. plicatula*, Nuttall, from China, but is much more depressed, has the earlier whorls smaller, and though the umbilicus is like it is much larger though more closed by the interior pad. *N. Raynoldiana*, Récl., has (?) the same kind of umbilicus, but the front of the body-whorl is shorter and the apex is much finer.

3. *NATICA PSEUSTES*, n. sp.

July, 1874. Levuka, Fiji. Shallow.

Shell.—Rounded, with no angulation in the whole contour, obliquely depressedly globose, with spire scarcely projecting, thin, smooth, glossy, porcellaneous white, with a zone of large chestnut irregular spots below the suture; the umbilicus and pillar are uniformly stained with the same colour. *Sculpture*. Longitudinals—there are many delicate hair-like lines of growth, which are strongest and most crowded near the suture and round the umbilicus. Spirals—there is a very faint appearance of rounded threads and furrows, one of which below the suture is a little stronger than the rest; besides these the surface is densely, delicately, sharply, microscopically scratched; these scratches are strongest on the upper part of the last whorl near the mouth, where their intersection with the lines of growth produces a very delicate sharp cross-hatching. The centre of the base has a scarce perceptible carination, which becomes stronger just behind the point of the pillar; within this carination is a strong but shallow umbilical furrow, which deeply cuts in on the pillar, and curves round the base of the strong pad which chokes up the umbilicus. *Colour* semitransparent, porcellaneous white, which becomes a dead white round the umbilicus and also in a broadish band below the suture; this white band is flecked with irregular sharply defined, ruddy chestnut spots; a stain of this colour in

a lighter shade suffuses the whole umbilicus and pillar: the rest of the shell is covered with a delicate network of fine, sharply defined light-chestnut lines; amidst this network are two or three spiral zones, where the brown lines are sparser and pale lanceolate spots appear. *Epidermis*: none visible. *Spire* scarcely raised, but just perceptibly conical. *Apex* rather large, with the extreme rounded tip appearing at the highest point of the shell. *Whorls* $4\frac{3}{4}$ (of which the first $2\frac{1}{4}$ are embryonic and glassy), very flatly rounded, of rather slow increase. *Suture* almost horizontal and very slight. *Mouth* very oblique, semicircular, but pointed above and rounded below, with a slight angulation at the front of the pillar; the filling up of the superior corner by the labial pad equalizes the two extremities and reduces the opening to an unequal-sided oval; its entire height is about $\frac{10}{11}$ of the whole height of the shell; it is open, transparent porcellanous white within. *Outer lip*: it advances slightly on leaving the body-whorl, but beyond the pad retreats a very little, and from this point its whole curve is very equable; its edge is blunt and rounded. *Inner lip* very slightly concave; at the upper angle of the mouth it is formed by a thick transparently porcellanous pad, which is faintly tinged with chestnut: this pad projects beyond the plane of the mouth in a point, which is separated from the outer lip by a little triangular depression; it is continued with an uneven surface across the body, and unites with the pad which closes the upper part of the umbilicus, and is connected with the great chestnut-coloured spiral buttress which chokes up the umbilicus, below which the narrow umbilical furrow cuts deeply into the thickness of the pillar, whose edge is bevelled off from without and from within; towards its point the pillar is thickened by the feeble circumumbilical carina, which is rather suddenly developed and made distinct at this point. *Umbilicus* consists only of the channel or gutter, which twists round the pillar callus and disappears behind it. H. 0.327. B. 0.36. Penultimate whorl, height 0.075. Mouth, height 0.29, breadth 0.16.

Brazier, in the Chevert Exped. Marine Shells, Proc. Linn. Soc. N. S. Wales, 1877, i. p. 237, gives what is, I suppose, this species under the name of *Lunatia variabilis*, Récluz, and ascribes as its habitat N. and N.E. Australia and New Caledonia, 5–30 fms. In the British Museum there is a *Natica* presented by M'Andrew, and in his handwriting and initialed by him it is attested to come from Suez; probably it was his own dredging there (see his

Report on Suez dredgings, Ann. & Mag. Nat. Hist. 1870, vi. p. 437). It bears the name *N. marmorata*, H. Adams*. With that shell the 'Challenger' species described above is identical. But *N. marmorata*, H. Ad. (P. Z. S. 1869, p. 274, pl. xix. fig. 8) is certainly a mere synonym for *N. variabilis*, Récl.; and consequently the present species, which has hitherto passed for Adams's *N. marmorata*, requires both an individual name and a description, for it is beyond doubt distinct, though at first sight deceptively like, and, indeed, from this very fact the name proposed for it is borrowed.

Compared with *N. variabilis*, Récl., *N. pseustes* is a broader and flatter shell, with a more depressed spire; the apex is blunter, the embryonic whorls are $2\frac{1}{4}$ instead of 3 and are larger. Its coloration is very like that of *N. variabilis*, especially in the white band with large chestnut spots below the suture; but it has these spots less confluent, more ruddy, and there is none of the purple tinge on the spire which is traceable in that other. The coloured ornamentation in *N. pseustes* is a distinct network of minute, sharply defined, delicate lines, amidst which occur two or three spiral zones of lanceolate white spots where the brown lines are fewer. In *N. variabilis*, on the other hand, this coloured ornamentation is rather a mass of confused blotchy stains, with one or two spirals of brown arrow-heads parted by little white dots. There are very many other minute differences; but perhaps the best distinctive feature of all is that, when looked at perpendicularly to the centre of its axis, with the shell on its mouth and the base toward the observer, the oblique line of the base is in *N. pseustes* quite continuous and unbroken, while in *N. variabilis* in all stages of growth this basal line is abruptly interrupted by the projection of the pillar and the sweep of the basal lip.

4. NATICA SUTURALIS, n. sp.

St. 149 D. Jan. 19, 1874. Lat. $49^{\circ} 32'$ S., long. $70^{\circ} 0'$ E. Balfour Bay, Royal Sound, Kerguelen's Land. 60 fms. Mud.

Shell.—Conic-oval, thin, umbilicated, with a coarse, brown epidermis, suture channelled. *Sculpture*. Longitudinals—the surface is covered with fine, close-set, hair-like striæ, indicating lines

* M'Andrew in his Report (*l. c.*) gives "H. Adams" as his authority for this identification, but adds that "Mörch questions the species being identical." The identification being erroneous, M'Andrew's citation of the Canaries for the Suez species must be suppressed.

of growth. Spirals—there are a good many faint flexuous lines, and very obsolete but broader furrows. *Colour* apparently yellowish white, but there is a very persistent, dull ruddyish-brown *epidermis*, in which there are narrow longitudinal lines of lighter and darker shade. *Spire* high and scalar, each whorl rising high out of the one below. *Apex* quite worn away in both specimens. *Whorls* $4\frac{1}{2}$, tumid, large from the beginning and of slow increase. *Suture* not very oblique, channelled. *Mouth* very slightly oblique to the axis, semicircular, but a little slewed, so as to be very slightly pointed above, and unduly bulging below beyond the point of the pillar; it is two thirds of the total height of the shell. *Outer lip* retreats somewhat on leaving the body-whorl, and at this part is slightly contracted, but below this it is open and its curve is very regular; there is a very faint tendency to angulation on the base; its edge is narrow and sharp. *Inner lip* straight till it strikes the base of the shell, where it curves with a full rounded sweep to the right; it is carried across the body on a thickish, prominent, reverted layer, crosses the umbilicus with a thin reverted edge, which half covers the opening, and is thickened and rounded, with a narrowed edge at the point of the pillar. *Umbilicus* is a funnel-shaped opening, very much contracted and concealed by the reverted pillar-lip. H. 0.7. B. 0.63. Penultimate whorl, height 0.22. Mouth, height 0.47, breadth 0.38.

This species has so strongly the aspect of *Natica islandica*, Gm. (= *helicoides*, Johnston, = *canaliculata*, Gd., = *cornea*, Möller, out of which and the two latter synonyms Messrs. Adams form their genus (= Mörch's subgenus) *Amauropsis*, characterizing it by a feature which the species has not, viz. the absence of an umbilicus), that I can easily believe connecting links will yet establish their identity. The age of *N. islandica* and its distribution, as well as its present habitat in Subarctic and Arctic seas, make its presence in Antarctic regions more probable. But for the present it is impossible to unite them. *N. suturalis* has an epidermis which, though minutely marked very much like that of *N. islandica*, is coarser, darker-coloured, and more fibrous; the form of the shell is broader; the spire is lower, less scalar, with a less deeply channelled suture; the mouth is much rounder and is less pointed below.

5. NATICA RADIATA, n. sp.

North Atlantic, April or May, 1873. Over 1000 fms.

St. 33. April 4, 1873. Lat. $32^{\circ} 21' 30''$ N., long. $64^{\circ} 35' 55''$ W. Bermudas. 435 fms. Coral-mud.

Shell.—Strong, conically globose, with a high scalar spire, laterally compressed, so that its outline is peculiarly square; mouth small; umbilicus open, deep, and funiculate. *Sculpture*. Longitudinals—there are many, unequal, but generally fine lines of growth, which are strong above, and there radiate like curved spokes from the suture; they are sharpest and highest on the earlier whorls; on the base they are again stronger, and on the edge of the umbilicus they are sharply bent back, and form there an indistinct carina. Spirals—the whole surface is covered with very faint and narrow obsolete lines and furrows, over which is a minute system of sharp microscopic scratches. *Colour* polished porcellaneous white, with an indistinct and indefinite staining of buff below the shoulder and round the outside of the umbilicus. *Epidermis*: within the umbilicus are remains of a rather strong, thinnish, smooth, but puckered, blackish-yellow membrane. *Spire* high, scalar. *Apex* large, tumid, but with the extreme tip a very little bent down. *Whorls* 5, of which $1\frac{3}{4}$ are embryonic and glossy, rounded and rising high, each above the preceding one; they are laterally compressed so as to give a peculiar character to the shell, which is angulately shouldered below the suture, and tumid and broad at the base. *Suture* oblique, impressed, but not channelled. *Mouth* very small for the genus, very oblique, semi-circular, but reduced by the large superior labial pad to a flat-sided oval, deep, not open; its height is less than three fourths that of the whole shell. *Outer lip* narrow, but strong; it rises a very little at its junction with the body, retreats a good deal throughout its whole very equable sweep, till on the base towards the point of the pillar it very slightly advances, and there alone is a very little patulous. *Inner lip* oblique, very slightly concave; on the body it is formed by a large porcellaneous white pad projecting in a rounded knob, between which and the sharp edge of the outer lip is a small shallow depression; retreating and becoming thinner on the body, this pad projects prominently across the shell above the umbilicus, which it somewhat covers, but a furrow above the umbilical pillar cuts in on it; it spreads out in a half-circle on the point of this umbilical pillar; below this point another umbilical furrow cuts still deeper into it, but toward the point of the pillar it is broadened and reverted on the thickening of the slight circumumbilical carination. *Umbilicus* strong and

deep, narrowed by the overspread of the pillar-lip and by the strong, twisted, umbilical pillar, but helped by the strong furrow above and below this pillar. H. 0.42. B. 0.3. Penultimate whorl, height 0.13. Mouth, height 0.3, breadth 0.16.

This species is very peculiar in the squareness of its outlines, arising from an oblique lateral compression. When the shell is laid on its face a very slight angulation at the middle of the mouth is the only thing which breaks the whole basal profile. It has a slight resemblance to the young of *N. islandica*, Gm., especially in the form of the spire; but is very obviously different, being more compressed, with a much broader and shorter base.

6. *NATICA AMPHIALA*, n. sp. (*ἀμφιάλος*, sea-girt.)

St. 169. July 10, 1874. Lat. $37^{\circ} 34'$ S., long. $179^{\circ} 22'$ E. N.E. from New Zealand. 700 fms. Grey ooze. Bottom temperature 40° F.

Shell.—Thick, depressedly globose, with a small scalar, rather elevated spire, and a narrow obliquely pointed base; pale yellow, umbilicated. *Sculpture*. Longitudinals—there are many fine close-set lines of growth. Spirals—there are a few faint traces of obsolete lines and furrows; there is a slight angulation round the mouth of the umbilical pore. *Colour* is slightly brownish yellow, but is pure porcellaneous white below the *epidermis*, which is thin, slightly puckered, smooth, not glossy, persistent. *Spire* short, but abrupt and scalar. *Apex* seemingly rather large, but abraded. *Whorls* 4–5, narrow, flatly rounded, of gradual increase to the last, which is disproportionately large, especially toward the mouth. *Suture* strong, slightly channelled, almost quite horizontal. *Mouth* large, oval, very little oblique, and rather straight, scarcely pointed above; it is more than two thirds of the whole height. *Outer lip* sharp, but strong, patulous throughout. *Inner lip* straightish, but slightly concave in its whole length; it is expanded on the labial callus, which is thick, but has no labial nor umbilical pad; the front of the pillar is thickened and flattened back on the very indistinct circumumbilical carina. *Umbilicus* is a rather coarse, pervious, smallish round hole, hardly encroached on at all by the inner lip. *Operculum* membranaceous, thinnish, of a yellow colour, with a dark-maroon outer edge which does not quite coil in to the centre. H. 0.27. B. 0.25. Penultimate whorl, height 0.07. Mouth, height 0.21, breadth 0.17.

This species combines a flattened globose form with a pro-

minent pointed base and a small raised scalar spire, in a way that is very peculiar, so much so, indeed, that it almost recalls an *Amphibola*. *A. tenuis*, Gray, in particular, has features of resemblance. It very slightly resembles *N. nana*, Möller, from Greenland; but the body-whorl is more depressed, the spire is more exserted, and the umbilicus is not closed, as in that species.

7. *NATICA LEPTALEA*, n. sp. (λεπταλέος, delicate.)

St. 23. March 15, 1873. Lat. $18^{\circ} 24'$ N., long. $63^{\circ} 28'$ W. Off Sombrero Island, St. Thomas, Danish West Indies. 450 fms. *Globigerina*-ooze.

Shell.—Delicate, depressedly globose; spire slightly scalar, but with a flat round apex, thin, smooth and glossy, ivory-white, umbilicated. *Sculpture*. Longitudinals—very delicate hair-like lines of growth. Spirals—the whole surface is covered with very faint, minute, and superficial lines and furrows, complicated with sharper wavy microscopic scratches; the two so run into one another that it is difficult to say how far they are distinct, only they are so. *Colour* uniform ivory-white. *Epidermis*: none visible. *Spire* rises in a series of rounded steps from the inferior whorls. *Apex* large, but depressedly rounded. *Whorls* $4\frac{1}{4}$; the first $1\frac{1}{4}$ are embryonic, tumid, and equably rounded, of rather rapid increase. *Suture* very little oblique, slightly channelled. *Mouth* very oblique, roundly oval to circular, with a flattening of the left side; its height is rather more than five sevenths of the whole height. *Outer lip* open and well rounded throughout its whole sweep; its edge is thin. *Inner lip* is flatly curved; it spreads thinly across the body, is thinly reverted on the umbilicus, which it narrows but does not close, retreating at this point gradually to the pillar, where it is slightly nicked by the intraumbilical furrow; below this it is a little thickened and reverted throughout the length of the pillar. *Umbilicus*, which is small and funnel-shaped at its mouth, is not defined by any carina; within it is a slight furrow; it is half covered by the reverted lip, and contracts at once to a mere pore. H. 0.35. B. 0.33. Penultimate whorl, height 0.11. Mouth, height 0.26, breadth 0.2.

This species resembles some of the more flattened forms of the young of *N. Montagu*, Forb.; but than that species this is less globose, more depressed, with a higher, shorter, blunter spire, the apex of which has much coarser whorls; the mouth is much larger, more circular, and is not obliquely turned in under the

base of the body-whorl, as it comparatively is in *N. Montagui*. The umbilicus, too, is less open, and there is no trace of the umbilical pillar and superior furrow of that species. Than *N. bulbosa*, Rve., this species is rounder in the mouth, higher in the spire, and opener in the umbilicus.

8. *NATICA XANTHA*, n. sp. (ξανθός, yellow.)

St. 150. Feb. 2, 1874. Lat. $52^{\circ} 4' S.$, long. $71^{\circ} 22' E.$ Between Kerguelen and Heard Island. 150 fms. Rock. Bottom temperature $35^{\circ} 2.$

Shell.—Strongish, conically globose, slightly pointed below at the base of the mouth, glossy, bright yellow, but whitish around the umbilicus, which is a mere cleft. *Sculpture*. Longitudinals—there are very slight, rather unequal, hair-like lines of growth. Spirals—the surface is covered as usual with extremely faint superficial wavy lines and furrows, besides which is a system of still more superficial microscopic sharp straight scratches, which it is very difficult to see at all. *Colour* pure porcellanous white under the brilliant yellow *epidermis*, which is very thin, glossy and rather persistent. *Spire* high, but blunt at the top, which is somewhat eroded. *Apex* large, bluntly rounded. *Whorls* 4, the first one is large, and the shell increases very regularly; they are tumid and regularly rounded, and rise high above the succeeding ones; there is a slight and narrow swelling below the suture, with a very slight and shallow compression of the shell below this swelling. *Suture* channelled, but not broadly nor deeply so; it is considerably and increasingly oblique. *Mouth* large, open, broadly oval, with a slight flattening of its curve on the left side; its upper corner is very accurately rectangular. *Outer lip*, open but not very patulous, is a most regular curve in its whole sweep, which passes almost without change into the curve of the pillar. *Inner lip* is very slightly concave, till towards the front of the pillar it curves round to the right to meet the outer lip; a very slight pad fills up the upper edge of the mouth, a very thin transparent and straight-edged callus carries it across the body; over the umbilicus it is slightly thickened and a good deal reverted; at the point of the pillar, where it becomes adherent, it is encroached on very slightly by a small furrow, which runs out of the umbilicus parallel to the pillar; below this point the lip has a narrow, rounded, and expanded edge. H. 0.54. B. 0.47. Penultimate whorl, height 0.23. Mouth, height 0.42, breadth 0.3.

This *Paludina*-like form resembles no *Natica* known to me. It is narrower, longer in the last whorl, and higher in the spire than the most exceptional forms of *N. affinis*, Gm., var. *clausa*, Brod. & Sow. Philippi, in Küster's Mart. & Chem., reproduces pl. vii. 1, *N. limbata*, d'Orb., Patagonia, and pl. vii. 2, *N. isabelliana*, d'Orb., from South America, which vaguely have somewhat of the same features, and his *N. tenuis*, pl. xiv. 3, has so too; but these are species I do not remember to have seen, and none of the descriptions apply.

9. NATICA PRASINA, n. sp.

St. 149 D. Jan. 19, 1874. Lat. $49^{\circ} 32'$ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fms. Mud.

St. 149 E. Jan. 20, 1874. Lat. $49^{\circ} 28'$ S., long. $70^{\circ} 13'$ E. Royal Sound, Kerguelen. 28 fms. Mud.

Shell.—Conically globose, rather high in the spire, with umbilicus closed, thin, with a pale green roughish epidermis. *Sculpture*. Longitudinals—there are on the lines of growth slight puckerings of the fibrous epidermis. Spirals—there are some slight, open, irregular, and unequal furrowings of the surface, with microscopic scratchings. *Colour*: a pale buff colour below the dull greenish epidermis, which is fibrous, thin, easily rubbed through, but persistent. *Spire* more or less high, the whorls rising very considerably above each other in high rounded steps. *Apex* extremely large for the size of the shell but not prominent, being rounded, with the extreme tip sunk in and generally eroded. *Whorls* 5, of which about $1\frac{1}{4}$ are embryonic; they are globose, and increase regularly and slowly. *Suture* deep, very slightly channelled, straight, but towards the end a little oblique. *Mouth* large, open, circularly oval, little oblique, right-angled above, fully rounded below, with a scarcely perceptible angulation towards the point of the pillar, slightly flattened on the inner lip; its height is nearly seven ninths of the whole height. *Outer lip*—leaving the body-whorl at a right angle, it sweeps round very fully and regularly to the pillar; it is thin. *Inner lip* a little hollowed, with, on the body, a very slight projection; there is scarcely any pad at the upper corner of the mouth, and the callus is very thin on the body; above and at the umbilicus it is thinly and somewhat broadly reverted, so as quite to conceal the opening or to leave at most a mere chink; at the pillar it narrows, and there is at this point a slight transverse angulation; the pillar is the only part of the lip which is at all thickened, and that but slightly; the edge is rounded and

slightly levelled back. *Operculum* is membranaceous, thin, with a distinct and slightly impressed suture, and scored with sharp radiating lines. H. 0·64. B. 0·53. Penultimate whorl, height 0·15. Mouth, height 0·49, breadth 0·47.

N. globosa, King, from the Straits of Magellan, is somewhat like this, but has a much more depressed spire and longer mouth. Prof. v. Martens was good enough to compare this species for me with his *N. grisea*, and from that he says "it differs (1) by being considerably larger, (2) thinner, (3) penultimate whorl less prominent, (4) the last whorl, when seen from the dorsal side, is higher or longer relatively to the breadth, (5) the umbilicus is narrower; I think, therefore, that it is a distinct species, and I see also no other in the Berlin collection which might be identical."

10. *NATICA FARTILIS*, n. sp.

St. 145. Dec. 27, 1873. Lat. $46^{\circ} 43'$ S., long. $38^{\circ} 4' 30''$ E. Between Marion Island and Prince Edward Island. 50–150 fms. Grey sand.

St. 149 D. Jan. 19, 1874. Lat. $49^{\circ} 32'$ S., long. 70° E. Balfour Bay, Royal Sound, Kerguelen. 60 fms. Mud.

St. 150. Feb. 2, 1874. Lat. $52^{\circ} 4'$ S., long. $71^{\circ} 22'$ E. Between Kerguelen and Heard Island. 150 fms. Rock. Bottom temperature $35^{\circ} 2$.

Shell.—Globose, with a rather high spire and a somewhat elongated and pointed base, thin, with a delicate light-green epidermis; umbilicus closed. *Sculpture*. Longitudinals—the lines of growth are fine, hair-like, close-set striæ. Spirals—the surface is somewhat distinctly, though finely, scored with shallow furrows and faint lines, which are microscopically crimped; below the suture the whorls are compressed by a broad very shallow furrow, the lower side of which is very doubtfully angulated. *Colour* porcellaneous white under the delicate, slightly glossy epidermis, which is pale green, streaked on the lines of growth with darker green; the umbilical pad, pillar, and inside are dead white. *Epidermis* is a thin, rather persistent smooth membrane. *Spire* is rather high and conical. *Apex* rather large, raised so that the extreme tip projects, but rounded though not flattened. *Whorls* 6 (of which the first $1\frac{1}{2}$ are embryonic); they are scarcely rounded between one suture and the next, with a slight and narrow margin below the suture, then very slightly compressed; the last is very large and tumid in proportion to the rest, which project very little above it; they are of slow and very regular

increase to the last, which quite swallows up all the others. *Suture* nearly horizontal, small, not at all impressed, but very distinct, being slightly channelled, and being defined by the small margin and compression of the whorl below it. *Mouth* large but not very open, semicircular, oblique, almost right-angled above, rounded below; the swell of the body-whorl is just perceptible within; its height is more than seven ninths of the whole height. *Outer lip* very regular all the way round, its edge is thin. *Inner lip* a little flexuous; the upper corner of the mouth is filled up with a thinnish but broad pad, whose edge crosses the body in a slightly concave line; below the umbilicus, which it completely covers, it is contracted in on the pillar, which is thickish, rounded, and towards the point levelled back. *Operculum* testaceous, scored with slightish radiating lines; the spire is membranaceous, being left uncovered by the limy coat; but the one specimen which preserves the operculum is a young shell. H. 0·9. B. 0·75. Penultimate whorl, height 0·19. Mouth, height 0·73, breadth 0·52.

This species so closely approaches *N. affinis*, Gmel. (= *N. clausa*, Brod. and Sow.), that I have hesitated very much to separate them, and have been glad to be strengthened in so doing by the opinion of Prof. v. Martens and of Mr. E. A. Smith. *N. fertilis* is more globose, higher in the spire, longer and more pointed in the base, and less obliquely transverse in its outline; its apex is larger and slightly more prominent. *N. globosa*, King, from Magellan, like this in form, is umbilicated and has a thin operculum.

11. NATICA APORA, n. sp. (ἄπoπος, impervious.)

St. 191. Sept. 23, 1874. Lat. 5° 41' S., long. 134° 4' 31" E. Off Arru Island. 800 fms. Mud. Bottom temperature 39°·5.

Shell.—Conically globose, pointed on the base, with a pointed apex and a very slightly impressed suture; smooth but not glossy, buff-coloured, with white pillar-lip; umbilicus quite closed. *Sculpture*. Longitudinals—close-set, regular, hair-like lines of growth, which above near the suture are gathered into radiating puckers; these are strongest on the upper whorls. Spirals—there are traces of very slight furrows and obsolete lines, which are somewhat stronger and more regular on the base. *Colour*: below the ruddyish-yellow epidermis the shell is porcellaneous white. *Epidermis* thin, finely fibrous, persistent. *Spire* rather high and conical, its outline being hardly broken by the rounding of the whorls and the sinking in of the sutural lines. *Apex* large,

but, being eroded, the extreme tip is much effaced. *Whorls* 5, very little rounded, and, though flattened, not at all constricted below the suture. *Suture* oblique, scarcely at all impressed, but very slightly channelled. *Mouth* very oblique from the front backwards, but in its own direction very straight in the line of the shell's axis; oval, pointed above, and there slightly narrowed, fully rounded below; a considerable pad fills its upper corner; it is over four fifths of the whole height of the shell. It is slightly contracted above, and is not very open below; and is altogether rather small for the shell. *Outer lip* is a little flattened above; but from this forms a full round sweep. *Inner lip* slightly concave; the moderate pad which fills the upper corner of the mouth is divided from the edge of the outer lip by an angular furrow, below which a slight tubercular swelling runs out with a slight downward direction; the pad spreads widely and thinly across the body, and covers the umbilicus so as to leave of it only a mere chink; below this it narrows, but without any sudden contraction, to the somewhat thickened pillar, which is bevelled off to a narrow rounded edge, which is continued round on the base to meet the outer lip. H. 0·57. B. 0·45. Penultimate whorl, height 0·15. Mouth, height 0·41, breadth 0·3.

This species belongs to the *Amauropsis* group; but I know none with which to compare it. It is much higher and narrower than *N. impervia*, Phil., from Magellan Straits. There is a species of *Natica* from St. 169, N.E. from New Zealand, 700 fms., which may perhaps be this species; but it is in too bad condition for identification.

ONISCIA, *Sow.**

ONISCIA CITHARA, n. sp.

St. 192. Sept. 26, 1874. Lat. 5° 49' 15" S., long. 132° 14' 15' E. Ké Islands, west of Papua. 140 fathoms. Mud.

Shell.—Harp-shaped, being narrow below and broadish above; it has a somewhat raised and sharp-pointed apex, and is scored by many mucronated ribs and broad low spirals. *Sculpture*. Longitudinals—on the last whorl (but the shell is not quite adult) are 17 rather low, flexuous, narrowish, rounded ribs which are slightly crested on their front side; they are a little concave above, almost straight or very faintly convex for the most of their

* I do not feel called on to disturb this well-known name in favour either of *Lambidium*, Link, 1807, or of *Morum*, Bolten, 1798.

course, and retreat rather strongly so as to become horizontal as they die out on the pillar; they are parted by shallow flat furrows of unequal breadth, but greater than that of the ribs; over the whole surface, but especially in the furrows, are sharp puckerings with finer folds between, and close-set, sharp, almost microscopic striæ in the lines of growth; on the upper whorls the ribs are fewer and sharper. Spirals—on the last whorl there are 13 broad, low, squarish, raised bands, which are narrower and sharper on the snout: the first is at the suture; the second, a little remote, is narrower, but sharper than the rest; this and the third rise on the longitudinal ribs to high, narrow, sharp spikes which are parallel to the axis of the shell; the lower row of these is the larger, and they give the appearance of a shoulder: the spirals are most squarely prominent on the ribs, but are faintly continuous in the intervals; they are parted by square furrows of the same breadth as themselves; the surface of the shell is also finely scratched: below the spiral bands is a broad low swelling which curves round the pillar; it indicates the old canal, the former concave lines of whose edge form strong scores across it. *Colour* pale buff, with faint chestnut mottlings, which are concentrated and darkened in two distinct deep-purple bands in the middle of the last whorl, with fainter traces of two more below and another above near the suture; all these are vague in their limits. *Spire* raised, conical, scalar. *Apex* small, consisting of $3\frac{1}{4}$ embryonic whorls, which are polished, turbinated, and end in a fine, round, raised point; they are slightly iridescent; where they join the normal whorls there is indication of that thickening of the lip which is common in the embryonic shell of *Cassis*. *Whorls* (on the not quite adult specimen) 8, exclusive of the embryonic whorl; they rise high and constrictedly on each previous whorl, of which they leave but little uncovered; they are of very slow increase, the last is very little tumid, and that almost entirely above, its greatest breadth being at the third spiral; still they are convex throughout till near the point of the base, when the contour-line is slightly hollowed in passing over to the prominent but not lengthened nor narrow snout. *Suture* is a fine, angularly impressed, irregular line, much disturbed by the buttress-like ribs. *Mouth* long and narrow (but immature), pure porcellanous white within, but stained with the purple bands. *Outer lip* leaves the body at a right angle, but turns almost immediately to run parallel to the axis, thus forming a short narrow canal; from this point it

curves equably to the point of the shell, which is obliquely cut off upwards, forming a broad open canal. *Inner lip* spreads a little on the body in a porcellaneous glaze, narrowing to a sharp point in front; its direction is almost straight in an oblique direction to the extreme point, being only slightly concave in the middle. H. 1.6. B. 0.9. Penultimate whorl, height 0.14. Mouth, height 1.37, breadth 0.32.

In form and colour this is very like *O. cancellata*, Sow.; but in sculpture it is different, having the longitudinals much more numerous and the spirals much less sharp, especially less projecting at their intersection with the longitudinals; the spire is much lower, the edge of the last whorl projects much less sharply, and the spiral at the shoulder does not project nearly so much as the first spiral below this point. In the upper whorls there is not the sharp reticulation as in *O. cancellata*, from the intersection of the spirals by the sharp longitudinals. In that species, too, the embryonic apex is quite different, being a coarse flattened blob, much larger, and having at the outside only $1\frac{3}{4}$ whorls.

O. grandis, A. Ad., is much rougher, the spirals are more numerous and higher, the spikes on the spire are not so strong, nor do they run parallel to the axis, and the apex has fewer whorls. *O. Denisoni*, Rve., has all the spirals mucronated at their intersection with the longitudinals.

TRITON, *Lam.*

TRITON PHILOMELÆ, n. sp.

St. 135 c. Oct. 17, 1873. Lat. $37^{\circ} 25' 30''$ S., long. $12^{\circ} 28' 30''$ W. Nightingale Island, Tristão da Cunha. 100–150 fms. Rock, shells.

Shell.—A rather high narrow cone, with a contracted base and long reverted canal, two varices on the last whorl, and a thin bristly epidermis. *Sculpture*. Longitudinals—there are about 18 straightish ribs on the last whorl, these are fewer in number on the earlier whorls; they are rounded, a little prominent, and about half the width of the shallow depressions which part them; relatively to these the varices (of which there is one on each two thirds of a whorl) are high and prominent, though narrow; the whole surface, ribs and interstices, is rather coarsely striated with finish rounded threads on the lines of growth. Spirals—the last whorl is encircled by 6 or 7 rounded spiral threads, which on the longitudinals form blunt rounded tubercles, pretty equally

parted above, they are slightly more crowded on the base; the 2nd, 3rd, and 4th feebly carinate the body-whorl; between them lie 3 or 4 slighter rounded threads, which do not form tubercles on the ribs; below these on the base are 6 other spirals, with a similar feebler spiral between them, while on the snout there are about 9 pretty equal, close-set, rounded threads which run parallel with the open slit of the canal. *Colour* porcellanous white, with chestnut on the larger spiral threads. *Epidermis* of a pale ruddy brown, thin, rising along all the spirals into distinct short, sharp bristles, which are set on small round tubercles. *Spire* high and rather narrow, scalar, conical, but with its profile lines broken by the contracted suture. *Apex* consists of four polished, but spirally threaded, white, turbinated whorls, of which the first is extremely small and somewhat immersed. *Whorls* 8-9 in all; they have a sloping flat shoulder to the second spiral, below which they are cylindrical and scarcely convex; the last whorl is more tumid and rounded than the others, but is very much and rapidly contracted to the rather small, longish, sharply conical, lop-sided, and reverted snout, which, viewed from above, projects to the left from the right side of the base. *Suture* interrupted by the ribs and scarcely at all impressed, but strongly defined by the long sloping shoulder below it; on the embryonic whorls it is slightly channelled. *Mouth* almost round, but a little angulated and slightly distorted; a long, straight, and very narrow slit of a canal runs out of it toward the left, neither narrowing nor widening from the place where it leaves the mouth; its sinistral inclination seems to give the whole snout a turn to the left. *Outer lip*: its semicircular curve is a little flattened; at the point of the mouth it turns quickly and runs quite straight to the point of the snout, where it is a little obliquely cut off; the edge is sharpish, but with a tendency round the mouth to become double, in the form of an outside and an inside lamella parted by a minute shallow furrow; it is thickened outside by the slightly remote, narrowish, rounded, almost scrobiculated* varix, which on the snout loses definiteness and becomes doubtful; within it is thickened by a strong porcellanous milky-white varix, on which project 6 to 8 tubercle-like teeth, which are slightly elongated from within outwards; this

* I use this word to recall the similar, though stronger, feature in *Ranella scrobicator*, L.

labral varix is entirely absent at the upper angle of the mouth. *Inner lip*: its curve cuts somewhat deeply into the body-whorl, which it crosses as a thinnish, expanded, defined glaze; down the pillar it is reverted, with a slightly detached and projecting edge; towards the point of the mouth it is suddenly inverted so as to narrow and cover the canal, leaving behind it on the left a small shallow, angulated furrow whose labial side is scored with minute, blunt, interrupted lamellæ: there are 4 tubercle-like teeth on the pillar, of which the highest is often a little remote from the rest, the lowest, close to the origin of the canal, is smallest; the lip is plaited variously by the underlying spirals; near the upper corner is a single, rather obsolete tooth, which, like the rest, is a little elongated from within outwards. H. 1.15. B. 0.6. Penultimate whorl, height 0.26. Mouth, height 0.39, breadth 0.33. Canal, length 0.23, breadth 0.33.

This is a very exceptional form, and there is nothing much resembling it for comparison. It is narrower in the spire, less strongly ribbed longitudinally, with a shallower suture and much longer snout than *T. Quoyi*, Rve., = *T. viperinum*, Kiener nec Lam., which in some features it recalls. It is something like the young of *T. brasiliensis*, Gould, from Rio de Janeiro; but in that species the longitudinal ribs are feebler, the spirals much stronger, and the anterior canal and the whole aspect of the mouth is very different. I have quoted this note made from the specimen thus named in the British Museum. I did not at that time remember that this species of Gould has been held to be identical (see Kobelt, 'Jahrbücher d. D. mal. Ges.' 1878, p. 244) with *T. parthenopus*, v. Salis. If this identification be correct, I can hardly understand how I should have found it like the 'Challenger' species, which suggests no resemblance to the species of v. Salis.

RANELLA, Lam.

RANELLA FIJIENSIS, n. sp.

St. 173. July 24, 1874. Lat. 19° 9' 35" S., long. 179° 41' 50" E. Fiji. 315 fms. Coral.

Shell.—Ovate, turreted, conical, strong, but not heavy, with a long pillar, high narrow varices, and a superior row of pointed circular-based tubercles of a dead ruddyish yellow, with a few chestnut spots and suffused but paler patches. *Sculpture*. Longitudinals—there are high, narrow, alternate varices, which on the

earlier whorls follow continuously, but rather lag behind their true place; on the body-whorl they are dislocated by being thrown considerably in front of it; the last one does not extend to the snout; there are minute, not very continuous, uneven, longitudinal threads over the whole surface. Spirals—about a third of its height below the suture the last whorl is carinated at its periphery by a row of sharp, prominent, distant, round-based tubercles, which are hardly continuous nor set on a cord; on the spire this row nearly bisects the whorls, but is a little inferior; between this row and the suture there are placed alternately 3 fine tubercled threads and 2 tubercled cords, of which latter the upper is the stronger; its tubercles and those of the thread above it at the suture tend to coalesce; less than halfway below the periphery there is a row of smaller, less prominent, more numerous, pointed tubercles set on a cord; halfway between these two rows is a cord with close-set rounded tubercles having two threads below it and a thread and a fine tubercled cord above it, which last lies on the bases of the tubercles forming the peripheral carination. On the base are four tubercled cords, the first and second of which have a fine tubercled thread above them, and the fourth a similar thread below it defining the base of the pillar; on the pillar there are 6 cords more or less tubercled, of which 3 cover the snout, two are on the underside, and one at the edge: there is little difference in the strength or arrangement of the spiral cords or tubercles above or below the periphery; they all rise into very considerable prominence and sharpness in crossing the varices. The whole shell is covered by minute threads, which form knots where they cross the rather weaker longitudinal threads, giving the surface somewhat of the texture of a fine file. *Colour* dead white, with a superficial ruddy-yellow tinge, which has a few lines and patches of deeper hue and a few spots of chestnut. *Epidermis*: only a few traces of a very thin, smooth, membranaceous skin remain. *Spire* high, narrow, and small, conical, somewhat scalar from the infrasutural shoulder, whose angularity breaks the conical outline. *Apex* consists of 3 polished, turbinated, ochraceous whorls whose tip is immersed. *Whorls* 8 to 9 in all, with a sloping flat shoulder, a carinated periphery, and a slight straight contraction from this point to the suture; the rounded base contracts quickly on the left, bearing on this side a long, prominent, bent and twisted pillar, which is lost on the right side by the out-

ward sweep of the base, which advances very far forward, but leaves a short, square, projecting snout. *Suture* distinct and deeply impressed, on the upper whorls slightly channelled. *Mouth* oval; the upper canal is distinct, but neither long, wide, nor deep; the lower canal is open and moderate in size; but the whole snout is rather exceptionally square and prominent. *Outer lip* somewhat angular in its course, thin, prominent beyond the varix, patulous internally, but externally scarcely at all reflected; it is thickened within, and has very near its edge teeth in groups of 3, 2, 2, 3, so placed as to avoid the longer spirals of the external sculpture. *Inner lip* spreads somewhat thinly and with a slightly disconnected edge across the body, it then runs straight down the middle of the pillar: at the top of the mouth a long, somewhat subdivided, and upward-curved tooth defines the canal; below this there are about 9 not very definite teeth on the body; below the last of these is a wider break, and below this on the pillar are about 6 more, rather strong at first, but steadily becoming smaller; parallel to the edge the reverted flap of the lip is prominent below the callus glaze, and finally stands out beyond this glaze as a margin to the canal. H. 2.1. B. 1.44. Penultimate whorl, height 0.45. Mouth, height to point of canal 1.2, breadth from edge of callus 0.7.

This species, better than any I know, forms a link between the *crumena* and *granifera* groups of *Ranella*. It is very near *R. nobilis*, Rve.; but the form there is much broader and the system of tubercles quite different. *R. affinis*, Brod., is very like; but in that the form is much more regularly conical, the suture, so far from being impressed, is run up on the preceding whorl, the varices run down in straight regular succession, the apex is ruddy purple, and the pillar is much shorter, thicker, and reflected. *R. ponderosa*, Rve., has near affinities in arrangement of tubercles and teeth of outer lip, but is larger in form and quite different in colour and texture. *R. rana*, L., has a much sharper apex, a much squatter form, and much more pointed tubercles. Than *R. livida*, Reeve, the 'Challenger' species is much shorter, thinner, more tubercled, its suture is more impressed, and its pillar longer and straighter. Than *R. subgranosa*, Beck, it is a much less compact form, the spire being higher and smaller, the base and suture much more contracted; the body-whorl is in all ways much smaller and shorter, but broader in proportion to height.

NASSARIA, *Link.*

NASSARIA AMBOYNENSIS, n. sp.

Oct. 6, 1874. Amboyna. 15-25 fms.

Shell.—Ovate, conical, pointed, variced, brown-banded, a very contracted base, with a short, recurved, and somewhat twisted snout. *Sculpture*. Longitudinals—there are on each whorl 11 or 12 (on the earliest about 10), strong, prominent, well-defined, rounded, curved, and sinistrally inclined ribs, of which about 2 on each whorl are stronger than the rest; these ribs extend to the base of the snout, and swell up over, but are interrupted by, the suture which at top of whorls cuts them off; they run with a sinistral twist down the spire; the rather deep interstices are fully broader than the ribs: besides these, the whole surface is roughened with slight unequal lines of growth, which are most distinct on the earlier whorls. Spirals—the surface is beset with unequal threads, of which about 6 on the body and 4 on the base are stronger and more prominent than the rest; the two in the middle of the whorls are most so of all; between these are 3, 4, or 5 unequal, raised, and sharpish round threads, especially prominent on the longitudinal ribs the hollows between these are variable in width, deep, and flat-bottomed, though sometimes filled by another minute thread; these intervals are finely scored, while the threads are coarsely roughened and crumpled by the longitudinal lines of growth: besides these, the surface is finely fretted with microscopic spirals; on the snout are about 10 coarsish somewhat crumpled threads, with minute sharp lines in their interstices. *Colour* tawny white, with a broadish, infraperipheral chestnut band and less continuous stains of the same up to the suture and on the base and snout. *Spire* high turreted, conical, small and sharp at the point, with an almost continuous outline in spite of the deep suture. *Apex* partly broken, but evidently consisting of 2 or 3 polished, rounded, turbinated whorls. *Whorls* 9, exclusive of the embryonic whorl, ventricose, rounded, of regular increase; but the last is somewhat disproportionately large; the base is rounded, but contracted and a little flattened toward the snout, which is ample, but not large, both as to length and breadth, and advances straight in the axis of the shell, but with a dextral twist and a strong backward bend on itself. *Suture*

is itself invisible, but is very strongly defined by the deep undulated furrow, which at the top of the whorls sinks in behind the longitudinal ribs and cuts them off from the base of the preceding whorl. *Mouth* oval, rather small, deep, perpendicular, and very little oblique; from its lower left corner rises a strong, deep, equal, slightly curved canal, whose direction is distinctly, but not strongly, to the left. *Outer lip*: its nearly semicircular curve is slightly flattened about the middle, and bags a little toward the lower outer corner; at its upper corner it advances a good deal and rises a little on the body-whorl; its sharp and contracted margin, which projects from the last and massive varix, is crenulated; remote from the edge it is scored by 9 rather long, narrow, sharp-topped teeth, the first and two last of which are stronger than the rest; the first is a little remote from the upper angle of the mouth, while the last is on the very edge of the canal. *Inner lip* spreads patulously, but not broadly, on the body-whorl in a thin, defined, porcellanous layer; it runs straight down the pillar as a sharp projecting edge; it is scored within by about 9 teeth, of which the first is short and strong, the second long and strong, the third and fourth long and weak, the fifth, sixth, and seventh short and weak, while the eighth and ninth are strong and coil round the point of the pillar. On the left side of the canal are 4 or 5 tubercles. H. 1.37. B. 0.84. Penultimate whorl, height 0.26. Mouth, height (exclusive of canal) 0.49, breadth 0.3. Length of canal 0.29, breadth 0.07.

This species has much resemblance to *N. acuminata*, Rve., but is shorter, squatter, coarser, with more ribs, is deeper in suture; the canal is shorter, more recurved, and more twisted.

Notes on British Tunicata, with Descriptions of new Species.

I. Ascidiidæ. By W. A. HERDMAN, D.Sc. Edinb.

[Communicated by Sir Wyville Thomson, F.R.S., F.L.S.]

[Read December 2, 1880.]

(PLATES XIV.-XIX.)

THE family Ascidiidæ comprises those Simple Ascidians which have a six-, seven-, or, more generally, an eight-lobed branchial aperture and a six-lobed atrial aperture, the principal additional characters being:—body sessile, attached; tentacles simple, fili-



Watson, Robert Boog. 1881. "Mollusca of H.M.S. 'Challenger' Expedition.-Part VII." *The Journal of the Linnean Society of London. Zoology* 15(85), 245–274.
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