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Dedicated to Professor Dr. H. Engel

## *Flabellina engeli*, a new nudibranch from Curaçao

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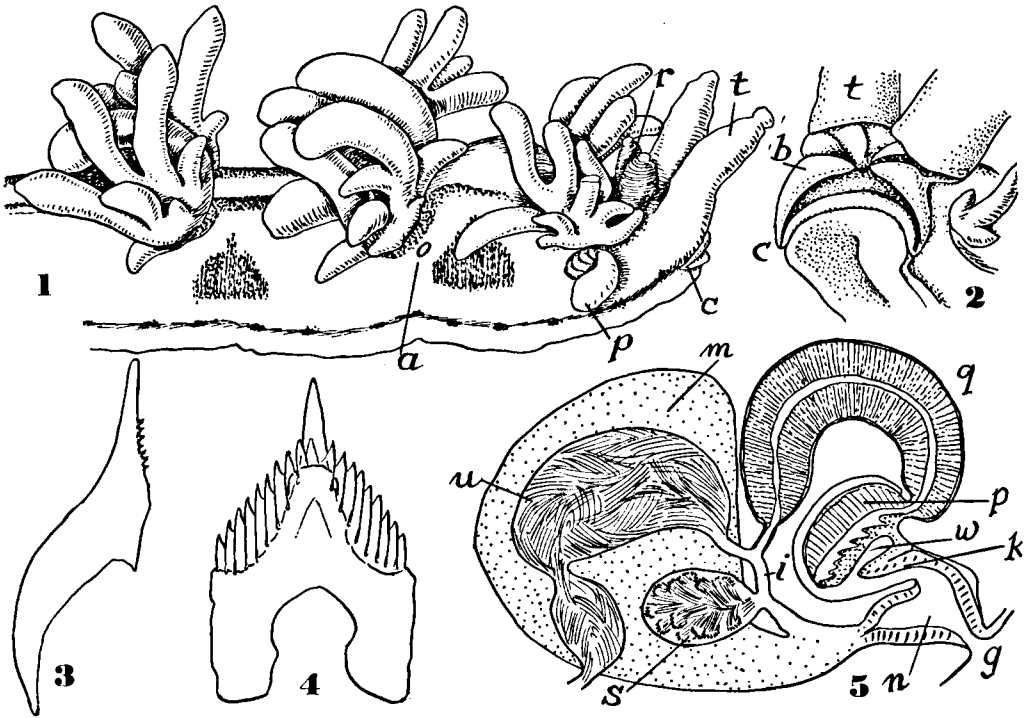
### ABSTRACT

Description of the nudibranch *Flabellina engeli* n.sp., from Piscadera Baai, Curaçao. The affinities of the new species are discussed.

In February and March, 1966, Dr. Diva Diniz Corrêa found, on *Halimeda* in the outer part of Piscadera Baai, Curaçao, three specimens of a new opisthobranch, described here as *Flabellina engeli* spec. nov. The type material has been preserved in the Zoology Department of the University of São Paulo.

The living slugs were 20 mm long, transparent pinkish white with scarce brown pigment granules. The cerata were light brown, each with a darker brown ring. Opaque white are a spot between the tentacles, one on each side behind them, streaks and spots between the footstalks of the cerata, and a dorso-median stripe along the tail.

Measurements of the biggest preserved animal (in mm) are: body length 12, breadth 1.5, height on the cardiac prominence 4, length of the tentacles 2.5, of the rhinophores 0.6, length of the foot 11, its breadth 1.2. Crown-shaped white patches between the footstalks, and brown pigment in the wall of the cerata are preserved. The gonopore with the projecting penis (fig. 1, *p*) lies under the 1st footstalk, the anus (*a*) in front of the 2nd. The tentacles (Fig. 2, *t*) are prolonged towards the mouth with small swellings, to which bulges (*b*) from the short anterior foot corners (*c*) converge. The tail is long and slender. The rhinophores (fig. 1, *r*) bear 25 complete thin leaves on either side of the rhachis which ends with a white knob. As in the other species of *Flabellina* the cerata are firmly attached to the 6 pairs of stalks. Bigger and smaller cerata form groups like the branches of a tree. The right (and left) numbers of cerata are: I 9 (9), II 10 (9), III 8 (7), IV 5 (4), V and VI 2 (2). Bergh (1876 : 650; 1886 : 49) and Vayssière (1888, pl. 2 fig. 1; counted by Hoffmann, 1934 : 353) gave the numbers for *F. affinis*, which has about the



FIGS. 1—5. *Flabellina engeli* spec. nov. fig. 1, lateral view of fore end; fig. 2, ventral view of fore end; fig. 3, lateral tooth; fig. 4, rhachidian tooth; fig. 5, diagram of reproductive organs.  
a — anus; b — bulge; c — foot corner; g — gonopore; i — inner oviduct; k — collar; m — female gland mass; n — common atrium; p — penis; q — prostate; r — rhinophore; s — seminal receptacle; t — tentacle; u — ampulla; w — male atrium.

same body length as *engeli* and also a slightly higher number on the right side (Vayssière). *F. affinis* reaches a maximum of 22 cerata on one (the 3rd) stalk (Bergh, 1886).

The very thin, light yellow jaw has a quite transparent masticatory process with one series of pointed denticles near the hinge and several rows on the free end as in the type-species (Bergh, 1876, pl. 15 fig. 14, a, b). The radula comprises about 20 rows. It measures  $0.7 \times 0.45$  mm, the rhachidian tooth (fig. 4)  $82 \times 55 \mu$ , the laterals (fig. 3)  $85 \times 30 \mu$ . The rhachidian central cusp is strong; of the 7—11 denticles which flank it the innermost insert on its back as in other species of the genus (Vayssière, 1888, pl. 4 fig. 48). The lateral teeth bear 5—10 denticles on the concave side; sometimes the convex side is rough or finely denticulate as in *F. affinis* (Bergh, 1876, figs. 15, 18).

The hermaphrodite duct forms a globular dilatation before it enters the curved ampulla (fig. 5, u). A short spermoviduct divides into the prostatic

male duct (*g*) and the inner oviduct (*i*). The male duct continues glandular to its entrance into the broad, tongue-shaped unarmed penial papilla (*p*). The epithelium of the ejaculatory duct in the papilla is folded on one side and contains a pad of high glandular cells on the opposite side. A collar-like fold (*k*) projects into the male atrium (*w*).

The inner oviduct (*i*) bears a seminal receptacle (*s*) defined by the sperms fastened to the walls by their heads. The following connexion with the female gland mass (*m*) or pallial oviduct is short. A common atrium (*n*) whose wall is glandular receives the outlet of the pallial oviduct and the male atrium (*w*).

We compared the present species with the other Eolidoidea with triseriate radula and the cerata on footstalks; the 3 species of *Flabellina* described by Angas (1864) and contained in Bergh's list (1892: 1034) do not belong to this group (Burn, 1965: 89—90, nos. 27—29). In our comparison we did not consider the position of the anus in the interhepatic space (Acleioprocta) or under it (Pleuroprocta). Its position is not always indicated, e. g., not for *Flabellina macassarana* Bergh (1905 : 237), or it is doubtful, e. g., in *Nossis indica* Bergh (1902 : 210), whose anus lies "in a notch of the dorsal brim". In *N. westralis*, where the anus opens below the notal brim (Burn, 1964 : 12), the pleuroproct condition is distinct.

Even in typical Pleuroprocta of the genus *Coryphella* the anus may be "slightly above the lowermost cerata bases of the first post-cardiac row" (MacFarland, 1966 : 314), and we described another *Coryphella* with the same acleioproctan location of the anus (Marcus, 1967, fig. 71).

The general aspect of *Flabellina engeli* resembles the Mediterranean *F. affinis*, but the produced foot angles of that species, the ringed rhinophores, and the pointed penis papilla are different. In details, *Samla annuligera* Bergh (1900 : 237) from Laysan Island (25° 30' N, 171 ° 50' W) comes near to *F. engeli*, because its foot corners are not produced. This character and the armature of the masticatory process of the jaw of Bergh's species might justify its subgeneric separation from *Flabellina*, because already the first well-defined diagnosis of this genus includes produced angles of the foot (Alder & Hancock 1855, Appendix : XXI). In *Coryphella*, it is true, the exceptionally rounded foot angles (Marcus, 1961 : 48, no. 1) are not considered as a subgeneric character.

Features of *F. annuligera*, which separate it from *F. engeli*, are : 2—3 cerata on each footstalk as in *F. ornata* (Risbec, 1928; Baba, 1955 : 29, 52); 12 rhinophoral leaves; a single series of rounded denticles on the masticatory process, each with a low tubercle on its base; and a bluish body with orange bands on the cerata.

*Flabellina engeli* spec. nov., is named in honour of Professor Dr. Hendrik Engel, to whom we owe many valuable reprints of his papers, from his Dr.-thesis (1925) to recent years.

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