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A NEW SLUG FROM GUADELOUPE

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*Vaginulus (Angustipes) antillarum*, new species

Five slugs (in alcohol), two of which are immature, were collected July 2, 1914, by F. M. Gaige on Guadeloupe, Lesser Antilles (cf. H. B. Baker: 1925, Proc. Acad. Nat. Sci. Philadelphia, LXXVII, 183). These represent a new species of pulmonate gastropod mollusks, family Veronicellidae.

Body: elliptical, arched dorsally. Notum: light brown, densely obscured by dark pigment so as to appear grayish; marked by a widely-spaced reticulum of dark hair-lines and sometimes with a slight trace of a median light stripe. Hyponotum: broad and almost horizontal; light unicolor. In the young specimens, the notum is thickly scattered with larger, dark spots; the dorsomedian light stripe is much more evident; and the posterior end of the hyponotum has short series of vaguely-outlined, darker spots on either side. Foot: narrow, blunt anteriorly and slightly tapered posteriorly. Female opening: slightly behind middle and nearer to pedal groove than to perinotal edge. Anus (fig. 1): transversely oval, large and distinctly visible to right of foot.

	Animal		Sole wide	Female Opening Distance from	
	long	wide		ant. end	foot
<i>langsdorfi</i> (Fér., fig. 4)...	61.8	26(16.1)	7(4.2)		
<i>angustipes</i> (Srth., 1913)...	32	28 (9)	5(1.5)	59(19)	75(1.3)
<i>robustus</i> (Col., 1922).....	56	36(20)	9(5)	52(29)	80(1.25)
<i>taylori</i> (Srth., 1913).....	64(?)	(24.5)	(7)	55(28)	40(2.5)
<i>marginatus</i> (Smpr., 1885)	35	43(15)	9(3)	64(22.5)	64(1.6)
<i>antillarum</i> , no. 1 (type) ...	38.6	38(14.5)	10(3.9)	55(21.2)	40(2.4)
no. 2	32.0	44(14.1)	15(4.7)	57(18.1)	38(2.6)
no. 3	26.4	42(11.1)	11(2.8)	50(13.3)	44(2.25)
no. 4	23.7	46(11.0)	16(3.7)	57(13.5)	39(2.6)
no. 5	21.1	39 (8.3)	10(2.2)	52(11)	32(3.2)

Ovotestis (fig. 2) : irregularly lenticular, imbedded on right side between stomach and lobes of liver. Hermaphroditic duct: much convoluted, coarser towards its anterior end. Spermoviduct: rather short and little convoluted, with claviform enlargement at its posterior end; terminal part imbedded in groove between albumen gland and uterus. Albumen gland: large and massive, irregularly lobed. Uterus: thin-walled and yellow near entrance of slender connecting duct; thicker-walled and brown as it passes to left of prostate; very thick-walled, white and swollen by albuminous material in the rather simple double-spiral; joins spermathecal stalk near body wall. Spermatheca: cylindrical stalk very short and thick-walled; sac subspherical (in adult) with mammilliform basal protuberance for reception of canalis junctor. In a young specimen, the spermatheca is peculiarly claviform very much as in immature examples of *V. langsdorfi* (Simroth: 1913, Mém. Soc. Neuchat. Sci. Nat. V, 325, fig. xiv-110). Vagina: simple.

Vas deferens: first free portion (fig. 2) quite long; receives prostatic duct inside of relatively small prostate (probably past climax of male maturity), which is partially covered by swollen uterine coils; gives off short, stout, recurved canalis junctor near entrance into body wall; second free portion (fig. 3) long and convoluted, not distinctly sheathed by verge-retractor. Dart-sac: considerably larger than that of verge; papilla relatively enormous, elongate mammilliform with

minute, sharply-conical teat which projects slightly from its obtusely-rounded apex; gland tubules about  $2\frac{1}{2}$  times as long as papilla, much convoluted at base and enclosed in exceptionally heavy sheath, beyond which 14 of them extend in one adult and 17 in another; retractors very short and two in number, one dorsal and the other ventral, arising ventrad and mesiad to verge-retractor and inserting on basal sheath. Verge (figs. 3-5): considerably smaller than dart-papilla; arrow-shaped, with exceptionally long, cylindrical basal stalk and lanceolate, subacuminate (fig. 5) head which develops lateral wings on either side that are very heavy and curve ventrad at its base but die out towards its apex; orifice large and transverse, with crenulate margin, situated a short distance behind (pseudacrocaul) and ventral to the flattened, weakly-notched apex. Verge retractor: quite stout, considerably longer than those of dart-sac; origin slightly behind level of anterior pericardial edge and about 2 mm. mesiad to the latter, so as to be adjacent to the pedal nerves. In a young specimen, the dart-papilla and the verge differ less in relative size.

The pedal nerves of two adults are in close juxtaposition to near the posterior end of the body cavity, but, in a young specimen, they diverge noticeably in front of the pericardial level.

Amongst Lesser Antillean species, *V. antillarum* seems rather closely related to *V. dubius* Semper (1885, Reis. Arch. Phil. II-III, 296, fig. xxvi-12; cf. H. B. Baker, 1925, 179, fig. vi-27), but has a shorter stalk to the spermatheca, about twice as many, considerably longer tubules to the dart-gland, and a relatively smaller verge with a much more definite basal constriction and heavier lateral wings. Also, *V. mörchii* Smpr. (1885, 319, figs. xxv-13, xxvii-20), described as an "Africanisch-indische" species from "Guadeloupe", somewhat resembles young specimens of *V. antillarum* in coloration, but has a smaller number of dart-gland tubules and branched retractors like *V. dubius*, and, in addition, appears to lack the lateral ridges on the verge. However, *V. antillarum* appears most closely allied to the South American *langsdorfi*-group, and in

fact is quite close to this typical species of *Angustipes* itself.

Although I have seen no specimens, I am inclined to agree with Hoffmann (1925, *Jena. Zeitschr.*, LXI, 198, 245, fig. vi-45h, 1) that *V. angustipes* Heynemann (1885, *Jahrb. D. Mal. Ges.*, XII, 276) from Taquari, Rio Grande do Sul, Brazil, is founded on young specimens (cf. Simroth, 1913, 325, fig. xiv, 108-110) of *V. langsdorfi* Férussac (1821, *Prodr.* 13; 1823, *Hist.*, 96<sup>v</sup>, figs. viiiB-3, 4) from Rio de Janeiro. *V. robustus* Colosi (1921, *Atti. Soc. It. Sc. Nat.*, LX, 156; 1922, *An. Mus. Nac. Hist. Nat. Buenos Aires*, XXXI, 491, figs. 9-16) from near Corumba, Matto-Grosso, Brazil, also does appear to be the first accurate description of the adult of that or a very closely-related species. However, I am far from convinced by Hoffmann's (*l. c.*) evidence for his relegation of *V. difficilis*, *V. morii* and *V. absumptus* Colosi (*op. cit.*) to the same synonymy.

From Colosi's excellent figures, it would appear that *V. langsdorfi* (+ *robustus*) has a relatively larger verge with a much shorter basal constriction, thinner wings, and more nearly terminal orifice than has *V. antillarum*. The verge of *V. marginatus* Smpr. (1885, 312, figs. xxvii-11) has an emarginate apex with subterminal orifice somewhat similar to that of *V. antillarum*, and is also smaller than the dart-papilla, but its lateral wings are strongest at the apex and die out towards the base while the opposite is true of the same structures in the Guadeloupean species. Also, the female opening of *V. antillarum* is considerably closer to the foot than in any of the other species of this group with the exception of *V. taylori* Simroth (1893, *Jahrb. S. B. Naturf. Ges.*, XVII-XVIII, 73, 86; 1913, 327, fig. xiv, 114-117), which apparently has a stoutly conical verge with a relatively slender dart-papilla (described from young animal).



## PLATE I

All drawings are made with aid of camera lucida. Scales in lower left hand corner indicate lengths of two millimeters; uppermost is for fig. 1, middle one for figs. 2 and 3, lowest for figs. 4 and 5. Fig. 5 is made from specimen no. 1 (the type), the others from no. 2.

FIG. 1. Ventral view of posterior end of body, with foot slightly pushed to left so as to expose most of anus (combined opening of lung and hindgut).

FIG. 2. Dorsal view of posterior genitalia after partial dissection. Uterus is cut and turned back to expose vas deferens. Horizontal line across vagina and hindgut represents slit in body wall.

FIG. 3. Dorsal view of penis and accessories. Penial wall represented diagrammatically by dotted lines. Verge and dart-papilla slightly protracted and distorted by binding edges of their sheaths.

FIG. 4. Ventral view of verge.

FIG. 5. Ventral view of more extended verge of type specimen.



