

[(1881), *Annals and Magazine of Natural History*, (5), 7, 39: 250 – 254 (Londres)]

ON *VIQUESNELIA ATLANTICA*, MORELET & DROUËT (*)

[Plate XIII.]

The history of the genus *Viquesnelia* is sufficiently well known, but may usefully be repeated here. It was founded by Deshayes, upon some fragmentary Roumelian fossils (†). D'Archiac discovered another fossil representative of the genus in the Pyrenees (‡). The only surviving species known are one native to India (*V. Dussumieri*, Fischer (§)) and a second found in the Azores; the latter is the subject of the present paper.

I have not been able to obtain Fischer's memoir on the Indian species; but the absence of any description of the animal in various conchological manuals, which at the same time make mention of the species, leads me to suppose that the detailed structure of *Viquesnelia* has not hitherto been made known (*). The satisfaction with which I announce new results is qualified by the unpleasant necessity of criticizing somewhat harshly the previous researches of Morelet and Drouët on the same subject. It is much to be regretted that these two naturalists, skilled observers and careful writers on other subjects, should have passed by the internal structure of an animal which is, to use their own language, “sans contredit le plus curieux de tous les mollusques açoréens” (††).

MM. Morelet and Drouët examined the animal of *V. atlantica* without dissection. M. Morelet says: - Malheureusement, dans le cours du voyage, le petit nombre de spécimens que nous avons recueillis s'est égaré, en sorte que je ne puis rien ajouter à la description des formes extérieures que j'ai donnée plus haut.” Only the shell M. Morelet, like a true conchologist, took care not to lose; and this he describes minutely; the animal itself, though we are told that the specimens were lost on the voyage, is drawn by Lackerbauer as if from nature (*ad nat.*)!

The descriptions of MM. Morelet (‡) and Drouët (§) differ notably, which is the more to be wondered at, as these authors conjointly founded the species, and as the memoir of M. Drouët, though later in the date of its publication, was based upon no additional materials: no second visit to the islands had been made; and the specimens collected during the first visit had, as we are told, been lost. M. Drouët's

(*) Translated, with notes, by Prof. L. C. Miall.

(†) [“Note sur un nouveau genre de Limacien fossile,” par M. Deshayes, *Journal de Conchyliologie*, 2^e sér. torn. i. p. 283, pl. vii. figs. 14-17 (1856). The fossils in question (*V. lenticularis*, Desh.) were obtained by M. Viquesnel from rocks believed to be of the age of the Nummulitic Limestone, at Balouk-Keni, near Feredjik, Roumelia. - M.]

(‡) [In a footnote to the paper cited above, Deshayes remarks that D'Archiac had found a *Viquesnelia* – stratum in the lower part of the Nummulitic deposit of the Pyrenees. This is apparently the authority for the statement in the text. - M.]

(§) [“Addition à la Note sur le Genre *Viquesnelia*,” *Journ. de Conchyliologie*, 2^e sér. tom. i. p. 290. In this short memorandum Fischer explains that some shells of *Limacidæ* obtained at Mahé by Dussumier are preserved in the Museum at Paris, and that Valenciennes had attached to them a label bearing the name *Clypeicela Dussumieri*. The species is now included in *Viquesnelia*. - M.]

(*) [Stabile (*Moll. terr. du Piémont*, p. 121) has proposed to remove *V. atlantica* to a new genus *Plutonia*, and this without any knowledge of the anatomy of the animal. - M.]

(††) [*V. atlantica* is noticed as the most remarkable Gastropod of the Azores in Dr. H. B. Tristram's observations on the Terrestrial Molluscs of the Azores, contributed to F. D. C. Godman's “*Natural History of the Azores*,” p. 107, London, 1870. - M.]

(‡) [L'Histoire naturelle des Açores, suivie d'une description des Mollusques terrestres de cet Archipel: Paris, 1860. - M.]

(§) [Eléments de la Faune Açoréenne : 1861. - M.]

description comes nearest to nature; the figure is inaccurate and sketchy. Generic and specific descriptions based upon dissections are now offered to zoologists.

Fam. *Limacidæ*, Gray.

Gén. VIQUESNELIA, Desh.

Mantle large, sub median. *Tail* much compressed. *Respiratory orifice* on the right side, towards the hinder end of the mantle. *Caudal mucus-gland* absent. *Mandible* without ridges or teeth, its free edge forming a re-entrant right angle. *Radula* very complicated. *Reproductive orifice* below and a little behind the right upper tentacle. *Capreolus*? *Flagel-lum* absent. *Dart-sac* absent. *Accessory glands* represented by a glandular layer surrounding the vagina. *Sperm theca* present. *Shell* rudimentary, concealed within the mantle, oval, depressed, with a rudimentary spire.

Viquesnelia atlantica, Mor. & Dr.

Viquesnelia atlantica, Mor. & Dr., *Hist. Nat. des Açores*, 1860, p. 139, pl. i. fig. 1.

ANIMAL 25 mm. (1 inch) long, 3 mm. (1/8 inch) wide, elongate, compressed behind, narrowed towards the middle behind the mantle, tuberculo-rugose, chocolate-coloured to a greater or less degree in different individuals. *Mantle* entire, defining by its posterior border the posterior two fifths of the body, and almost as long as the tail when the animal is fully extended, rounded in front, gibbous over the shell (the place of which is indicated by a reddish patch), finely shagreened, in some individuals with large blotches of bluish colour. *Neck* about one fifth of the total length, thick, rounded, slightly curved longitudinally, narrowed in front, not exceeded by the foot, with large tubercles and two longitudinal furrows which extend to the bases of the tentacles; external to these grooves are two rows of large quadrilateral oblong tubercles; colour dull reddish, deeper on the sides, where it agrees with the ground-colour of the animal, brighter and pinkish above, with large yellow blotches along the upper part of each side. *Locomotor surface* narrow, parallel-sided, with two grooves, of a general bistre or sepia-colour, with minute dark spots, glistening. *Tail* much compressed, tolerably elevated, with oblique grooves intersecting so as to form polygonal lozenge-shaped or hexagonal areas which are raised and resemble plates; each plate has very many black shining elevations, which, when examined by a powerful lens, are seen to be small hemispheres sharply defined and resembling the eyes of a spider. At times the animal, when beginning to creep, raises the tail considerably in a peculiar way. *Tentacles* - the upper ones wide apart at the base, strongly divergent, two thirds the length of the neck, cylindrical but insensibly tapering, with a shagreen-like surface, deeply coloured, nearly opaque; terminal tubercles inconspicuous, obliquely truncate above; eyes very inconspicuous, black; the lower tentacles one quarter the length of the superior, brighter-coloured, much less divergent. *Head* with anterior surface sub vertical, rounded, furnished with large tubercles.

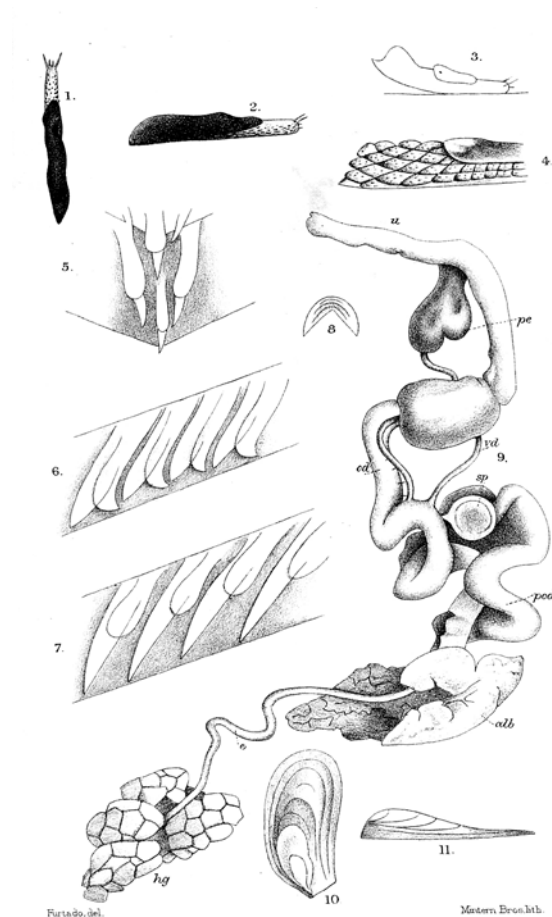
DIGESTIVE SYSTEM -*Buccal pouch* very long (as long as the stomach), pyriform-elongate, muscular layer well defined. *Mouth* hardly conspicuous, resembling when closed the letter T rather than the letter Y. *Mandible* with a cutting-edge forming a (re-entrant) right angle, the attached border uniformly convex, translucent, yellowish, lateral tips sharp, with no ridges or teeth, but with visible lines

of growth. *Tongue* strong, pointed, deeply concave, its sheath very prominent, straight, club-like, inclined downwards. *Radula* of strong conical or slightly depressed teeth in fifty transverse rows, each with about thirty teeth, forming chevrons, which point backwards. *Esophagus* about one third of the length of the stomach, gradually increasing in diameter backwards. *Stomach* curved, fusiforme, twice as wide as the esophagus, yellow, very pale in some individuals, with whitish longitudinal lines, which indicate internal rugosities. *Intestine* forming about half the length of the alimentary canal, equal in diameter to the esophagus, whitish and partly transparent; its course simple, describing a letter N, nearly all of which lies in one transverse plane. *Salivary glands* largely developed, lying upon the anterior fourth of the stomach, quite separate from each other, white, lobed. *Liver* very huge, bilobed, the larger lobe to the left, the anterior end curved round the central part of the stomach, the posterior end curved round the hermaphrodite gland; the smaller lobe applied to the hinder part of the intestine, sending a process into each bend, the posterior extremity lying along the rectum. The lobulation of the liver is conspicuous upon its lower surface; the colour uniform, bright and essentially composed of yellow and pink. The liver adheres strongly to the base of the stomach, and to the first part of the intestine.

REPRODUCTIVE SYSTEM - *Hermaphrodite gland* very large, pyriform, of from five to six lobes, each of which consists of from ten to fifteen lobules; colour milky. The gland lies in the concavity formed by the curved posterior extremity of the larger lobe of the liver, and is partly enclosed by the small lobe. It adheres slightly to the liver, but is entirely free in some individuals. *Duct of hermaphrodite gland* large, twice as long as the gland, more or less sinuous, of uniform diameter. *Albuminiparous gland* unequally bilobed, convex posteriorly, excavated in front and receiving the duct of the hermaphrodite gland, subdivided into irregular lobules, position transverse. *Oviduct* - prostate portion wide, sinuous, white, translucent, the dilated part remote from the albuminiparous gland, origin from gland not terminal; infraprostatic portion much curved, constituting nearly half the oviduct. *Sperm theca* spherical, attached to the anterior end of the uterus, its canal attached (externally) to the oviduct. *Vestibule* as long as the oviduct (neglecting the convolutions of the latter), variously curved or reduplicate. *Pennies* short, depressed, situate in the middle of the vestibule, bifid, of a delicate yellow-pink colour; vas deferens entering the anterior lobe.

SHELL - I have nothing to add to M. Morelet's description, which is as follows: - "*T. ancyliformis*, oblonga, planata, rugosiuscula, longitudinaliter costulata, fulvescens; spira brevis, lateralis, postica, apice albido."

Note - I have not found *Viquesnelia atlantica* in the gardens of Ponta Delgada, where it was discovered by MM. Morelet and Drouët. The specimens upon which this memoir is founded were caught on Oct. 31, 1880, on the mountains near 7 Cidades, near the aqueducts of Muro do Carvão and Muro das 9 Janelas, on stones and overturned masses of *Sphagnum*. Specimens collected in the same neighbourhood in the month of May had the albuminiparous gland so slightly developed that it was necessary, in order to complete the study of the reproductive organs, to wait for the breeding-season; in May the sperm theca was so small as to escape observation.



EXPLANATION OF PLATE XIII.

Viquesnelia atlantica.

Figs. 1, 2. Animal (nat. size).

Fig. 3. Occasional attitude when beginning to creep.

Fig. 4. Tail-end (magnified).

Fig. 5. Median part of radula.

Fig. 6. Lateral part of radula.

Fig. 7. Marginal part of radula.

Fig. 8. Mandible (magnified).

Fig. 9. Reproductive organs. *hg*, hermaphrodite gland; *e*, its efferent duct; *alb*, albuminiferous gland; *od*, oviduct (prostatic portion); *od'*, oviduct (infraprostatic portion); *sp*, sperm theca; *vd*, vas deferens; *pe*, penis; *v*, vestibule.

Fig. 10, 11. Shell (magnified).