

XXVI.—On some new Genera and Species of Mollusca from the North of China and Japan. By ARTHUR ADAMS, F.L.S. &c.

My observation of the marine Mollusca of North China extends over the whole of the Yellow Sea, from the deep bight between the Yang-tsze-Kiang and the Shan-tung Promontory on the west, and the coast of Korea on the east. The water of this sea is muddy and of a yellowish colour, especially near the land. It is also shallow, the greatest depth not usually exceeding 36 fathoms. The nature of the bottom is very unfavourable for molluscos and indeed any other kind of life, on account of the enormous quantity of mud which comes down the rivers, and which subsides, and destroys nearly all marine life. In "races" and tide-ways, off points of land, and in the deep sandy bays, many species of interest may, however, be met with; but, on the whole, I should say that the mere collector of shells could not proceed to a worse field for his labours than the shores of the Yellow Sea and the Gulfs of Pe-chili and Lian-tung.

Genus EULIMA, Risso.

1. *Eulima gibbosula*, A. Adams.

E. testa pyramidalis-subulata, alba, semipellucida, apice roseo tincto; spira lateraliter inclinata; anfractibus circa 11, planis, suturis marginatis; anfractu ultimo magno, gibboso, ad basin rotundato; apertura subcirculari.

Hab. Lian-tung (Hulu-Shan Bay); 3 fathoms.

This curiously-shaped little species is something like *E. pinguicula*, A. Ad., with a subcircular aperture; it resembles also in some respects *E. clavula*, A. Ad., but that species is more pyramidal and flat at the base.

2. *Eulima subula*, A. Adams.

E. testa subulata, spira subtortuosa, alba, semipellucida, apice roseo tincto; anfractibus circa 11, planis, ultimo ad peripheriam rotundato; apertura acuminato-ovata; labio antice vix everso; labro in medio producto.

Hab. Gulf of Pe-chili; 4 fathoms (mud).

Genus LEIOSTRACA, H. & A. Adams.

1. *Leiostraca Ariel*, A. Adams.

L. testa subulata, alba, tenui, pellucida; anfractibus $6\frac{1}{2}$, planatis, suturis obliquis; anfractu ultimo magno, ad peripheriam rotundato, ad basin producto; apertura acuminato-ovata.

Hab. Shan-tung (Kala-hai).

2. *Leiostraca Oberon*, A. Adams.

L. testa parva, pyramidali-subulata, alba, opaca, quasi pruinosa; anfractibus circa 8, planis, ultimo magno, ad peripheriam rotundato, ad basin producto; apertura ovata, antice subeffusa; labio recto, subincrassato.

Hab. Shan-tung (Kala-hai).

3. *Leiostraca Titania*, A. Adams.

L. testa parva, subulato-pyramidali, sordide alba, semipellucida; anfractibus circa 9, planis, suturis marginatis; anfractu ultimo ad peripheriam vix angulato; apertura ovata; labro in medio subangulato.

Hab. Shan-tung (Kala-hai).

4. *Leiostraca Maria*, A. Adams.

L. testa recta, subulata, solida, vix opaca, lactea; anfractibus circa 11, convexiusculis, varicibus obsoletis instructis, suturis subirregularibus; anfractu ultimo elongato, ad peripheriam rotundato; apertura ovata, antice producta; labio calloso.

Hab. Gulf of Pe-chili; 3 fathoms (mud).

5. *Leiostraca Constantia*, A. Adams.

L. testa subulata, tenui, sordide alba, semiopaca; anfractibus circa 9, planiusculis, suturis marginatis; anfractu ultimo subventricosus, antice producto; apertura lanceolato-ovata, postice acuminata, antice dilatata; labio incrassato.

Hab. Lian-tung (Hulu-Shan Bay); 3 fathoms (sand and shells).

6. *Leiostraca casta*, A. Adams.

L. testa recta, tenui, subulata, alba, semipellucida; anfractibus circa 11, planiusculis, suturis marginatis; anfractu ultimo elongato, ad peripheriam rotundato; apertura ovata, postice acuminata, antice vix effusa; labio subincrassato.

Hab. Shan-tung (Hwang); Lian-tung (Hulu-Shan Bay); 3 fathoms.

7. *Leiostraca lentiginosa*, A. Adams.

L. testa lanceolato-pyramidali, compressiuscula, semipellucida, sordide alba, maculis parvis rufo-fuscis numerosis irregularibus confertis ornata; anfractibus $6\frac{1}{2}$, planis; apertura elongato-ovata; labio incrassato.

Hab. Shan-tung (Lo-shan-kow).

Genus *Rissoella*, Gray.

1. *Rissoella sinensis*, A. Adams.

R. testa helicoidea, profunde umbilicata, alba, semiopaca, nitida, ob-

solete striata; spira elata; anfractibus $3\frac{1}{2}$, rotundatis, suturis profundis; apertura subcirculari; peristomate vix continuo.

Hab. Gulf of Pe-chili; 7 fathoms.

2. *Rissoella consobrina*, A. Adams.

R. testa helicoidea, profunde umbilicata, ventricosa, alba, tenui, lævi, pellucida; spira brevi, acuta; anfractibus $3\frac{1}{2}$, convexis, ultimo magno, suturis mediocribus; apertura subcirculari; peristomate vix continuo.

Hab. Shan-tung (Lo-shan-kow).

Genus *STYLOPSIS*, A. Adams.

Stylopsis sulcata, A. Adams.

S. testa subulata, alba, opaca; anfractibus normalibus 13, planulatis, sulcis duobus transversis instructis, suturis profundis, exaratis; anfractu ultimo ad peripheriam rotundato, sulcis tribus transversis instructo; apertura subquadrata; labio recto, simplici; labro margine regulariter arcuato.

Hab. Sea of Okhotsk; 17 fathoms.

This is a second species of *Stylopsis*, a genus most like *Synola*, but wanting the columellar fold. The present species may be known from *S. typica*, A. Adams, by the last whorl being rounded, and not angulated, at the periphery, and in being furnished with three transverse grooves. The other whorls have two grooves each.

Genus *LEUCOTINA*, A. Adams.

Leucotina sulcata, A. Adams.

L. testa alba, solida, ovato-conica, umbilicata; anfractibus $3\frac{1}{2}$, planiusculis, transversim valde sulcatis, sulcis obsolete punctatis; apertura oblonga; labio rectiusculo, plica evanida instructo.

Hab. Korea Strait; 46 fathoms.

L. nipponensis, A. Adams, is the nearest to this species, from which, however, it differs in being more conoidal, shorter, and broader; the transverse obscurely punctate grooves, moreover, are very deep, and the umbilicus is conspicuous and open.

Genus *MYONIA*, A. Adams.

1. *Myonia elegans*, A. Adams.

M. testa subulata, tenui, semiopaca, gracili; anfractibus 6, convexiusculis, transversim sulcatis, sulcis obliquis, distantibus, punctatis;

apertura ovata, postice acuminata; plica parietali tenui, mediana, obliqua; labro simplici.

Hab. Gulf of Pe-chili; 5 fathoms.

Most like *M. punctigera*, A. Adams, but more slender and transparent, with longer whorls, and with a thin inner lip; the transverse grooves, moreover, are not so coarsely punctate.

2. *Myonia scitula*, A. Adams.

M. testa subulato-ovata, alba, opaca, nitida; anfractibus 4, planiusculis, transversim sulcatis, sulcis distantibus, concinne punctatis, suturis impressis; anfractu ultimo magno, elongato; apertura ovata, antice dilatata, postice acuminata; plica parietali conspicua, obliqua; labro simplici.

Hab. Mino-Sima; 63 fathoms.

A small species, somewhat similar in appearance to *M. punctigera* from the Gulf of Pe-chili, but shorter and more ovate.

Genus VANESIA, A. Adams.

Testa subulata, rimata, tenui; anfractibus numerosis, planis. *Apertura* ovata, postice acuminata, antice rotundata, integra; labio tenui, subreflexo; labro margine simplici, acuto.

This shell closely resembles a thin *Melania*. The only known marine genus which it appears to approach is *Mesalia*, from which, however, the general character of the shell and the form of the aperture at once distinguish it. There is no river near this part of the coast, nor have I detected any species of *Melania* in Manchuria.

Vanesia trifasciata, A. Adams.

V. testa rimata, subulata, tenui, corneo-lutescente; anfractu ultimo fasciis tribus transversis rufo-fuscis ornato; anfractibus 9, planatis, rugosis, erosis, lineis longitudinalibus et transversis subtiliter decussatis; apertura ovato-acuminata, antice integra, rotundata; labio tenui, subreflexo; labro simplici, acuto.

Hab. Sunday Island, coast of Manchuria; dredged from 20 fathoms.

Genus DIALA, A. Adams.

Testa imperforata, ovato-conica, sæpe semiopaca, varie picta; anfractibus simplicibus. *Apertura* ovata, antice integra; labio rectiusculo; labro simplici.

This is an ill-defined, though natural, group, allied to *Alaba*, H. & A. Adams, and might form a portion of a family to include *Litiopa* and *Planaxis*. They are found between the Coralline and Laminarian zones. By some they would be called *Hydrobiae*.

1. *Diala varia*, A. Adams.

D. testa tenui, rufo, fusco nigroque varie picta, elevatim conica; anfractibus 7, planulatis, ultimo ad peripheriam subangulato, basi convexa, sulcata; apertura oblonga; labio arcuato; labro in medio subangulato.

Hab. Lo-shan-kow; Shan-tung; also not uncommon in the Korea and Japan.

2. *Diala cornea*, A. Adams.

D. testa ovato-conica, semiopaca, cornea, transversim substriata; anfractibus $4\frac{1}{2}$, convexiusculis, suturis rufescentibus, apice rufo tincto; apertura oblonga; columella rectiuscula, rufo tincta; labio sæpe rufo tincto.

Hab. Hulu-Shan Bay; 3 fathoms. Lo-shan-kow; Shan-tung.

3. *Diala leucosticta*, A. Adams.

D. testa ovato-conica, solidiuscula, semipellucida, alba, ad suturas et ad peripheriam serie macularum lactearum ornata; anfractibus 6, convexiusculis, suturis marginatis, basi spiraliter striata; apertura oblonga; labio arcuato, subincrassato.

Hab. Lo-shan-kow; Shan-tung.

4. *Diala picta*, A. Adams.

D. testa ovato-conica, semiopaca, solidiuscula, anfractibus 6, vix convexis, apice violaceo, alba, lineis rufescentibus tribus (in anfractibus singulis) transversis et longitudinalibus concinne picta, basi concentrice rufo-lineata; apertura oblonga, antice subangulata; labio recto; labro intus subincrassato.

Hab. Lo-shan-kow, Shan-tung.

Genus LIOTIA, Gray.

Liotia armata, A. Adams.

L. testa turbinata, alba, solida; spira elata, conica, late umbilicata; anfractibus convexis, longitudinaliter corrugato-lamellatis, lamellis confertis undulatis; anfractibus carinulis transversis (in anfractu ultimo quatuor) et seriebus duabus spinarum instructis, spinis muricato-squamulosis.

Hab. Korea Strait; 46 fathoms.

Most like *L. muricata*, Humph., but with two series of squamose spines, and the form of the shell turbinate instead of conical; it is also devoid of colour, and the spines are longer and more aculeate than in that species.

Genus CYNISCA, H. & A. Adams.

In our 'Genera of Recent Mollusca,' vol. i. p. 406, my brother and myself proposed a subgenus of *Cyclostrema* under the name

of *Cynisca*. This was founded on a shell in Mr. Cuming's collection, which I described, under the name of *Cyclostrema granulata*, in the 'Proc. Zool. Soc.' 1853, p. 183. The great peculiarity consists in the aperture, which is something like that of *Stoastoma*, the inner lip being straight, and the outer lip being continued posteriorly on the penultimate whorl beyond the inner lip. A second species, as far as I can make out by the figure and brief description, is *Delphinula australis* (Kien., Spec. Gén. p. 8, tab. 4. fig. 7, copied in Reeve, Conch. Icon. sp. 20, and by Philippi, Conch. Cab. tab. 5. fig. 13). I now add the description of a third species from Japan.

Cynisca japonica, A. Adams.

C. testa turbinata, anguste umbilicata, alba, solida, transversim lirata, liris elevatis confertis, ad suturas vix granulatis; anfractu ultimo ad peripheriam rotundato; umbilico parvo, profundo, callo plicato marginato; apertura circulari; labio recto; labro incrassato, intus lirato.

Hab. Korea Strait; 46 fathoms.

This species differs from *C. australis*, Kien., in the margin of the aperture not being reflexed, and from *C. granulata*, A. Ad., in the umbilicus being small, and not wide and perspective, and in the liræ of the whorls not being granulated. In not being pearly within, and in their white colour, these shells resemble *Cyclostrema*, while in the peculiar callus which surrounds the umbilicus and the sulcate style of sculpture they remind one of *Monilea*.

Genus ADEORBIS, Searles Wood.

The genus *Vitrinella* of the late Prof. C. B. Adams is composed of a somewhat incongruous assemblage, having one feature only in common, namely transparency. If form be considered, many species must be arranged under *Adeorbis*. The little shells I now describe are more or less pellucid, but they have all the characters of *Adeorbis*. The small shells described by D'Orbigny as species of *Rotella*, namely *R. striata*, *pusilla*, *carinata*, and *anomala*, are species of *Adeorbis*. The type of *Pseudorotella*, Fischer (*R. semistriata*, D'Orb.), which has the umbilicus nearly covered by a thick callus, I consider to belong to *Ethalia*, a subgenus of *Umbonium*. I may here observe that the *Omphalogyra* of Jeffreys, founded on *Skenea nitidissima*, is a synonym of *Spira*, Brown. The very remarkable shell described by me as *Cyclostrema spirula* is neither a *Spira* nor a *Serpularia*, and the name of the subgenus may therefore be changed into *Daronia*. M. Fischer has recently endeavoured to throw some light upon these little obscure genera; but he seems to have given up his original

intention, and to have grouped the species geographically—a comparatively easy task. If Dr. Gray or M. Mörch would take them up where M. Fischer laid them down, we should perhaps find the species arrange themselves in a more orderly manner.

1. *Adeorbis clausa*, A. Adams.

A. testa discoidali; spira depressa, albida, subdiaphana, striis incrementi radiatim ornata; anfractibus rapide crescentibus, ultimo ad suturas vix angulato, ad peripheriam rotundato; umbilico callo tenui vix clauso; labro producto.

Hab. Tabu-Sima; 25 fathoms.

2. *Adeorbis orbella*, A. Adams.

A. testa discoidali; spira planata, alba, subporcellana, nitida, semi-opaca, radiatim striata; basi transversim confertim sulcata; anfractibus regulariter crescentibus, ultimo ad peripheriam rotundato; umbilico patulo, perspectivo, margine rotundato; labro subproducto.

Hab. Mino-Sima; 63 fathoms.

3. *Adeorbis prominula*, A. Adams.

A. testa discoidali; spira elatiuscula, alba, subdiaphana, nitida, striis incrementi ornata; anfractibus rapide crescentibus, ultimo ad peripheriam rotundato; umbilico mediocri, margine carinato; labro producto.

Hab. Korea Strait; 46 fathoms.

4. *Adeorbis depressa*, A. Adams.

A. testa discoidali; spira planata, alba, vix opaca, radiatim striata; anfractibus rapide crescentibus, ultimo ad peripheriam rotundato; basi rugulis radiantibus ornata; umbilico patulo, margine valde rugoso-crenato; labro mediocri.

Hab. Korea Strait; 46 fathoms.

5. *Adeorbis patruelis*, A. Adams.

A. testa ut in *A. japonica* discoidali, sed spira elatiuscula, alba, nitida, semipellucida, radiatim striata; anfractibus regulariter crescentibus, convexiusculis, ultimo ad suturam vix angulato, ad peripheriam rotundato; umbilico angusto, margine carinato; labro mediocri.

Hab. Mino-Sima; 63 fathoms.

6. *Adeorbis corniculum*, A. Adams.

A. testa ovato-discoidali, tenui, nitida, subdiaphana, radiatim minutissime striata; anfractibus rapide crescentibus; umbilico angusto, margine valde carinato; labro producto.

Hab. Mino-Sima; 63 fathoms.

7. *Adeorbis suturalis*, A. Adams.

A. testa ovato-discoidali; spira prominula, albida, tenui, semipellucida, striis incrementi radiatim ornata; anfractibus rapide crescentibus, prope suturas subcarinatis, ultimo ad peripheriam subangulato, suturis canaliculatis; umbilico angusto, margine rotundato; labro mediocri.

Hab. Tsu-Sima; 26 fathoms.

8. *Adeorbis japonica*, A. Adams.

A. testa discoidali; spira depressa, alba, nitida, tenui, semidiaphana, radiatim striata; anfractibus regulariter crescentibus, convexiusculis; umbilico patulo, margine valde carinato; labro mediocri.

Hab. Mino-Sima; 63 fathoms.

9. *Adeorbis nanula*, A. Adams.

A. testa ovata, subconvexa, tenui, semidiaphana, nitida; anfractibus rapide crescentibus, convexiusculis, ultimo subventricosus, ad peripheriam angulato; umbilico angusto, margine rotundato; labro mediocri.

Hab. Mino-Sima; 63 fathoms.

Shanghai, China,
January 1, 1861.

XXVII.—On the Structure of the larger Foraminifera.

By H. J. CARTER, Esq., F.R.S.

IN a paper on the Structure of the larger Foraminifera, read before the Bombay Branch of the Royal Asiatic Society (April 11, 1861), the author sums up his observations on the discoidal Foraminifera as follows:—

Test.—The test is situated in the substance of the animal, and (in *Operculina*) consists of the spiral or horizontal lamina and the marginal cord. The spiral lamina, again, is divided into the parts which cover the chambers and those which cover the interseptal spaces: the former are pierced with close-set vertical tubuli, and the latter with more or less scattered minute branches of the interseptal canals. Besides this, there are non-tubular spaces or puncta, more or less regularly scattered over the chambers and interseptal spaces, which answer to the external ends or bases of conical columns of condensed shell-substance, intended apparently for strengthening the test; and these are accompanied, in some species of *Nummulites*, by a horizontal branch-work of the same material, which gives them very much the appearance of the lacunæ and their canaliculi in bone; yet



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