

ON NATICOID GENERA LAMELLARIA AND CALEDONIELLA
FROM SOUTH AUSTRALIA.

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[Read April 4, 1905.]

PLATES XXVI. to XXIX.

The NATICIDÆ include a sub-family known as the *Lamellariinæ*, the members of which are characterised by possessing a thick dorsal shield (reminding of the mantle of the *Doridæ*), partly or wholly enclosing a fragile shell. Five genera have now been established, and of these two have their shell completely enveloped by the animal. They are *Lamellaria* and *Caledoniella*.

The genus *Caledoniella* was founded in 1869 by Souverbie on the shell of an unknown animal. It was consequently very doubtfully placed among the *Naticidæ*, and has maintained its uncertain position ever since.

Among other genera that came under my notice on Dr. J. C. Verco's marine dredging excursion were included a number of molluscs with internal shells, and of these I have separated several forms which I unhesitatingly refer to this little-known genus.

After an examination of the dentition and general structure of the animal I am fully convinced that *Caledoniella* is correctly included under the *Naticidæ*, in the sub-family *Lamellariinæ*.

An unfigured species of *Lamellaria*, the internal shell of which was originally described in 1849 from New Zealand, by Gray,* has been reported to occur in South Australia. It goes by the name of *L. ophione*. Dr. Verco has dredged a shell, measuring 8 mm., in Backstairs Passage, in 22 fathoms, which, as near as determination will permit, is *L. ophione*. An additional new species is described in this paper.

GENUS LAMELLARIA, Montagu, 1815.

Lamellaria australis, spec. nov

Animal.—Dorsal shield elliptic, with a waved outline and notched in front; soft, smooth, or minutely granular; appreciably broader than the foot, over the sides of which it folds very loosely and imperfectly (differing in this respect considerably from *Caledoniella*); under side obliquely striated (muscle fibres), around the foot. Body depressed, more con-

* Proc. Zool. Soc., Lond., 849, p. 169.

vex over the shell. Foot flat, straight and dilated in front, sides approximately parallel, terminating in a blunt point, the free tail nearly one-half the whole length; projects beyond the mantle border anteriorly when in motion; it is horizontally slit in front. Eyes, distinctly discernible as little black beads on the outer bases of tentacles, which are not retractile. Genitalia, situated far anteriorly on the right, immediately adjacent to the trunk of the head. Colour: The dorsal shield of the unique specimen is of a uniform, dull, brick-red or vermilion colour, with an imperfectly stellate, four-lobed, opaque white crown in its centre, and three additional white blotches on the right side, all of the white markings being easily removed by abrasion; its under surface is yellow at the border, grading to vermilion, thence to an impure white in the region adjoining the foot. Head and foot shaded brownish yellow. Dentition: Formula |:|:|; central plate sub-trigonal; laterals large, their spines overlapping in the central line. Dimensions: Length, 33; breadth, 25; height, 12 mm.

Shell.—Auriform, moderately convex, about three and a half whorls; margin of lip with a shallow concavity anteriorly; ornamented with distinct incremental striae and very faint spiral incisions, the latter hardly recognisable with the unaided eye; open underneath, exposing the whorls; invested with a thin, transparent yellowish epidermis. Colour shining white, spire and inside nacreous. Dimensions: Major axis, $21\frac{1}{2}$; minor axis, $16\frac{1}{2}$; height, 9 mm.

Hab.—Backstairs Passage, St. Vincent Gulf. Dredged in 25 fathoms.

Obs.—The shell of *L. ophione*, Gray, is much like that of *L. australis*, though smaller, with its body whorl more convex, spire smaller and apex less central; no authentic description or figure of the animal has, however, come to hand. Professor F. W. Hutton has taken a mollusc in New Zealand which he considers in all probability to be *L. ophione*, of Gray.* It clearly differs in one respect from my species. Whereas the dorsal shield of *L. australis* is smooth or minutely granulated, that of the specimen taken by Professor Hutton is smooth, but much wrinkled, resembling convolutions of the brain.

GENUS CALEDONIELLA, Souverbie, 1869.

Animal.—Body ovoid. Dorsal shield thick, ample, verrucose, with its edges tucked in along the sides, and, in a contracted state, completely enclosing the foot: notched anteriorly and produced to an imperfectly closing siphon, re-

* Manual New Zealand Mollusca, p. 59.

ceiving the inhalent current. Head differentiated; eyes distinct, on outer bases of tentacles, which are flattish cylindrical. Foot truncated, horizontally slit, and dilated laterally in front; bluntly pointed behind; tail free. Renal aperture on the right, the mantle-border slightly grooved outward from this spot. Dentition, 2.1.1.1.2. Mandibles corneous, strong.

Shell.—Internal, "heliciform, imperforate oval, orbicular, thin, invested by a thin epidermis, which extends beyond the lip;* spire much depressed, sub-lateral; whorls few, rapidly increasing; aperture oblique, rather large, the extremities of the simple lip united by a callus extending widely upon the whorl."

Hab.—New Caledonia and South Australia.

***Caledoniella contusiformis*, spec. nov.**

Plate xxviii., fig. 1, and Plate xxix., figs. 1 to 8.

Animal.—Body ovoid, large. Dorsal shield soft, verrucose, and wrinkled; drawn in along the sides, the head and foot being unprotected when in motion, but capable of being retracted under the shield, which closes over them securely. Foot flat; extended laterally, and slit horizontally in front; the tail and head being free to move, and connected to the main body by a comparatively narrow trunk. Mouth large, from underneath the strong muscular rim of which the serrated edges of the jaws are visible. Dentition, formula 2.1.1.1.2.; central tooth sub-quadrangular, minutely and multicuspidated, laterals at least bicuspid, marginals noticeably narrower than the laterals, strongly hamate. Mandibles strong, elongate, wing-shaped, horny; obliquely striate; outer edge sharply serrate; a prominent ridge marking off the serration, beneath which a narrow band of setæ. Colour: The wrinkled dorsal shield is of an impure white to light brown ground-colour, which in the valleys of the wrinkles appears of a deeper hue. Large black, easily detachable blotches cover the surface, without system in their arrangement; they are each surrounded by a rim of deeper brown, and, at some distance from their edge, by a ring of similar colour; the underside of the shield is light flesh-red. Foot and head brownish-red, the edge of the dilated front of the former, and the tips of the tentacles of the latter, black. Dimensions: Length, 40; breadth, 30; height, 25 mm.; length of foot, 25 mm.

Shell.—Very thin, globose, ellipsoid, heliciform; about three whorls, rapidly increasing in size; spire small, depressed;

* As a generic character I do not attach much importance to this feature.

covered by a colourless epidermis, which projects beyond the shell-lip; suture channelled; aperture oblique, border with a wide, shallow depression in the anterior; widely open so as to display the winding columella up to the apex. Ornamented by faint accremental striæ; the epidermis has raised, branching lines, radiating from the apex. Colour white, semi-translucent. Dimensions: Major diameter, 28; minor diameter, 17 mm.

Hab.—Backstairs Passage, St. Vincent Gulf; in 25 fathoms.

Obs.—I have not been able to trace the existence of a callus over the body whorl of the shell, between the inner and outer lip, although such was described of the only species hitherto known, viz., *C. montrouzieri*, Souverb. The remaining features of that shell correspond so closely with those of my type that a new genus can hardly be proposed, especially as the animal has not been previously seen; but the differences are considered sufficient to warrant the creation of a new species.

The calcareous matter does not completely infiltrate the shell, which in parts is only membranous (see var. *labyrinthina*, below), especially in the earlier and posterior portion of the last whorl. I will, however, point out that, prior to my examination of the shells, the molluscs had been kept in a weak solution of formalin, and it is just possible that this chemical may have had some deteriorating influence on their delicate tests.

Mr. E. A. Smith has described* a mollusc from Port Phillip Bay, closely allied to my new species. No figure of the living animal is given, and it is not a fair criterion to make a comparison from the description of a contracted spirit specimen with the living animals. Mr. Smith's figure of the internal shell is more elongate-bulimoid, and the spire more elevated, than is the case in my specimens.

Varieties of *Caledoniella contusiformis*, *spec. nov.*

I have before me a number of smaller specimens of *Caledoniella*, which in the outer colouration and design of the dorsal shield differ markedly from one another and the type. The head and foot are coloured the same in each case, and the measurements about one-half that of the form described above. The similarity in shape of the internal shells and other features is so close that I feel indisposed for the present to separate them specifically from *C. contusiformis*, for it is a matter of opinion whether, in this strange genus, specific dis-

* Ann. and Mag. Nat. Hist., V. Series, 1886, Vol. xviii., p. 270.

tingtion can with justice be made on colour variation alone. For the time being I enumerate them as varieties.

Var. **testudinis.**

Plate xxviii., fig. 2.

This comes nearest to the described type. The dorsal shield is more closely wrinkled, of an earthy-brown colour, with more numerous black blotches, in the centre of the crests produced by the wrinkles; each crest does not necessarily carry a blotch.

Shell calcareous, as described in type above.

Hab.—St. Vincent Gulf; in 25 fathoms.

Var. **pulchra.**

Plate xxviii.; fig. 3.

Dorsal shield comparatively smooth; of a rich yellow ground-colour, with large, circular, or oval lighter blotches surrounded by wreaths of black.

Shell calcareous, as described in type above.

Hab.—St. Vincent Gulf; in 25 fathoms.

Var. **labyrinthina.**

Plate xxviii.; fig. 4.

Dorsal shield wrinkled; of a faint yellowish ground-colour, of which very little remains visible on account of a labyrinthine structure, produced by closely set, black, partly spiral lines, usually more or less concentric to an enclosed nucleus in the form of a black dot, into which the innermost line very often passes.

The internal shell in this case is destitute of calcareous matter, consisting only of a soft, transparent membrane, with the characteristics described in the type above.

Hab.—St. Vincent Gulf; in 25 fathoms.

EXPLANATIONS OF PLATES.

PLATE XXVI.

Fig. 1. *Lamellaria australis*, Basedow—Animal; dorsal surface.

Fig. 2. *Lamellaria australis*—Animal; ventral surface.

PLATE XXVII.

Figs. 1, 2, and 3. *Lamellaria australis*, Basedow—Internal shell, various aspects.

Fig. 4. *Lamellaria australis*, Basedow—Showing position of internal shell with respect to animal.

Fig. 5. *Lamellaria australis*, Basedow—A lateral tooth.

Fig. 6. *Lamellaria australis*, Basedow—Dentition 1:1:1. A single row of teeth, unfolded.

PLATE XXVIII.

- Fig. 1. *Caledoniella contusiformis*, Basedow.
 Fig. 2. *Caledoniella contusiformis*, Basedow—Var. *testudinis*
 Fig. 3. *Caledoniella contusiformis*, Basedow—Var. *pulchra*.
 Fig. 4. *Caledoniella contusiformis*, Basedow—Var. *labyrinthina*.

PLATE XXIX.

- Figs. 1, 2, and 3 *Caledoniella contusiformis*, Basedow—Various aspects of internal shell.
 Fig 4. *Caledoniella contusiformis*, Basedow—Showing position of shell with respect to animal.
 Fig. 5. *Caledoniella contusiformis*, Basedow—Radula.
 Fig. 6. *Caledoniella contusiformis*, Basedow—A single row of teeth. Dentition 2:1:1:1:2.
 Fig. 7. *Caledoniella contusiformis*, Basedow—Mandible, external aspect.
 Fig. 8. *Caledoniella contusiformis*, Basedow—Mandible, internal aspect.



Basedow, Herbert. 1905. "On naticoid genera Lamellaria and Caledoniella from South Australia." *Transactions and proceedings and report of the Royal Society of South Australia (Incorporated)* 29, 181–186.

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