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THE WESTERN ATLANTIC TRITONIIDAE

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RESUMO

As sete Tritoniidae do Atlântico Ocidental são descritas e desenhadas. Os caracteres sistemáticos são discutidos e foram feitas lista e chave para os gêneros das Tritoniidae. A distribuição de **Marionia cucullata** é estendida para o norte até o Estreito da Flórida.

As novas espécies, **Tritonia eriosi** da Ilha dos Lobos, Uruguai, e **Marionia tedi** do Estreito da Florida são descritas e desenhadas.

Tritonia odhneri Tardy, 1963, da Bretanha é pré-ocupada por **Tritonia odhneri** Marcus, 1959, do Chile. Propondo chamar a espécie de Tardy de **Tritonia nilsodhneri,** nom. nov.

A **Marionia cucullata** Vicente & Arnaud, 1979 da Terra Adelie, tem processos velares simples, e placas gástricas não são mencionadas. Portanto não pertence ao gênero **Marionia.**

Tritonia episcopalis Bouchet, 1977, é provavelmente uma **Tritoniella** devido à forma da ponta do seu penis.

ABSTRACT

The seven western Atlantic Tritoniidae are described and figured. The systematical characters are discussed, and a list and key of the genera of the Tritoniidae are given. The range of **Marionia cucullata** is extended northward to Florida Strait.

The new species **Tritonia eriosi** from Ilha dos Lobos, Uruguay, and **Marionia tedi** from Florida Strait are described and figured.

Tritonia odhneri Tardy, 1963, from Brittany is preoccupied by **Tritonia odhneri** Marcus, 1959, from Chile. I propose to call Tardy's species **Tritonia nilsodhneri,** nom. nov.

The **Marionia cucullata** Vicente & Arnaud, 1979 from Adelieland has simple velar processes, and stomachal plates are not mentioned. Therefore it does not belong to the genus **Marionia.**

Tritonia episcopalis Bouchet, 1977, is probably a **Tritoniella,** due to the shape of the tip of its penis.

INTRODUCTION

A sample of eight specimens of a Tritoniid from Uruguay was entrusted to me for classification by Eliezer de Carvalho Rios. In the collections which Frederick M. Bayer had given me, there were also some

Tritoniidae. These are the materials for the seventh contribution to my planned catalogue of the Western Atlantic Warm Water Opisthobranchia (Contributions 1-6 see Marcus, 1972, 1972a, 1973, 1974, 1978, 1980).

The allocation of the Tritoniidae in the system of the Nudibranchia was altered since Thiele (1931: 420), who had still, as Bergh, placed them, together with the Doridoxidae, at the beginning of the Doridacea Holohepatica, followed by Phanerobranchia and Cryptobranchia; he considered all the other families, now united in the Dendronotacea, as Aeolidiacea Cladohepatica (p. 441, 444-449). Odhner's sequence in Franc (1968: 873-877) corresponds better to the anatomical relationship.

Odhner's introduction to the family Tritoniidae, at that time called Duvauceiidae (1926: 31) is still valid: "the taxonomic study of this family has not kept step with the profound revision of its nomenclature, although the first task seems to be a necessary presupposition for the second".

The concepts of genera and subgenera have also changed. Eliot (1905: 17) found it "difficult to maintain the distinction between the genera **Tritonia** Cuv. and **Candiella** Gray". However, he added **Tritoniopsis** (1905: 22) and **Tritoniella** (1907: 5). Odhner considered **Candiella** as a subgenus of **Tritonia** (1963: 51).

Due to the insufficient descriptions it is sometimes impossible to decide into which genus or subgenus a species belongs (e. g., Pruvot-Fol, 1937: 69). The characters are often chosen by subjective judgement.

Odhner (1922: 6) assigned his new species **griegi** to **Tritonia.** In 1926, p. 32, it is still **Tritonia,** on p. 35, transferred to **Duvaucelia.** In the same year (1926a: 15) it is treated as **Duvaucelia** subgenus **Tritonidoxa.** In 1939, following Pruvot-Fol (1931) it returns to **Tritonia,** and in 1963 (p. 48) to the subgenus **Tritonidoxa** Bergh, 1907, because of its flagelliform penis.

Pruvot-Fol (1937: 69), discussing the generic position of her new species **cincta,** found the first lateral tooth undifferentiated as in **Tritoniopsis,** the jaw plates as in **Candiella dubia** Bergh, and the rhachidian tooth as in **Doridoxa griegi** Odhner; the penis is not described.

For **Tritonia alba** Alder & Hancock, 1855. Iredale & O'Donoghue (1923: 230) created a new genus **Candellista** by reason of its denticulate lateral teeth, well described by Mia Larsen (1925: 16, figs. 5-10). Thompson (1962: 199) considered **alba** as a juvenile state of **Tritonia hombergi,** and Odhner (1963: 51) synonymized it. The list of the Tritoniid genera in Franc (1968: 874) is incomplete.

As of the more than 70 species of Tritoniidae the male organ is described only for about 20, it can rarely be used for classification, though it seems to be one of the few rather reliable characters.

For dividing the species onto genera and subgenera I tried to construct a key. However, the characters mentioned and rarely figured are so heterogeneous that I did not succeed to give comparable diagnoses. For the type species of new genera and subgenera not all the following marks are described, and later authors differ in considering their importance. Hence the type species ought to be re-examined and their descriptions completed. The varied combination of characters in the tritoniid species would require new genera or subgenera for many of

them, e. g., **Tritonia elegans** Audouin, 1826, in Baba's detailed description has a unicuspid rhachidian tooth and a short conical penis (Fig. 4). The former character combines with **Tritoniopsis** Eliot, 1905 (Fig. 38), and **Tritoniella** Eliot, 1907. The latter character differs from **Tritoniopsis** with flagelliform penis and from **Tritoniella** with a ring near the tip of the penis (Fig. 9-12).

I restrain from distinguishing subgenera. In Odhner's synopsis or key (1963: 51) **Tritonia** is clumsy and large, 5-10 cm long, **Duvaucelia**, slender and small, up to 5 cm. Body size and number of appendages are only valid for full grown animals. **Candiella** Gray, 1850, was a subgenus distinguished by an entire veil from **Tritonia** s. str. and **Tritonidoxa** Bergh, 1907, with bilobed velum. **Tritonia** s. str. has a short and broad penis (Fig. 1, 2); **Tritonidoxa** a flagelliform one (Fig. 7), subgenus **Myrella** (Odhner, 1963: 51) has an elongate, conical penis. Of **Tritoniella** Eliot, 1907, with unicuspid rhachidian tooth, **T. belli** has a broad rhachidian and differentiated first lateral, and a conical penis with a small ring near the tip (Fig. 11), while **T. sinuata** has a narrow rhachidian, first lateral not different from the others, and a cylindrical penis with a broad, flat top with a conical point (Fig. 9).

As an example of the difficulties to determine the characters of the subgenera I refer to the synonymy of **Tritonia australis** (p. 7).

The only hitherto known west Atlantic species, **Marionia cucullata** (Gould, 1852) has been reported from Rio de Janeiro, 23°S to Argentina, 40°32'S (Marcus, 1969: 26). Some of the samples I received from Prof. F. M. Bayer for classification belong to this group, so I reviewed the further Atlantic species. In the keys Odhner (1936: 1077; 1963: 51) distinguished "liver in two masses" for **Marionia** (1936, fig. 16) from the other Tritoniidae with "liver fused" (1936, fig. 14). However, Odhner (1963: 50) admitted, that "separation or fusion of the two parts of the liver is to be clearly noted, though, of course, with some difficulty". **Marioniopsis** has fused liver lobes like most Tritoniidae. **Marionia** and **Marioniopsis** have hard stomach plates. The plates of **Paratritonia** Baba (1949: 166, fig. 123 on pl. 34, tetxt-figs. 104-106) show no sign of chitin (Baba, 1969: 397). There are several tritoniid species with a girdle of undetachable soft folds in the stomach, some have a re-inforced edge. Hence the stomach plates are not a subfamily character, nor even sufficiently uniform for a generic separation. **Marionia** has branched velar processes (Fig. 66); in the type species of **Marioniopsis** and in **Paratritonia** the processes are simple.

It is unsatisfactory to create species on single specimens, but it is worse to lump them into known species in spite of some differences. Later it is easier to synonymize them than to separate them from a mixture of species.

Recommended characters for the description

1. Size: large, around 10 cm, or small, not more than 5 cm. **Tritonia** s. str. and (**T.**) **Candiella** are distinguished by size, veil, and number of appendages. These characters are different in juvenile specimens (Marcus, 1967: 209).
2. Slender or bulky shape is no use in preserved, contracted specimens.

3. Veil: rounded (**Fig. 53**) or bilobed (Figg. 41) (Hoffmann, 1933, figs. 120, 132). This is a specific character. Odhner's key (1963: 51) uses the bilobed velum for **Tritonidoxa**, but it applies only to **griegi** Odhner, 1922, not to the type species **capensis** Bergh, 1907, nor to two further species; these have an entire veil.
4. Velar appendages: number and shape. The outermost are the tentacles (**Fig. 55**).
5. Rhinophores: usually of equal shape. Prominences on the margin of their sheath are a good character (**Fig. 15,36**).
6. Gills: generally branched dichotomically. Descriptions and figures vary. They are mentioned as wanting as principal character for **Tritonidoxa capensis** Bergh, (1907: 87). In **Tritoniella belli** Eliot (1907: 5, fig. 1) the simple, unbranched, triangular prominences of the notal border are papillate; in **T. sinuata**, pl. (1) fig. C, they are smooth.
7. Position of genital aperture (Fig. 15, g), anus (a), and nephropore may be useful (Thompson, 1971: 330, 338).
8. The jaw plates vary in size, shape, and border so that Eliot (1907: 6) wanted to describe his material as different species. The same happened to me (Fig. 19, 21, 23).
   The masticatory border of one and the same species can be smooth or wavy, or have simple indentations. Other species have several rows of prominences of different height and aspect (**Fig. 45, 61**). A short masticatory border set off and covered with small denticles, e. g., in **Tritoniella belli**, is specifically distinctive.

Bergh (1892: 1067) described the jaw plates of the Tritoniidae as covering only the anterior part of the pharynx. In **T. tetraquetra** he indicated 16 mm for the pharynx and 12 mm for the jaw plates (1879: 157), and for **Tritonidoxa capensis** (1907): pharynx 8 mm and jaws 6 mm. In **T. hombergi** he gave the pharynx with 20-23 mm and the jaw plates with 23-24 mm. Odhner in his key (1936: 1073) distinguishes the family Duvauceliidae from the Aranucidae, now Marianinidae, among other characters by the short jaw plates in the former; however, in most species the jaws are as long as the pharynx.

9. Radula: The rhachidian tooth is often tricuspid (**Fig. 66**). Its lateral denticles are sometimes subdivided into 3-4 strips. **Tritoniella** and **Tritoniopsis** have a unicuspid rhachidian (Fig. 38), narrow in **T. sinuata** Eliot and **T. brucei** Eliot, broad in **Tritoniella belli** Eliot. The first lateral beside the unicuspid rhachidian is often not different from the following ones (Fig. 38). Beside the tricuspid tooth it is differentiated, shorter and stouter. Often the first lateral, sometimes also the 2nd and 3rd, have some denticles. In **Candellista** Iredale & O'Donoghue 1923, nearly all laterals have strong denticles. In young specimens the shape of the teeth and denticulation may be different (e. g., Odhner, 1926, fig. 27, 28). The proportion of number of rows in the radula and number of teeth per half-row varies: in **Marionia cucullata** Bergh (1884: 50) indicated 52 x 80 teeth. Odhner gave 70 x 60 in 1926, and 52 x 58 teeth in 1934.

   Thompson (1971: 334) treats the specific differences and their systematic value, and considers the shape of rhachidian and lateral teeth of the radula, the cutting edges of the mandibles, and the

shape of the penis as exposed to subjective judgements. The last character varies to a certain degree according to its contraction (Fig. 1, 2). However, the marginal rows of denticulation of the jaw plates and the shape of the rhachidian and first lateral tooth seem to me to be useful characters, and in these aspects dissected specimens are equal to one another.

10. Cuticular, hard, detachable plates in the stomach, as, e.g., in **Marionia**, are characteristic (Figs. 62,70). In **Paratritonia** there are low, epithelial folds, undetachable, forming a girdle similar to that with hard plates. These are present also in **Tritonia eriosi** (Fig. 29, x).
11. Penial papilla: conical or flagelliform, or with a distal ring. It seems to me to be the best character, but is unfortunately rarely described, and very different in size (Figs. 1-12).
12. The shape of the spermatheca, elongate or spherical, depends to a certain degree on age and filling.
13. Haefelfinger (1963: 75) is quite right to stress the systematic importance of the colours and their development in the living animals. However, who has to classify preserved specimens must look for other characters to distinguish the species.

I restrict the present paper to descriptions of the seven species I have seen from the Western Atlantic.

Tritonia exsulans was erroneously reported from Florida by Bergh (1894: 150), see Thompson, 1971: 336.

Tritonidoxa wellsi Marcus 1961; Marcus, 1967: 99, figs. 126-130. From North Carolina to Brazil, São Sebastião (Fig. 7, 13).

Tritonia (Candiella) bayeri Marcus, 1967: 101, figs. 131-134. Florida (Fig. 8, 14).

Tritonia bayeri, subsp. **misa** Marcus, 1967a: 211, figs. 13, 14. (Fig. 15). Georgia.

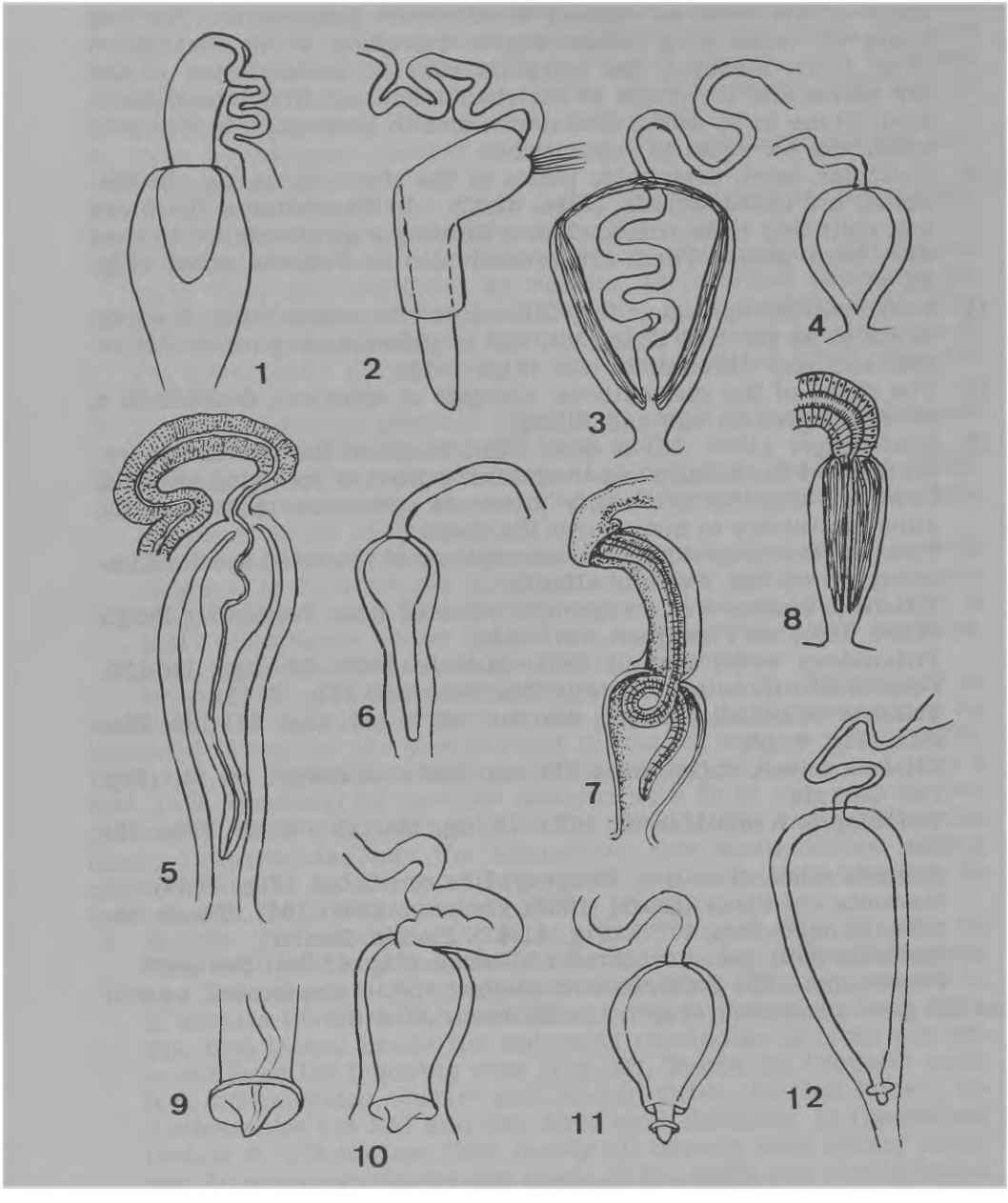
Tritoniopsis frydis Marcus, 1970: 75, fig. 134-137. Florida (Fig. 35-38).

Tritonia eriosi, spec. nov. Uruguay, Ilha dos Lobos (Fig. 16-34).

Marionia cucullata (Gould, 1852) (Marcus, 1967: 104). Rio de Janeiro to Argentina, 40° S (Fig. 41-47). Florida Strait.

Marionia tedi, spec. nov. Strait of Florida (Fig. 48-74). Southern

Furthermore, the Southwestern Atlantic species are treated, as well as the genera not occurring in the Southern Atlantic.



Figures 1-12 — Copulatory organ. 1, *Tritonia hombergi* (from Bergh). 2, *Tritonia hombergi* (from Odhner). 3, *Tritonia australis*. 4, *Tritoniopsis elegans* (from Odhner). 5, *Tritoniopsis frydis*. 6, *Tritonia lineata* (from Bergh). 7, *Tritonia wellsi*. 8, *Tritonia bayeri*. 9, *Tritoniella sinuata* (from Eliot). 10, *Tritoniella festiva* (from Baba). 11, *Tritoniella belli* (from Odhner). 12, *Tritoniella episcopalis* (from Bouchet).

Family Tritoniidae

Diagnosis. — Dendronotacea with an entire or bilobed veil, generally with short or long papillae on the anterior border, the outermost of which are the ventrally grooved tentacles. Rhinophores sheathed, the smooth club is surrounded by a circle of branched appendages. Notum smooth or papillate, sometimes it has a median ridge. Its border generally bears a row of branched or simple gills.

Strong jaws embedded in the pharyngeal bulb; their borders sometimes standing out from the musculature. Their inner border is sharp, smooth, generally accompanied by several rows of platelets and/or denticles. In adult specimens the borders may be jagged (Fig. 17). Radular rhachidian tooth uni- or tricuspid, or with some more lateral denticles. First lateral often different from following ones.

Stomach wich epithelial folds or cuticular plates. Digestive gland compact, right and left liver fused or separated.

Shape of penis of generic importance, short and wide, conical, or flagelliform.

Genus **Tritonia** Cuvier, 1797; type species **hombergi** Cuvier 1803.

T. challengeriana Bergh, 1884: 45, pl. 11, fig. 16-19, pl. 12, fig. 1-8, pl. 14, fig. 17-18. Antarctis to Falkland Islands.

T. antarctica Pfeffer, 1887, South Georgia, considered as synonym of **T. challengeriana** Bergh, 1884.

T. australis Bergh, 1898 (**Candiella?**); Bergh,1898: 536, pl. 31, fig. 17-25; Marcus, 1959: 63, figs. 144-152; 1969: 26. Syn. **poirieri** Rochebrune & Mabille, 1891; Odhner, 1926: 40. From Juan Fernandez to Argentina, 40°S, 25-100 m depth (Fig. 3).

T. bayeri Marcus, 1967: 101, fig. 131-134; and subsp. **misa** Marcus, 1967a: 211, fig. 13-14; Florida and North Carolina (Figs. 8, 14, 15).

T. ericsi, spec. nov. Uruguay, Ilha dos Lobos (Figs. 16-34).

Genus **Tritoniopsis** Eliot, 1905: 22; type species: **brucei** Eliot, 1905: 22, fig. 17, 18; syn. **Tritoniopsilla** Pruvot-Fol, 1933. Gough Island.

T. frydis Marcus, 1970: 75, fig. 134-137. Florida (Fig. 35-38).

Genus **Tritoniella** Eliot, 1907: 5; type species: **belli** Eliot, 1907:5 (Fig. 39).

T. sinuata Eliot, 1907: 10, fig. 9-11; Odhner, 1934: 292; Falklands, 53° 43' S. Lat. to Antarctis, Adelieland, Vicente & Arnaud, 1974: 537 (Fig. 9, 40).

Genus **Tritonidoxa** Bergh, 1907: 87; type species **capensis** Bergh, 1907: pl. 8, f. 8-13, (1906, pl. 31).

T. wellsi Marcus, 1961: 146; fig. 22-24; 1967: 99, fig. 126-130; North Carolina to Brazil, 23° 50' S (Fig. 7, 13).

Genus **Candellista** Iredale & O'Donoghue, 1923; type species: **alba** Alder & Hancock, 1855; Larsen, 1925: 16, fig. 5-8, pl. (1), fig. 2a-2d.

Genus **Paratritonia** Baba, 1949; type species: **lutea** Baba, 1949: 85, 166 text-fig. 104-106, pl. 34, fig. 123.

Genus **Tochuina** Odhner, 1963: 50; type species: **Limax tetraquetra** Pallas, 1788. Synonyms are listed by Baba (1969: 134) and Thompson (1971: 334).

Genus **Marionia** Vayssière, 1877; Type species: **Marionia berghii** Vayssière, synonym to **Tritonia blainvillea** Risso, 1828.

Marionia cucullata (Gould, 1852). Western Atlantic: **Marcus**, 1967: 104; 1969: 26; non Adelieland, Vicente & Arnaud, 1974: 539 (Fig. 41-52).

Marionia tedi, spec. nov. Strait of Florida. **(Fig. 48-74).**

Genus **Marioniopsis** Odhner, 1934: 286, Type species: **Tritonia cyanobranchiata** Rüppell & Leuckart, 1828.

Key to the genera (or subgenera) of the Tritoniidae

1 Stomachal plates (Fig. 52) or folds (Fig. 29) present . . . **2**
— No plates, ridges not observed **6**
2 Plates hard, detachable 3
— Girdle of folds not detachable **4**
3 Liver in two masses (Fig. 42) . . . . **Marionia** — 12
— Liver in one mass . . . . **Marioniopsis**
4 Penis short, conical . . . . **Paratritonia**
— Penis with broad base and narrow tip 5
5 Penis with ring under conical tip (Fig. 9-12); rhachidian tooth unicuspid (Fig. 38) . . . . **Tritoniella**
— No ring near tip of penis (Fig. 32); rhachidian tooth tricuspid (Fig. 25) . . . . **Tritonia eriosi**, spec. nov.
6 Rhachidian tooth unicuspid (Fig. 38); 1st lateral not different..11
— Rhachidian tooth tricuspid, 1st lateral different 7
7 Laterals denticulate, 5-6.1.1.1.5-6 . . . . **Candellista**
— Laterals in full grown slugs not denticulate. . . . 8
8 Penis flagelliform (Fig. 7) . . . . **Tritonidoxa**
— Penis conical (Figs. 1-6) . . . . **Tritonia** — 9
9 Bulky, veil bilobed (Fig. 17) . . . . **Tritonia** s. str.
— Slender, small, veil entire 10
10 Genital aperture in front of first gill; anus in front of middle of body . . . . **Duvaucelia**
— Genital aperture behind first gill; anus farther behind. . . . **Tritonia (Candiella)**
11 No velar processes; hundreds of small gills; up to 250 teeth per half-row . . . . **Tochuina**
— Velar processes present (Fig. 35); 12-40 gills; 5-30 lateral teeth per half-row . . . . **Tritoniopsis**
12 Large, 65-90 mm long, preserved (Fig. 41); genital aperture under 3rd to 5th gill; tip of penis pointed . . . **Marionia cucullata**
— Small; 35-45 mm long, preserved; genital aperture under 2nd gill (Fig. 53); penial tip blunt (Fig. 73) . . . . **Marionia tedi**, spec. nov.

Genus **Tritonia Cuvier, 1798** (according to Neave, 1940: 571)

Odhner (1926: 31) said: not earlier than 1803; the indications of the year vary from 1797 to 1803; the type species **Hombergii** Cuvier was only described in 1803.

For synonyms see Alder & Hancock, 1855, Fam. 2, pl. 2, and Thiele, 1931: 421.

Diagnosis. — Veil entire or bilobed; gills numerous; genital aperture

behind first gill; anus in middle of row.
Penis conical; different according to contraction (Bergh, 1884a; pl. 73 fig. 28) or extension (Odhner, 1926a, fig. 12).
Type species: **Tritonia hombergi Cuvier**, 1803.

Tritonia challengeriana Bergh, 1884

Tritonia challengeriana Bergh, 1884: 45, pl. 11, figs. 16-19, pl. 12, figs. 1-8, pl. 14, figs. 17-18; 1884a: 727; Eliot, 1907: 4.
McMurdo Sound; Patagonia; Falkland Islands.

Length 29-45 mm; veil not distinctly bilobed; with 10-20 identations; 16-19 small gills; jaws with 7-9 rows of teeth; radula 32-43 x 30-45.1.1.1.30-45; rhachidian tricuspid; first lateral bulky; atrium pear-shaped; penis straight, conical, elongated, about 4 mm long.

Tritonia australis Bergh, 1898
Figure 3

Candiella australis Bergh, 1898: 536, pl. 31, figs. 17-25.
Duvaucelia (Microlophus) poirieri Odhner, 1926: 38, figs. 24A, 26.
Tritonia (Duvaucelia) australis Marcus, 1959: 63, figs. 144-152; discussion.
Tritonia (Candiella) australis Marcus, 1969: 26; discussion.
Juan Fernandez; Chile; Falkland Islands; Argentina, 40° S, 0-150 m.

Small, 2-23 mm; veil entire, with 6-10 pointed papillae on either side and the grooved tentacles; up to 29 gills; genital aperture, in a 15 mm specimen with 29 gills, under the sixth; anus under the ninth gill; pharynx one third of body length; masticatory border of jaw plates with ten rows of cones. Radula 40-44 x 44-50.1.1.1.40-54. Rhachidian tricuspid; first lateral bulky. Penis coniform with broad base.

Tritonia bayeri Marcus, 1967
Figures 8, 14

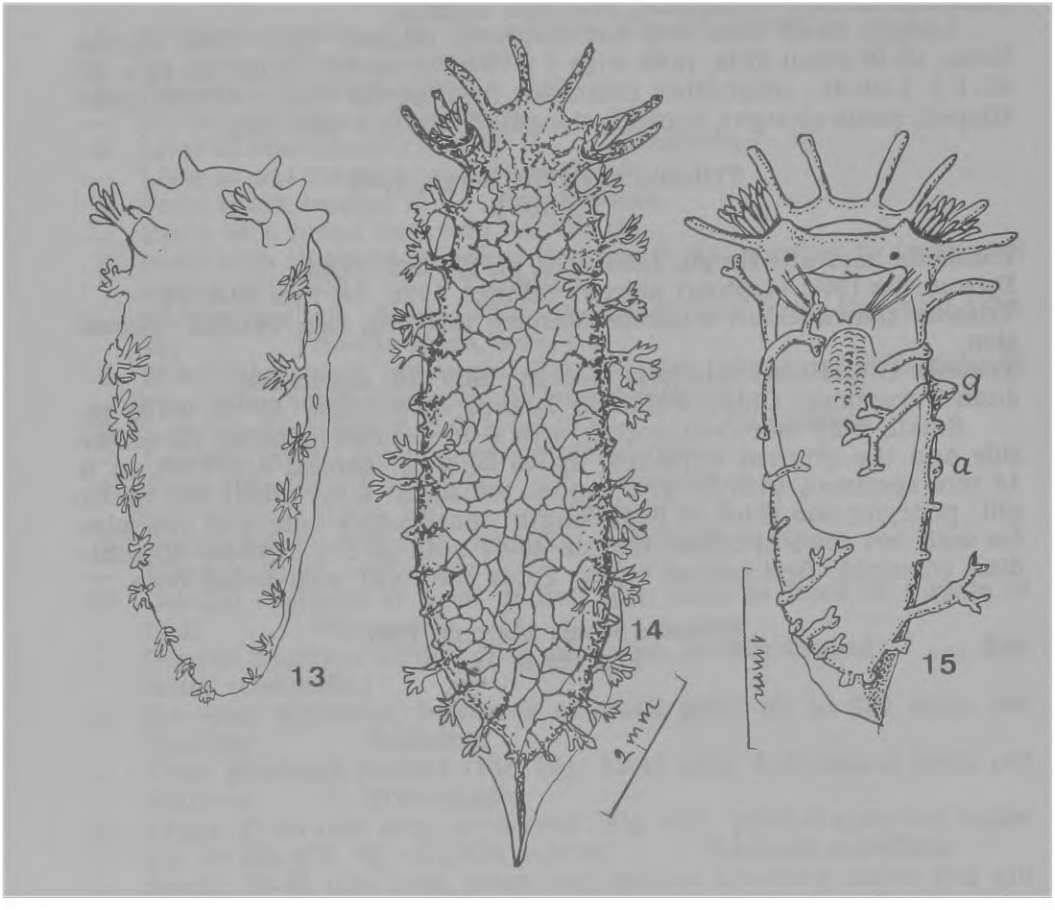


Figure 13 — *Tritonia wellsi* Marcus, 1961.

Figure 14 — *Tritonia (Candiella) bayeri* Marcus, 1967.

Figure 15 — *Tritonia (Candiella) bayeri misa* Marcus, 1970.

Tritonia (Candiella) bayeri Marcus, 1967: 101, figs. 131-134. Florida.

Small, 4.5-11 mm long. Back smooth; veil entire; with 4 digitate processes; two of which are the tentacles. Rhinophoral sheath with outward directed process. Up to 15 gills; genital opening between 2nd and 3rd gills, anus between 5th and 6th, in middle of body. Jaws with several rows of conical teeth. Radula 34 x 11.1.1.1.11; rhachidian tricuspid, first lateral differentiated; the first two laterals bear denticles. Penis short, conical.

Tritonia bayeri misa Marcus 1967

Tritonia (Candiella) bayeri misa Marcus, 1967a: 211, figs. 13, 14. Georgia

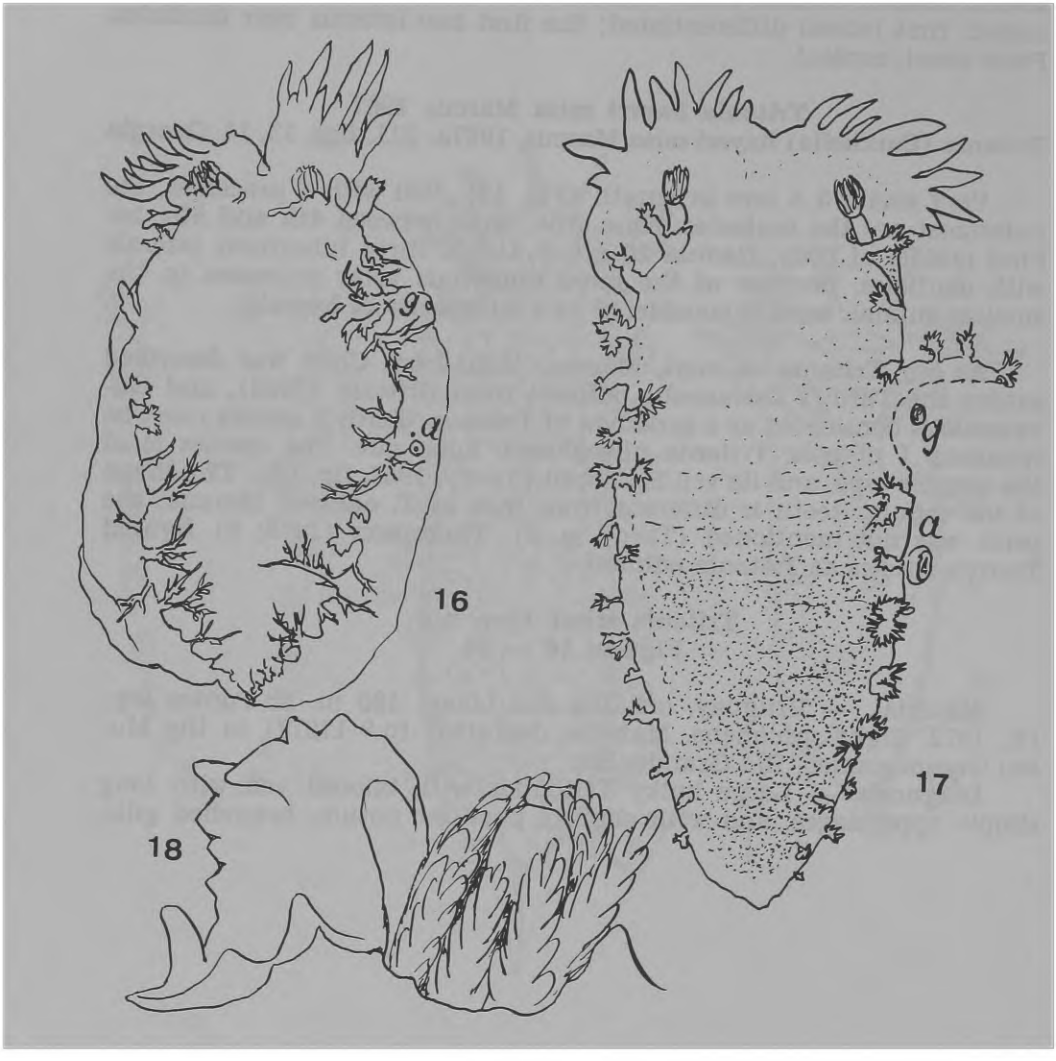
Very small, 3.5 mm in length (Fig. 15). Veil with 6 processes, the outermost are the tentacles. Nine gills; anus between 4th and 5th, behind middle of body. Radula 20 x 9.1.1.1.9; three innermost laterals with denticles. Because of the more numerous velar processes in the smaller animal, **misa** is considered as a subspecies of **bayeri.**

As our **Tritonia odhneri,** Marcus, 1959, from Chile was described earlier the Tardy's **Duvaucelia odhneri** from Brittain (1963), and **Duvaucelia** is considered as a synonym of **Tritonia**, Tardy's species must be renamed. I propose **Tritonia nilsodhneri,** nom. nov. The species is of the slender type, and its veil is bilobed (Tardy, 1963, fig. 1B). The shape of the radular teeth is different from that in **T. odhneri** Marcus; the penis was not mentioned (Tardy, p. 2). Thompson (1976: 5) figured Tardy's species as **Tritonia odhneri.**

Tritonia eriosi, spec. nov.
Figures 16 — 34

Material. — Uruguay, off Ilha dos Lobos, 120 m. L. Pontes leg., IX. 1972. Eight specimens. Material deposited (n.º 17277) in the Museu Oceanográfico, Rio Grande, RS.

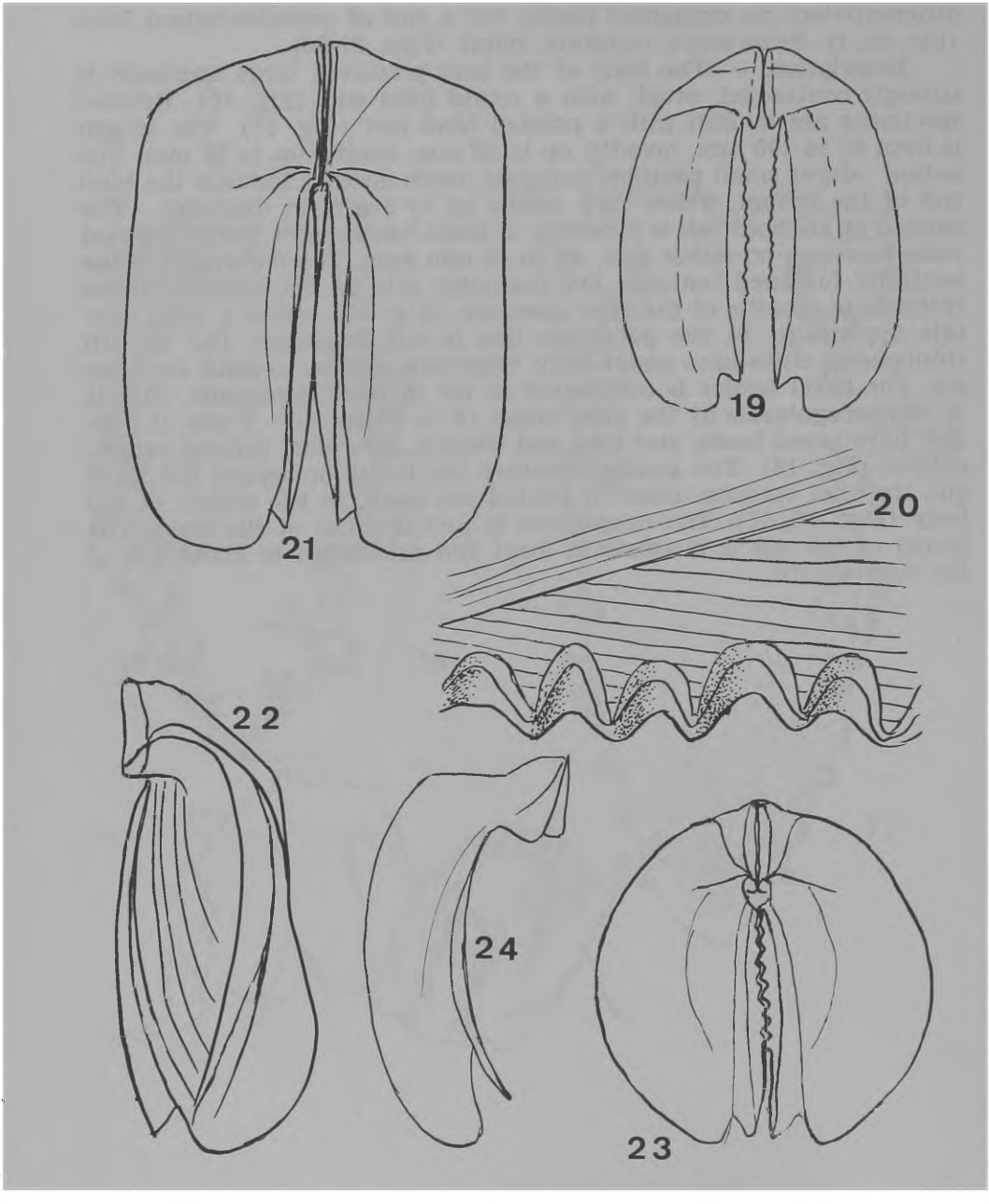
Diagnosis. — Large bulky Tritoniids with bilobed veil with long simple appendages, and with slightly pustular notum, branched gills.



Figures 16-18 — *Tritonia eriosi*, spec. nov. 16. Dorsal view of type specimen. 17. Dorsal view of a paratype with contracted branchiae, part of notal brim torn. 18. Left rhinophore with flap on sheath of type specimen. a — anus. g — genital aperture.

masticatory border of jaws quite smooth or with coarse serration, not with several rows of denticles. Rhachidian tooth tricuspid; first lateral differentiated; no stomachal plates, but a row of uncuticularized folds (Fig. 29, f). Penis short, coniform, blunt (Figs. 31-34).

Description. — The body of the best preserved large specimen is strongly contracted, ovoid, with a round hind end (Fig. 16). Relaxed specimens are longish with a pointed hind end (Fig. 17). The length is from 80 to 135 mm, breadth up to 60 mm, height up to 35 mm. The notum shows small pustular polygons, more distinct towards the hind end of the notum, where they attain up to 3 mm in diameter. The smooth or knobbed veil is bipartite. It bears about eight simple pointed velar processes on either side, up to 16 mm long. The outermost is the ventrally furrowed tentacle. On the outer side of the slightly jagged rhinophore sheaths of the type specimen (Fig. 18) stands a long, dentate appendage. In the paratypes this is not developed. The smooth rhinophoral clubs have about eight tripinnate plumes around their bases. The notal border is contracted so far in most specimens, that it is only recognizable by the gills, about 16 on either side. These, if relaxed, have broad bases, and long and slender, irregular, pointed ramifications (Fig. 16). The genital aperture lies under or behind the third gill, the anal opening under or behind the sixth, in the middle of the body (Figs. 16, 17). The nephropore is just in front of the anus. The border of the sole is bilabiate in front and prominent to about 2/3 of the body length.

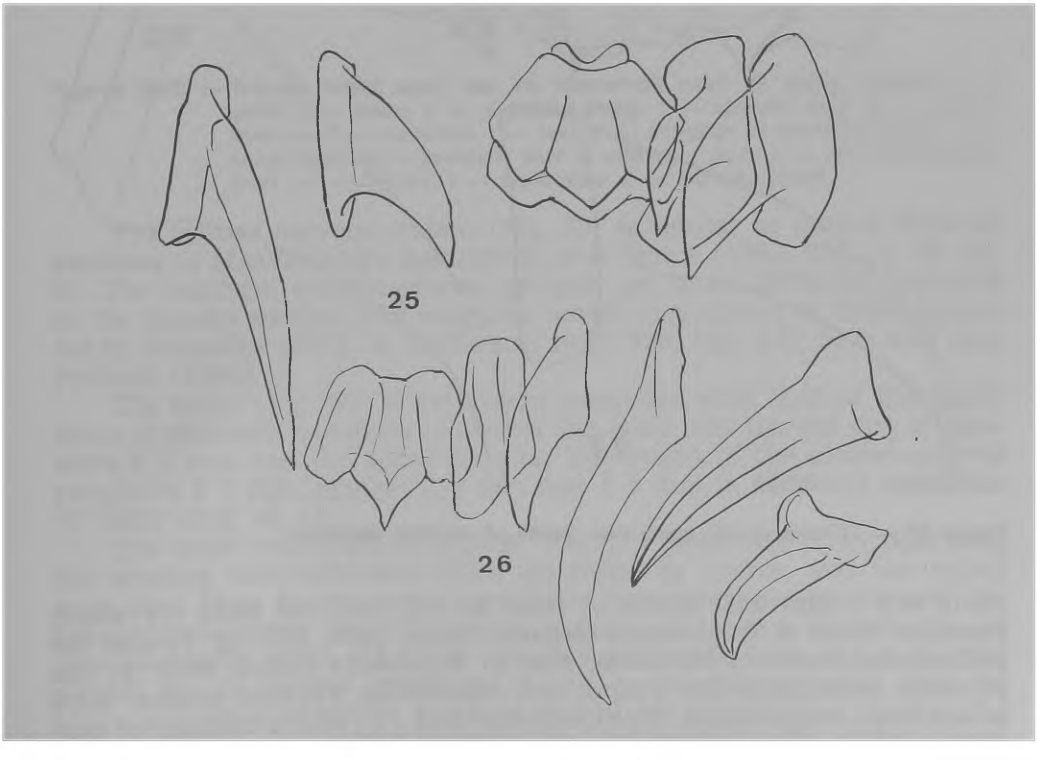


Figures 19-24 — *Tritonia eriosi*, spec. nov. 19. Jaws of type specimen. 20. Masticatory border of jaw of paratype. 21. Jaws of other paratype. 22. Lateral view of same. 23. Jaw of other specimen. 24. lateral view of same.

The colour of the preserved specimens is a creamy white or beige; the middle of the notum was rose-coloured, fading out towards the sides, and vanishing after some time of preservation.

The pharynx often lies obliquely in the body. Its size varies from 22 to 34 mm length, independent of the body size. The shape of the jaws is so different from specimen to specimen (Figures 21-24) that they seem to belong to different species. The strong brown jaws are also 22-34 mm long; those 31 mm long were each 11 mm broad. The reflexed masticatory borders vary from coarsely serrate (Figure 23) to quite smooth (Figure 24). They are never set with several rows of prominences or denticles as in most other species of **Tritonia.**

The radula measures about 18 x 18 mm in the larger specimens; it has about 100 x 160.1.1.1.160 teeth (Figs. 25-27). The rhachidian tooth is tricuspid, its upper border concave. Its lateral cusps had long points in a freshly dissected specimen which were no longer visible after some days in glycerine (Fig. 27). The first lateral tooth is broad and blunt. The marginal teeth have a long cusp. They increase in length to the outer third, where they attain 850 µm in length, and diminish towards the border. (There are 6-7 irregular, defective longitudinal rows between the normal ones on both sides).



Figures 25-26 — *Tritonia eriosi*, spec. nov. 25. Teeth of type specimen. 26. Teeth of one of paratypes.

The compact salivary glands clasp the oesophagus from both sides (Fig. 28, z).

The oesophagus is wide in this part. Its epithelium is thrown into delicate longitudinal folds. The small anterior right liver is indistinctly separated from the large left liver. They open into the stomach together (Fig. 29, n). The stomach emerges from the surrounding digestive gland after having received these ducts. The entire digestive tract was filled with many, in one specimen more than 40, parallel axes of a pennatulid, up to 30 mm long. In the oesophagus some of these were still surrounded by pieces of tissue and even polyps, and many smooth, pointed spicules, up to 2 mm long; some sticking in the walls of the digestive tract. After removal of the contents some inner folds (f) of the stomachal epithelium are visible. Just behind the entrance of the liver ducts

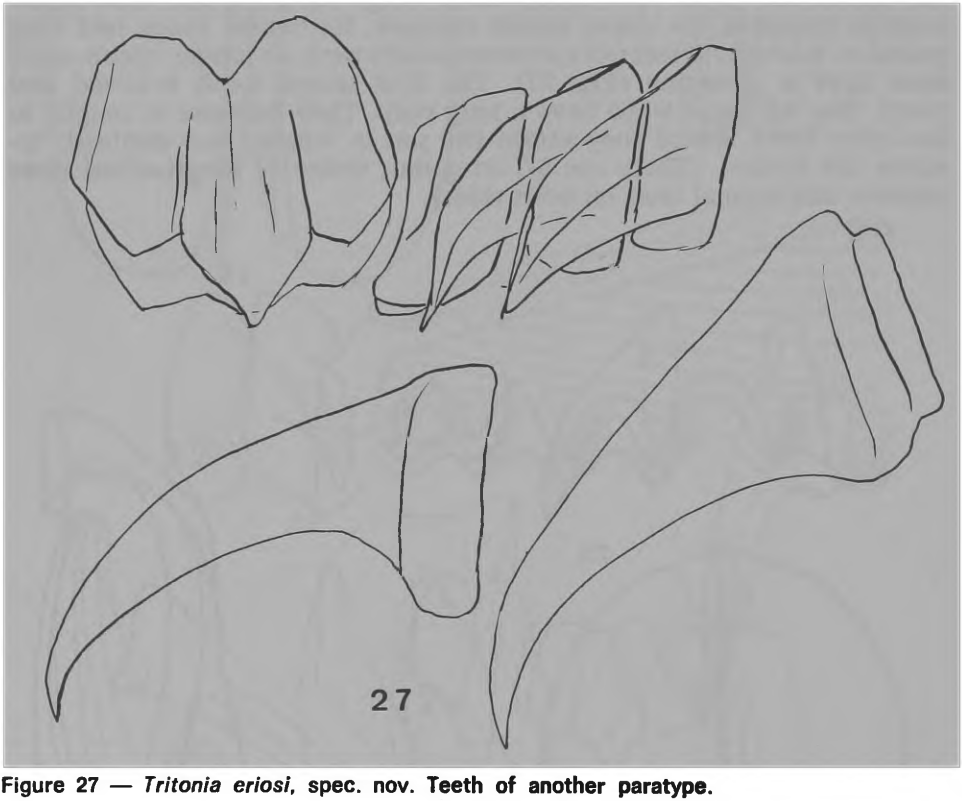
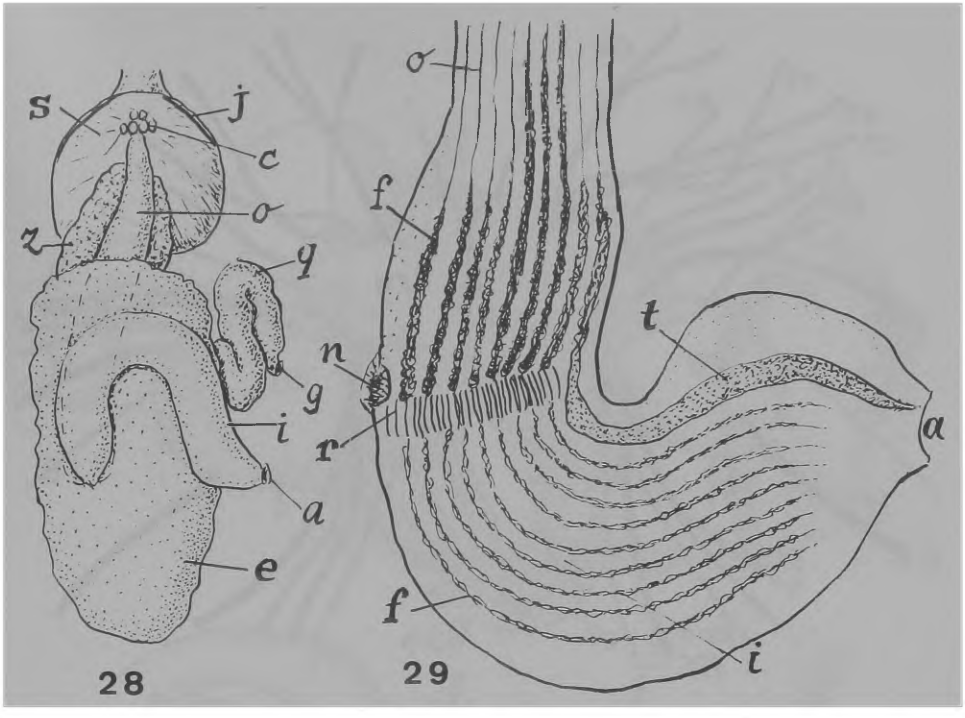


Figure 27 — *Tritonia eriosi*, spec. nov. Teeth of another paratype.

there is a 3 mm wide girdle of some 30 soft and low folds (r) which resemble those of **Tritoniopsis elegans** (Baba, 1969: 397, fig. 7) and the cuticularized ones of **Marionia**. Also in **Tritoniella** (Eliot, 1907: 5) the stomach bears plate-like ridges, not detachable. Farther behind there is one large longitudinal, typhlosole-like fold (t), and a number of narrower ones, ending near the anal opening (a). In front of the anus lies the nephroproct, the outlet of a small kidney connected with the pericardium.



Figures 28-29 — ***Tritonia eriosi*, spec. nov. 28. Alimentary tract. 29. Same, opened.** a — anus. c — brain. e — digestive gland. f — epitelial fold. g — genital aperture. i — intestine. j — jaw. n — entrance of digestive gland. o — oesophagus. q — prostatic part of efferent duct. r — not cuticularized folds. s — pharynx. t — typhlosole. z — salivary gland.

The central nervous system (Fig. 30) is similar to that of **Tritonia exsulans** in MacFarland's description and figure (1966: 234, pl. 45, fig. 9). The reniform cerebro-pleural ganglia are more distinctly bipartite in the present species. The outgoing nerves correspond to those indicated by Vayssière (1901, in Hoffmann 1936: 798, figs. 541, 542) and Mac Farland (1966).

The brain (Fig. 30) is very large compared with that of the specimens of **Marionia cucullata** of almost the same size. Spread out, it measures 5.1 mm over the pedal ganglia; the height of the cerebro-pleural ganglia is 2.7 mm, against 2.9 mm and 1.2 mm in **Marionia cucullata** (P 1437) (Fig. 49, c).

The inner reproductive organs (Fig. 31) were brittle, so that only the winding hermaphrodite duct, distended by sperm, and the coiled male duct (Fig. 31, q), in part prostatic, were recognizable around the female gland mass (m). The male atrium (a) is club-shaped, the 12 mm-long penis (Figs. 32-34, p) has a 4 mm wide base and a bluntly conical tip. In several specimens it was so far disintegrated, that its shape was not analyzable; it was certainly not flagelliform. Behind the male pore and the female opening lies the vaginal pore, which opens into a sac-shaped vagina (v) with longitudinally folded epithelium.

The species is named in honour of Dr. Eliezer de Carvalho Rios.

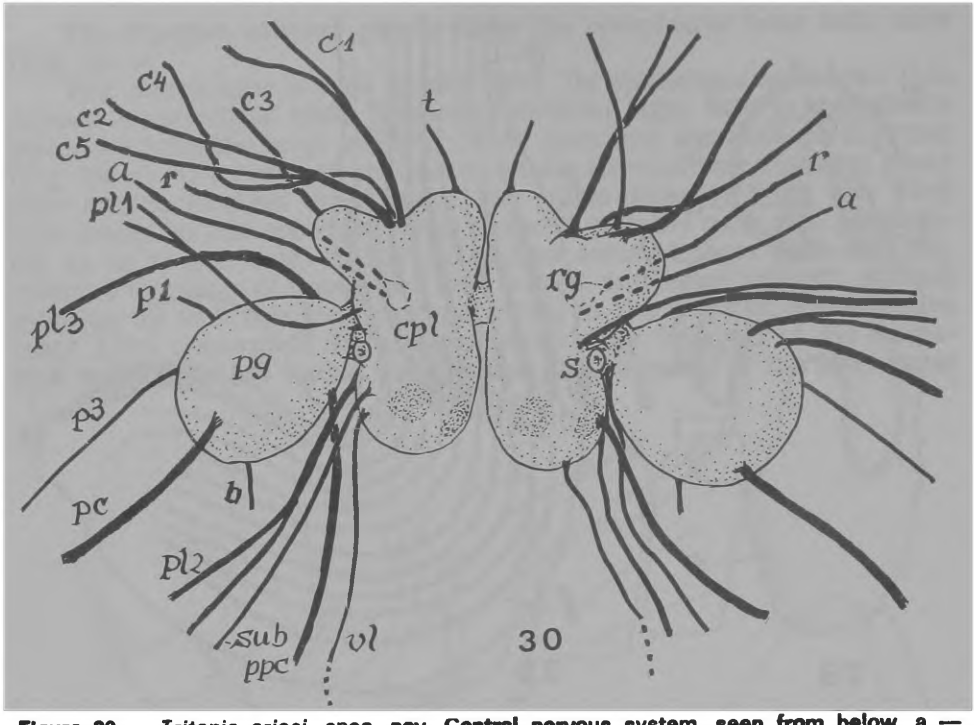


Figure 30 — *Tritonia eriosi*, spec. nov. **Central nervous system, seen from below.** a — optic nerve. b — buccal nerve. c1-c5 — cerebral nerves. cpl — cerebropleural ganglion. p1-p3 — pedal nerves. pl 1, pl 3 — pleural nerves. ppc — parapedal commissure. r — rhinophoral nerve. rg — rhinophoral ganglion. s — statocyst. sub — subcerebral commissure. t — tentacle nerve. vl — visceral loop.

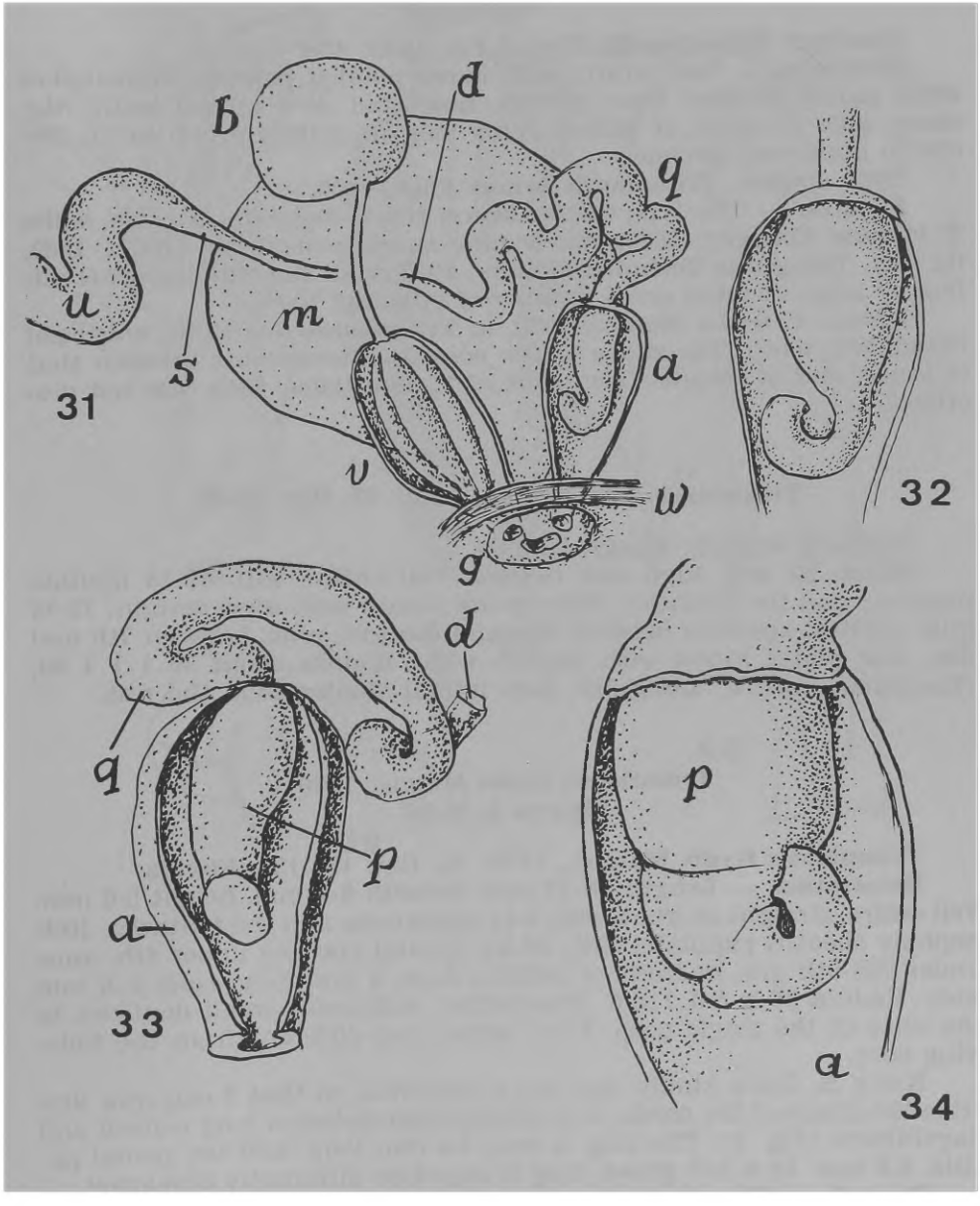
Discussion. — The aspects of these specimens were so far different, that I at first thought they belonged to different species (Fig. 19-24), but there were intermediate outlines and differences of the jaw plates.

The animals are externally similar to **Tritonia hombergi** Cuvier, 1803, compared with the excellent description and figures of Alder & Hancock (1855, Fam. 2, pl. 1). Their jaw plates (figs. 8, 9) are of the same shape. However, the several rows of prominences or denticles along the inner border of the jaw plates, present in most species of Tritoniidae, are wanting in **eriosi.** This seems to me to be a good specific character.

The radula of **hombergi** (Alder & Hancock, 1855, Fam. 2, pl. 2, fig. 6) is identical with the present material. The velar processes (figs. 1-3) are shorter and more numerous, 30-50, than in **eriosi.** Also the number of gills is much greater in **hombergi.**

The genital organs of **eriosi** are more like the figures of **hombergi** by Alder & Hancock (1855, Fam. 2, pl. 2 Fig. 2) than the diagram of Thompson (1961: 6, fig. 3). The penial papilla figured by Bergh (1884, pl. 73, fig. 23) is distinctly different from the present one.

Due to the distance from the range of **hombergi** and the mentioned differences, I prefer to treat **eriosi** as a separate species. Cases of bipolarity are rare, and the southernmost occurrences of **hombergi** are in the Mediterranean.



Figures 31-34 — *Tritonia eriosi*, spec. nov. 31. Reproductive organs, male atrium (a) and vagina (v) opened. 32. Penis of paratype. 33. Penis of type specimen. 34. Penis of other paratype. b — spermatheca. d — efferent duct. g — genital apertures. m — female gland mass. p — penis. q — prostatic part of efferent duct. s — spermoviduct. u — ampulla. w — body wall.

Tritoniopsis Eliot 1905

Synonym **Tritoniopsilla** Pruvot-Fol, 1933: 108.

Diagnosis. — Veil entire, with many pointed papillae. Rhachidian tooth hardly broader than laterals, unicuspid. Few lateral teeth. Stomach with no trace of plates. Penis long, flagelliform, curved at the end in preserved specimen.

Type species: **Tritoniopsis brucei** Eliot, 1905.

Remark. — The type species **brucei** has a flagelliform penis, while **T. elegans** (Savigny, 1826) has a quite short, conical one (Baba, 1969, fig. 10). The genus **Tochuina** Odhner, 1963, with flagelliform penis differs by large size and great number of gills and teeth.

I place **T. frydis** Marcus, 1970, in **Tritoniopsis** due to its unicuspid rhachidian tooth. The shape of the penis is intermediate between that of **brucei** and of **elegans**. The penis of **T. alba** Baba, 1949, was not described.

Tritoniopsis brucei Eliot, 1905: 22, figs. 15-20

Falkland Islands; Gough Islands.

Small, 22 mm, high and narrow. Veil entire, with 12-14 digitate processes and the tentacles. Rhinophore sheath with wavy margin; 12-14 gills. Genital aperture between 5th and 6th gill; anus between 7th and 8th. Jaw plates round with smooth edge. Radula about 30.1.1.1.30; rhachidian narrow, unicuspid; first lateral stouter than the rest.

Tritoniopsis frydis Marcus, 1970
Figures 5, 35-38

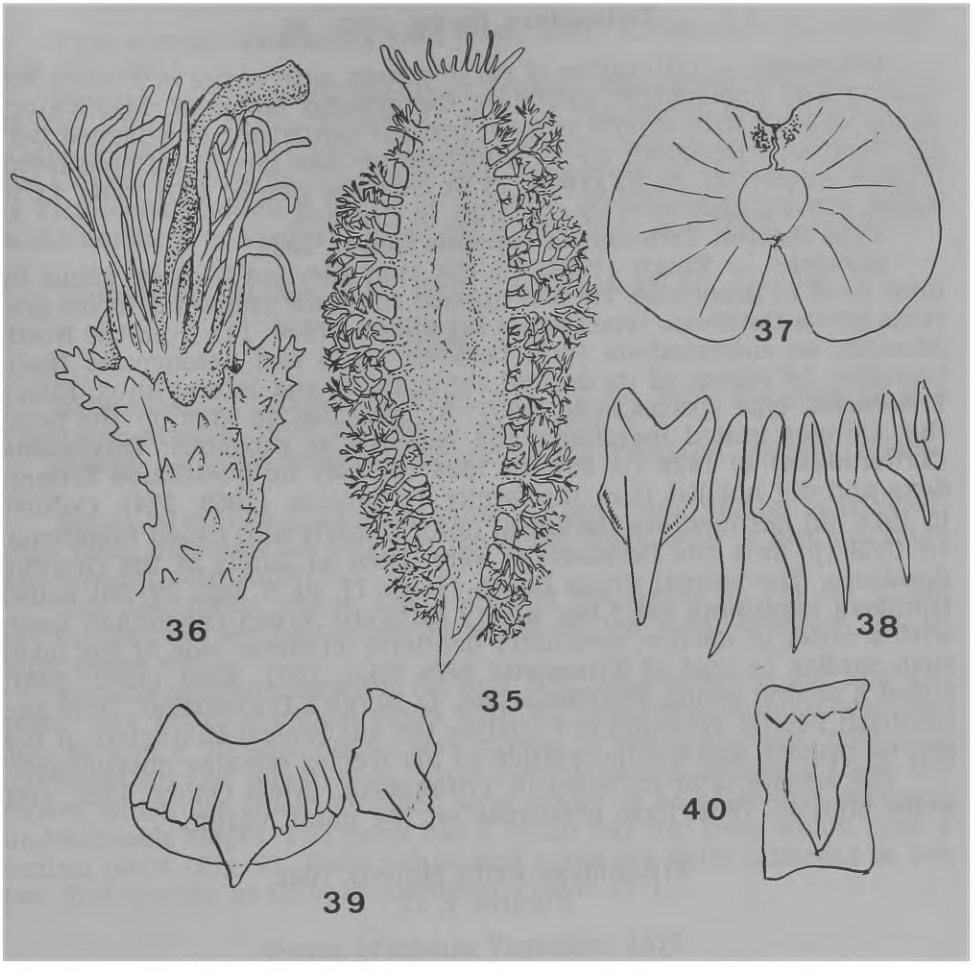
Tritoniopsis frydis Marcus,, 1970: 75, figs. 134-137. Florida

Description. — Length 10-17 mm, breadth 5-7 mm, height 5-6 mm. Veil entire, straight in front, with 9-11 digitations and the tentacles. Rhinophore sheaths papillate. Gills 14-20; genital opening under 4th, anus under 7th-9th gill, in front of middle. Jaws 2 mm long, each 1.5 mm wide. Radula 36 x 5-6.1.5-6. Rhachidian with some small denticles to the sides of the single cusp. First lateral not different from the following ones.

Kerry B. Clark kindly sent me a specimen, so that I can now describe the shape of the penis. It is intermediate between long conical and flagelliform (Fig. 5). The slug is only 7.5 mm long, and the penial papilla, 2.5 mm. In a full grown slug it might be differently developed.

Remark. — The shape of the rhachidian tooth (Fig. 38) resembles that of **T. hembergi** (Thompson, 1962, fig. 4 a).

Vayssière (1912: 90) mentioned a species of **Tritoniopsis** described by Balch. Evidently it was never published (Marcus, 1970: 77).



Figures 35-38 — *Tritoniopsis frydis* Marcus, 1970. 35. Living animal from colour slide. 36. Rhinophore. 37. Jaw plates. 38. Radular teeth.

Figure 39 — *Tritoniella belli* Eliot, 1907. Rhachidian tooth.

Figure 40 — *Tritoniella sinuata* Eliot, 1907. Rhachidian tooth. Both from Eliot, 1907.

Tritonidoxa Bergh, 1907: 86

Diagnosis. — Tritoniidae of varying sizes, with entire or bilobed veil bearing 6-12 appendages, including the grooved tentacles. Masticatory border of jaws with several rows of pointed denticles and a jagged border. Radula: rhachidian tri- or multicuspid, first lateral differentiated, laterals numercus, 90 in **griegi**, 75 in **capensis** Bergh, 1907, only 11 in **wellsi**. Penis flagelliform (3 cm long) in **capensis**.

Type species: **Tritonidoxa capensis** Bergh, 1907.

Remarks. — Bergh (1907: 86, 87) characterized his new genus by total want of branchiae. He had applied the same character to his previous genus **Doridoxa**, type species **ingolfiana** (1899: 14) from the North Atlantic, an intermediate form between clado and holohepatic Nudibranchia, by reason of its doridid rhinophores and lateral anus. Eliot's **Tritoniella**, type species **belli** (1907: 8), also has no gills on the notal rim. Odhner united **ingolfiana** and **capensis** as subgenus: **Duvaucelia (Tritonidoxa)** in 1926 (p. 33). In 1934 (p. 286) he questioned **Tritonidoxa** and did not list it in the family Tritoniidae (1968: 874). Odhner in 1926 did not mention **Doridoxa**, unfortunately also called **ingolfiana.** In 1968 (p. 857) the Doridoxidae were listed as family of the Gnathodoridacea. The animal which Bergh (1899: 17, pl. 5, figs. 29, 30) called **Doridoxa ingolfiana var.?** has a very different, broad rhachidian tooth with a series of narrow, secondary denticles on either side of the main cusp similar to that of **Tritoniella belli** Eliot, 1907. Eliot (1903: 544), added a second genus, **Doridomorpha, to** Bergh's Doridoxidae, from the southern Pacific. He could not analyze the anatomical characters of the genital organs, and so the position of his species remains questionable.

The species later included in **Tritonidoxa: griegi** Odner, 1922, and **wellsi** Marcus, 1961, have branchiae on the notal margin.

Tritonidoxa wellsi Marcus, 1961
Figures 7, 13

Tritonia (Tritonidoxa) wellsi Marcus, 1961: 146, figs. 22-24; 1967: 99 figs. 126-130. North Carolina to Brazil, Santos.

Small, 5-10 mm long (Fig. 7); veil entire, with six appendages, the outermost are the grooved tentacles; 9-10 gills; genital aperture under second gills; anus near fourth gill; rhinophore sheath high, with smooth borders and a point at the outer side; jaws with 8-10 series of pointed denticles; radula 20-21 x 10-11.1.1.1.10-11; rhachidian tricuspid; first lateral with 10-12 denticles. Penis flagelliform (Fig. 7).

Tritoniella Eliot, 1907: 5

Diagnosis. — Tritoniids with simple, triangular, unbranched prominences; with few lamellae or crenulations on the under side of the notal margin, instead of branched tufts. A median longitudinal ridge on the back, and some irregular accessory ridges. Jaws not denticulate. Radula wide. Stomach bears plate-like, not detachable ridges. Penis with a ring fold under tip (Figs. 9-12).

Type species: **Tritoniella belli** Eliot, 1907: 5, figs. 1-8, pl. (1) figs. A B (Fig. 39).

Remark. — The penial papilla of **Tritonia episcopalis** Bouchet, 1977: 55, fig. 23 (Fig. 12) is similar to that of **Tritoniella belli** Eliot, 1907 (Odhner, 1934, fig. 59) (Fig. 11) and also the radula (Eliot, fig. 22) is like Odhner's figure 54. I suppose that **episcopalis** should be considered as **Tritoniella**, though it would be the first representative of the genus in the northern hemisphere, at 44-48° N, 08-10° W, in 1035-2170 m depth.

Tritoniella sinuata Eliot, 1907; 10, figs. 9-11, pl. (1), fig. C

Figures 9, 40

References. — Odhner, 1926: 40, figs. 27, 28; 1934: 292, figs. 55, 61; Vicente & Arnaud, 1974: 537, fig. 5, pl. 2, figs. 5, 6.

Range. — From McMurdo Sound to the Falkland Islands; Adelie-land.

Small, 30 mm long, 10,5 mm broad, 12 mm high. Veil bi- or trilobed, with faint indentations and the tentacles. Back with a median ridge and covered with tubercles.

The description (Eliot, 1907: 10) and the figure pl. (1) fig. C are not compatible: the text reads 30 points on the notal margins, the figure shows six.

Genital aperture between 1st and 2nd, anus between 3rd and 4th point. Jaw plates elongate, edges with asymmetrical prominences. Radula 56 x 70.1.70. Rhachidian very narrow in young animals, distinctly unicuspid also in larger ones. First lateral hardly different from the others, which are thick. Stomach with girdle of 14 plate-like, soft and undetachable ridges. The penis has a broad flat top from which rises a conical point (Fig. 9). Both radula and penis are quite different in the two first species, as Odhner discussed (1934: 287).

Genus **Marionia** Vayssière, 1877

Type species: **Tritonia blainvillea** Risso, 1828.

Diagnosis. — Tritoniidae with arborescent papillae on veil; separate right liver; hard stomach plates.

Odhner (1934: 294-300; 1936: 1080-1090) has treated the Marionias so thoroughly that I refer to his anatomical descriptions.

Odhner (1936: 1087, 1088) distinguished two groups of different notal structure: those with polygonal reticulation, and those without polygons. **Marionia cucullata** is said to have polygons (Odhner, 1934: 294), but these are of different colours and not preserved. In Odhner's photograph(fig. 36) the notum is as smooth as in my present specimens.

Marionia cucullata (Gould, 1852)
Figures 41-47

Synonym· **Marionia occidentalis** Bergh, 1884; 49, pl. 11.

References. — Marcus, 1967y: 104 (references); 1969: 26; 1979: 132,

non **Marionia cucullata** Vicente & Arnaud, 1974: 539, figs. 6, 7, pl. 3, figs. 1-3.

Range. — From Brazil, Rio de Janeiro, 23° S, to Argentine, 40° S.

Material. — Pillsbury, 1437. 22° 12' N, 73° 16' W, 722-730 m; two specimens, 65 and 90 mm long.

The present specimens differ slightly in the shape of the jaw plate (Fig. 44) and the shape of the penis (Fig. 47) from Odhner's descriptions (1934: 294-300, text-figs. 62-72, pl. 3, figs. 36, 37). The rhachidian tooth (Fig. 46) corresponds exactly to Odhner's figure 66, and the stomachal plates to his figure 68. As the specimens come from the western warm water region, I consider them as **M. cucullata**, extending the range of the species.

As in several of the species studied by Bergh (1884a: 743, 746, 752) the epithelium of the mouth cavity contains black pigment, though not so much as to call the buccal cavity "sammetschwarz", as Bergh did.

The brain of the 5 mm long dissected slug is 2.9 mm wide and 1.2 mm high.

The **Marionia cucullata** of Vicente & Arnaud, 1974, has a pointed penis (fig. 7 C, pe), but its velar processes (fig. 7 B, vb) are simply digitiform, while Odhner (1934: 294) found them each composed of 3-5 tubercles in a row. He did not figure them but used them as a generic character. My specimens have tuberculose velar processes. Vicente & Arnaud describe and figure the denticles of the masticatory border (fig. 6 C) all of one size, while they are of different sizes in Odhner's fig. 65 as well as in my material (Fig. 45). As Vicente & Arnaud do not mention the stomach plates, the most important character of the Marionias, nor the separate right liver, it is certain that their animals of 20-30 mm length are not **Marionia.**

Marionia tedi, spec. nov.
Figures 48-74

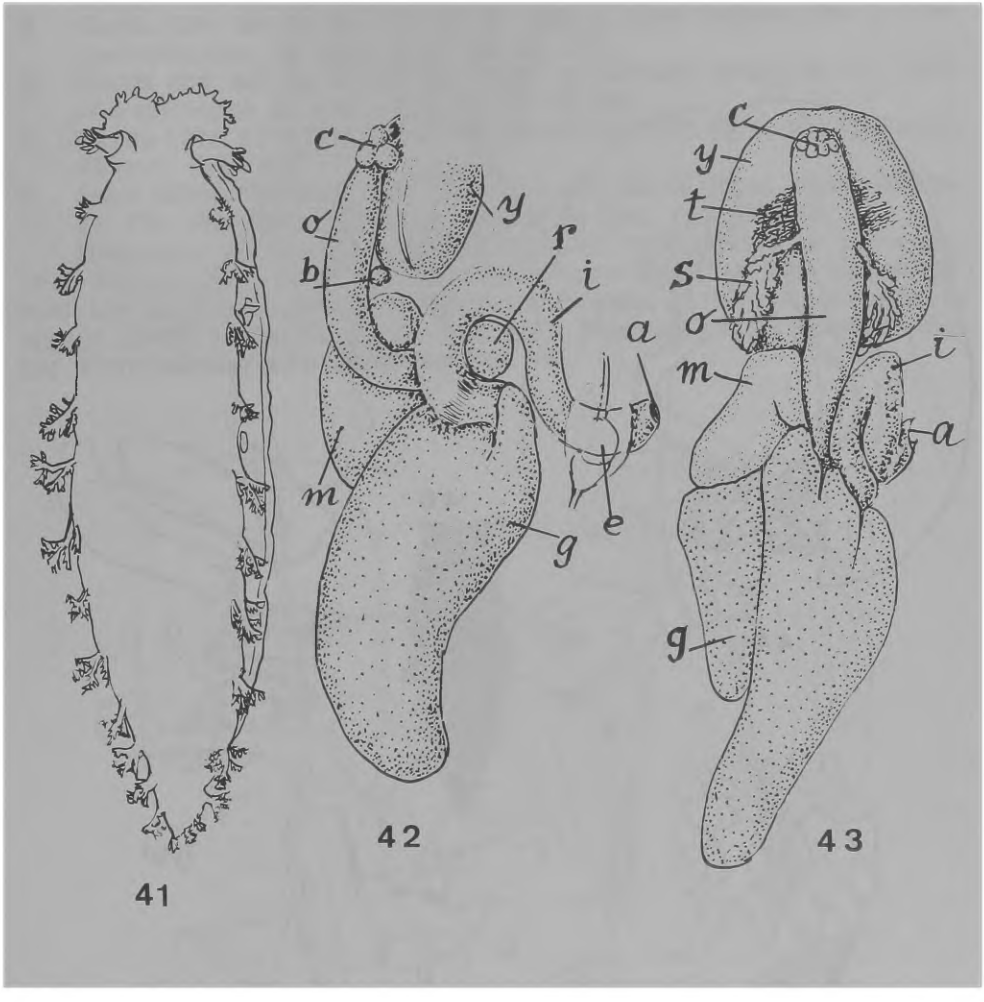
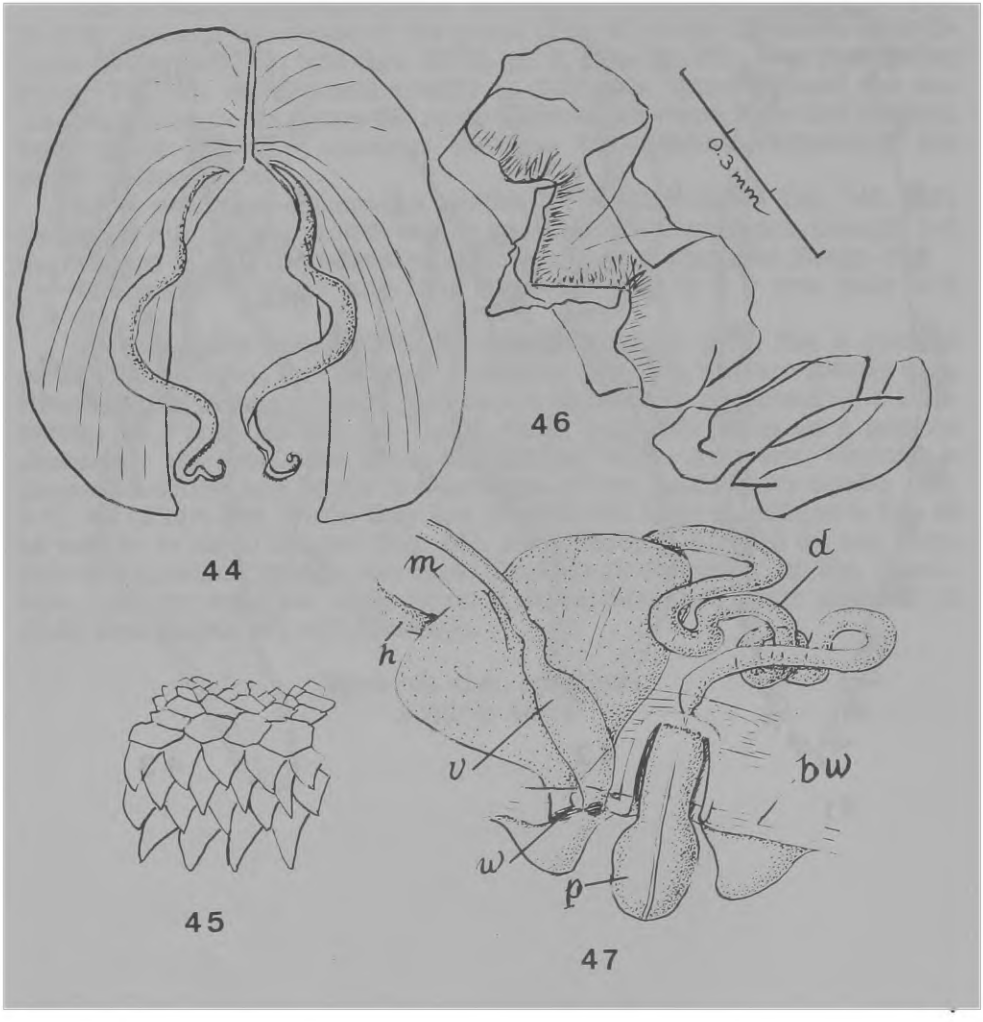


Figure 41-43 Marionia cucullata (Gould, 1852). Material (P 1437) 41. Preserved specimen. 42. Digestive tract, lateral view. 43. Same, dorsal view. a — anus. b — buccal ganglion. c — brain. e — heart. g — digestive gland. i — intestine. m — female gland mass. o — oesophagus. r — prostate. s — salivary gland. t — pharyngeal pigment. y — pharynx.

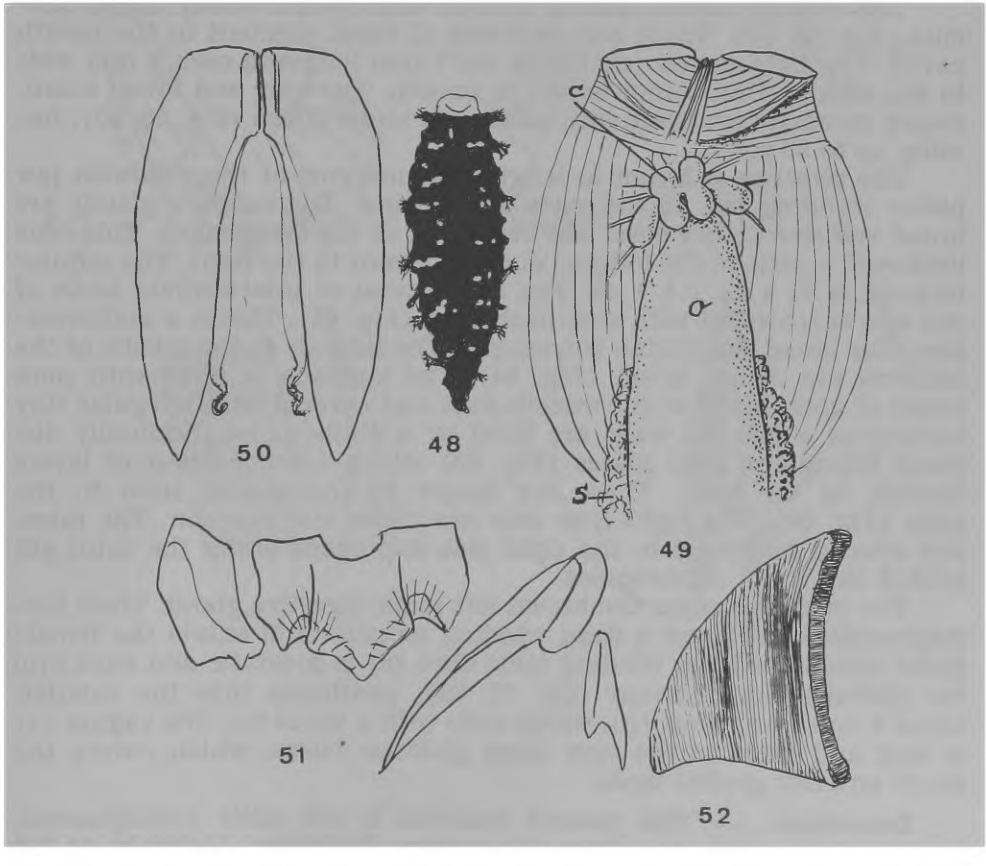


Figures 44-47 — *Marionia cucullata* (Gould, 1852). (Material P 1437). 44. Jaw plates. 45. Denticles of masticatory process. 46. Radular teeth. 47. Reproductive organs. bw — body wall. d — efferent duct. h — spermoviduct. m — female glandd mass. p — penis. v — vagina. w — female aperture.

Material. — Strait of Florida.

1. Gerda 972, 24° 24' N, 80° 52' W, 230 m, rocky bottom, 3. VIII. 1968. Type specimen, 35 mm (Figs. 53-57, 61, 63, 68, 69).
2. Gerda 239, 25° 20' N, 79° 15' W, 348 m, hard bottom, 30. I. 1964, one specimen, 40 mm. (Fig. 58, 64, 70).
3. Gerda 604, 25° 14' N, 80° 09' W, 91 m, bottom rocky, 15. IV. 1965, one specimen, 30 mm. (Fig. 59, 62, 65, 66).
4. Gerda 1276, 21° 02' N, 86° 28' W, 120 m, 21. VIII. 1970, one specimen. 45 mm. (Fig. 67).
5. John Elliot Pillsbury, 718, 11° 22' N, 64° 08' W, 60 m, hard bottom, 20. VII. 1968, two specimens, 40 and 50 mm. (Fig. 72-74).

Diagnosis. — **Marionia** with entire veil with about 15 processes, (Fig. 53) generally branched into two or three tips (Fig. 53). The outermost are the simple, furrowed, tentacles. Borders of rhinophoral sheaths jagged. About ten pairs of branched gills. Stomach plates pointed (Fig. 59). Penis tubular with blunt tip (Fig. 73).



Figures 48-52 — *Marionia tedi*, spec. nov. (Material Pillsbury 718). 48. Living slug from colour slide. 49. Pharynx. 50. Jaw plates. 51. Radular teeth. 52. Stomachal plate. c — brain. o — oesophagus. s — salivary gland.

Description. — A photograph of a living specimen (P 718) shows a black notum with white spots over the gills (Fig. 48). The type specimen is whitish after 8 years in alcohol. It is 40 mm long, 11 mm broad, and 9 mm high. It is a little wider in the middle; the hind end is turned upward. The veil is entire and its processes have 1-3 tips (Fig. 55). The notum is almost smooth with opaque white tubercles, probably glands. Such occur also on the sides of the body. The notal border is inconspicuous. It bears about 10 pairs of multipinnate gills. The genital aperture lies under the second gill, the anus immediately below the third. The protruded penis is straight.

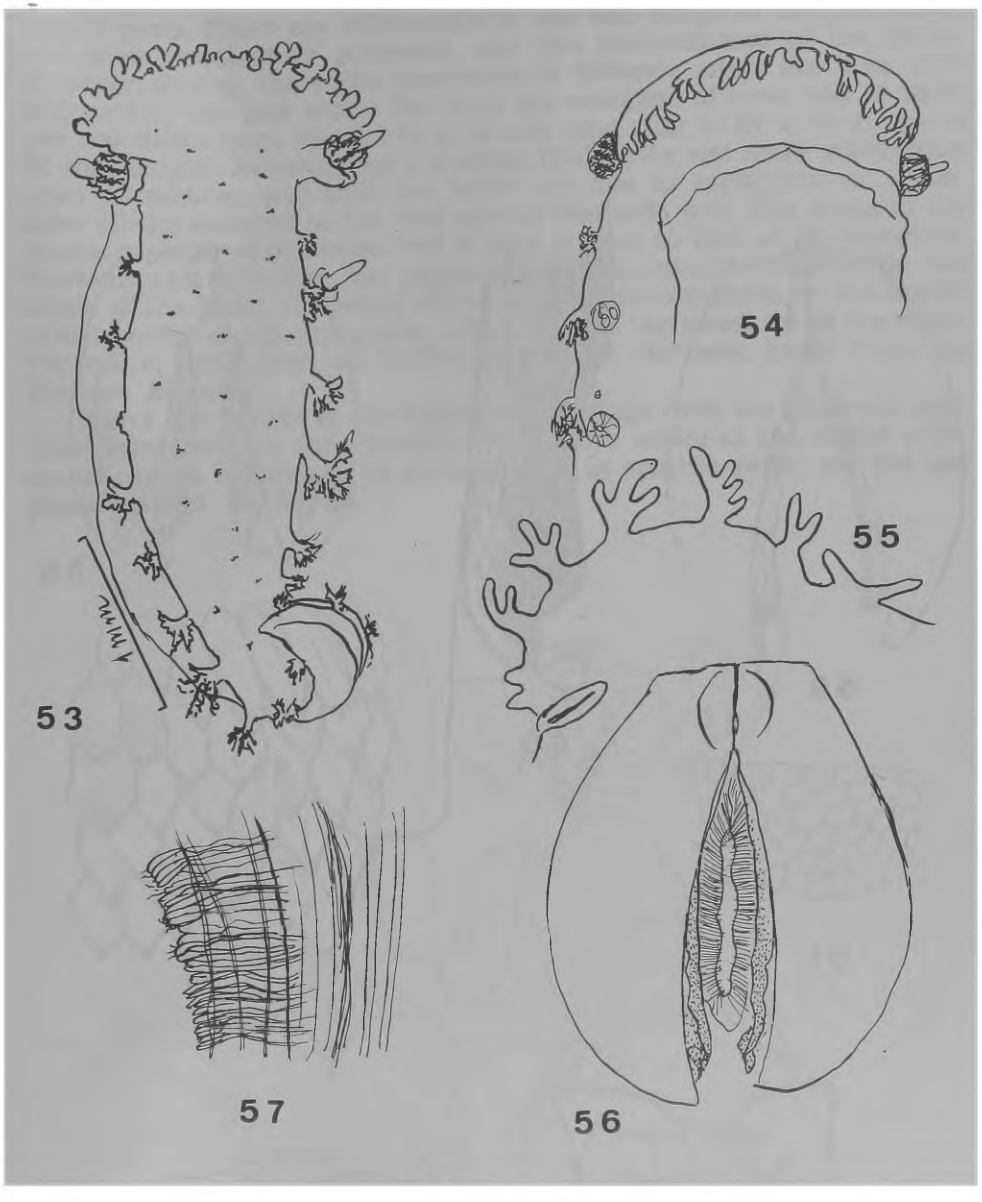
The central nervous system (Fig. 71) differs from that of **cucullata** figured by Bergh (1884, pl. 11, fig. 3) and Odhner (1934, fig. 72). The cerebral ganglia are broader and not set off from the pleural ones, while the connectives to the pedal ganglia are distinct. The central nervous system in the 40 mm long animal (Fig. 53) is 2.5 mm wide, with 1.2 mm high cerebro-pleural ganglia, not much smaller than that of the 65 mm long **M. cucullata.**

The vertical mouth opening is lined with a transversely folded cuticula (Fig. 56, 57). There are no traces of black pigment in the mouth cavity. The light yellow jaw plates are 7 mm long and each 2 mm wide in the middle. Their inner border is smooth. The long and broad masticatory processes are beset with numerous blunt knobs (Fig. 59, 60), forming up to 20 rows.

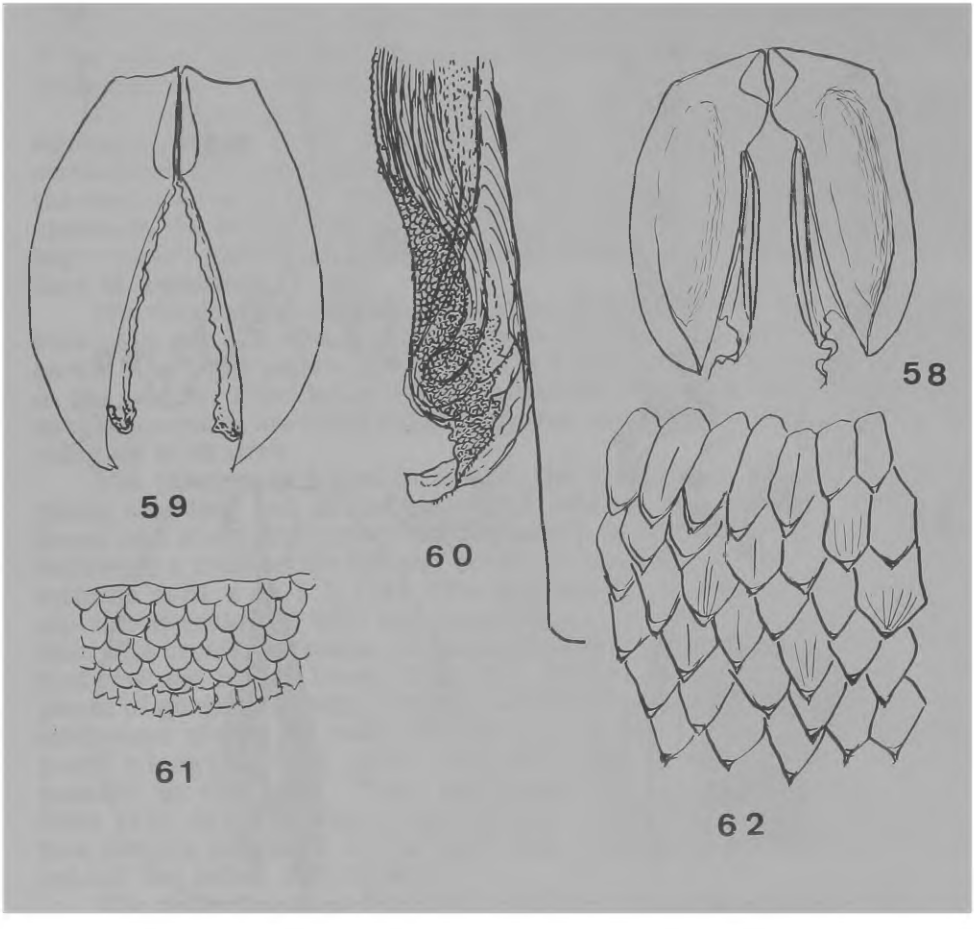
The pharynx is 9 mm in length, the margins of the yellowish jaw plates standing out at the sides and behind. The salivary glands are broad and short; they cover the beginning of the oesophagus. This runs backward a little to the left and curves forward to the right. The radular formula is 51 x 43.1.1.1.43. The first lateral or intermediate tooth of one side is coalesced with the rhachidian (Fig. 63). This is a malformation. The broad rhachidian is tricuspid. The laterals in the middle of the half-row are rather broad (Fig. 64). The stomach is filled with pink pieces of gorgonians with corneous axes and covered with irregular tiny calcareous plates. Its walls are lined by a circle of longitudinally disposed triangular hard plates (Fig. 68) which are composed of layers parallel to the wall. These are longer in the middle than to the sides (Fig. 69). The right liver lobe lies under the stomach. The intestine courses backward to the right side and opens under the third gill behind the small nephroproct.

The ovotestes cover the brown left main digestive gland. Their hermaphrodite duct forms a wide, winding ampulla and enters the female gland mass. The long, winding male duct (e) is prostatic and runs into the globular male atrium (fig. 72, 73), continued into the tubular, about 4 mm long, penis (p), which ends with a blunt tip. The vagina (v) is long and leads to the very large globular bursa, which covers the whole anterior genital mass.

Discussion. — The present material is not quite homogeneous, though all samples come from the eastern Caribbean, 11-25° N, 64-79° W. Their length is 30-50 mm the veil is more or less distinctly bilobed. The velar processes differ in number, but all specimens have several branched ones. All have hard stomachal plates, and a cylindrical, blunt-



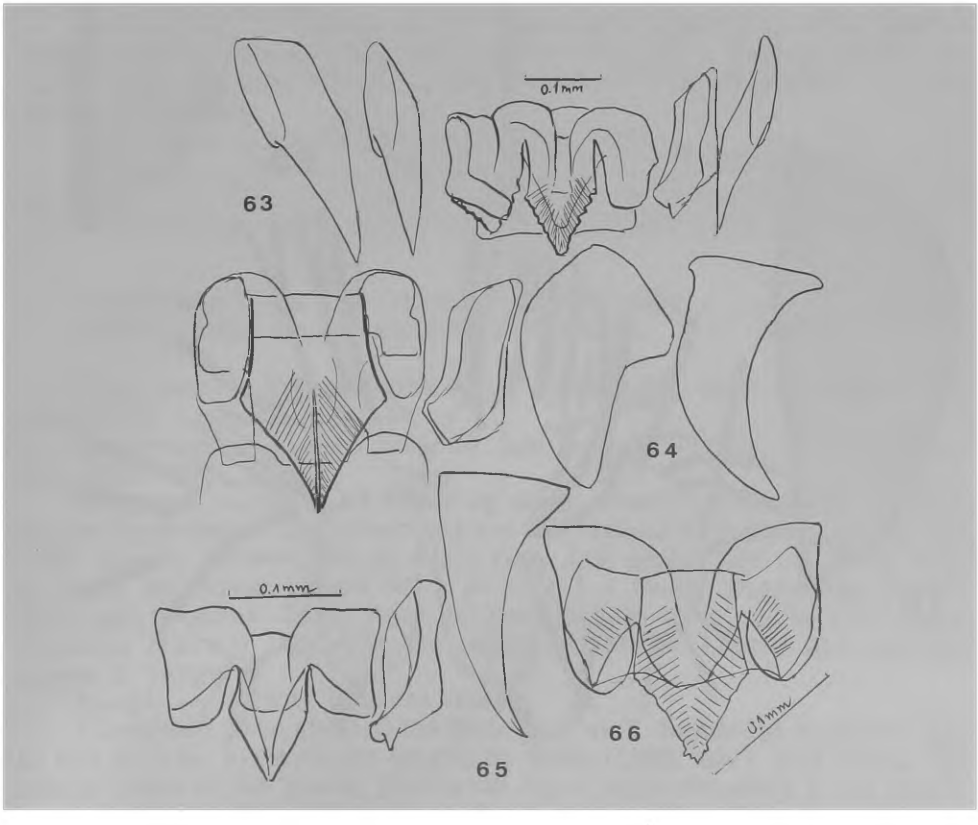
Figures 53-57 — *Marionia tedi*, spec. nov. (Material G 972): 53. Dorsal aspect of type specimen. 54. Ventral aspect of same. 55. Velar processes. 56. Jaw plates and buccal cuticle. 57. Cuticle of mouth.



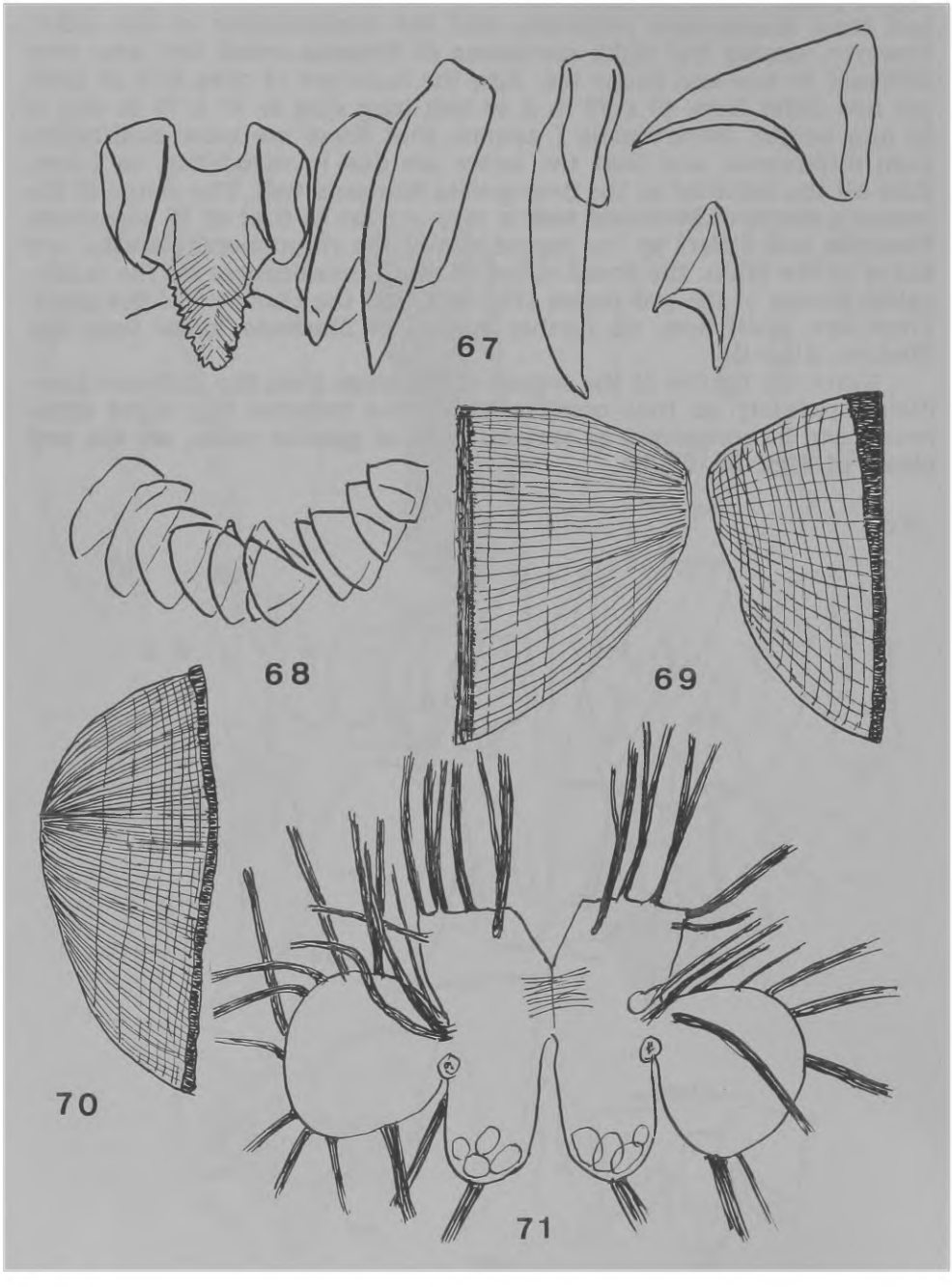
Figures 58-62 — *Marionia tedi*, spec. nov. 58. Jaw plates (G 239). 59. Jaw plates (G 604). 60. Hind end of masticatory process. 61. Denticles of masticatory process (G 972). 62. Same of G 604.

tipped penis. There are differences in size and shape of the jaw plates and their masticatory processes, and the denticulation of the latter. However, among the eight specimens of **Tritonia ericsi** the jaws were different in size and shape too. Also the numbers of rows and of teeth per row differ from 40 x 32 in a 40 mm long slug to 57 x 78 in one of 30 mm length. Nevertheless I assume that there are more similarities than differences, and that the latter are due to variability, so I consider all the material as the new species **Marionia tedi**. The shape of the stomach plates of **Marionia tedi** is very similar to that of **M. cucullata. Marionia tedi** differs by the jagged rim of the rhinophoral sheaths, the shape of the brain, the broad stripe of small prominences on the masticatory border of the jaw plates (Fig. 50), and the blunt tip of the penis. There are, until now, no further species of **Marionia** know from the Western Atlantic.

I give the figures of the organs of the slugs from the different localities separately, so that possibly with more material the slight differences can be recognized as variability or of specific value, see **the jaw plates of Figs. 56, 58, 59.**



Figures 63-66 — *Marionia tedi*, spec. nov. 63. Radular teeth (G 972). 64. Same (G. 239). 65. Same (G. 604). 66. Detail of rhachidian tooth (G. 604).



Figures 67-71 — *Marionia tedi*, spec. nov. 67. Radular plates (G 1276). 68. Stomachal plates (G 972). Different shapes of same. 70. Same of G 239. 71. Central nervous system.

Diagnoses of the genera not represented in the Western Atlantic

Genus **Duvaucelia** Risso, 1826.

Type species. — **Tritonia gracilis** Risso, 1826.

The genera **Tritonia** and **Duvaucelia** are separated by the position of the genital apertures below or in front of the first gill, and the anus in front of the middle of the body in **Duvaucelia,** while in **Tritonia** the genital openings lie behind the first gill and the anus farther back.

Remarks. — The name **Duvaucelia** Risso has long been used for the genus **Tritonia,** and Duvauceliidae for Tritoniidae, which was reinstalled by priority.

The Mediterranean **Tritonia cincta,** Pruvot-Fol, 1937, is by reason of the genital aperture in front of the first gill, a **Duvaucelia**(Odhner 1963: 50).

Tritonia (Candiella) Gray, 1850

Diagnosis. — Small Tritoniidae with entire veil with 4-14 appendages; tricuspid rhachidian tooth; short, conical penis.

Remarks. — By reason of the vague distinctions between **Tritonia** and **Candiella,** Bergh (1884: 702), Eliot (1905: 17), Odhner (1926: 31; 1926a: 13) and also Marcus (1967: 101-104) treat **Candiella** as a subgenus of **Tritonia.**

Type species: **Candiella plebeia** Gray, 1850.

Remark. — Candiella ingolfiana Bergh (1899: 18, pl. 2, fig. 20-22, pl. 3, fig. 4-8) does not belong to **Candiella** or **Tritonia,** but by reason of its flagelliform penis and tricuspid rhachidian tooth to **Tritonidoxa.**

Candellista Iredale & O'Donoghue, 1923: 230.
Odhner, 1963: 51: synonymous to **Tritonia.**

Type species: **Tritonia alba** Alder & Hancock, 1855: VI; Eliot, 1910 (Part VIII): 146, pl. 1, fig. 10.

References. — Larsen 1925: 16, figs. 5-10, pl. (1) fig. 2 a-d; Thompson, 1962: 199.

Diagnosis. — up to 18 mm long alive; slender; veil entire, 4-6 digitiform appendages, the outermost are the tentacles; rhinophore sheaths with smooth borders; up to eight gills. Jaw plates narrow, with rows of small tubercles; radula 26 x 20-36.1.1.1.20-36; rhachidian broad; first lateral stout; from third to penultimate with up to five sharp denticles (Larsen, figs. 4-7). No stomachal plates. Larsen did not find spawn or veligers.

Range. — Norway to great Britain.

Thompson, who studied the ontogeny of **T. hombergi** from the egg to full growth, gives 13 cm length or more (1962: 204), and found the lateral teeth of the young postlarvae up to approximately 2 cm length bearing one or two subterminal sharp spines (fig. 24 b, c), while in animals larger than 3 cm these spines are absent (Fig. 24, d). So he assumes that **alba** Alder & Hancock is the young stage of **hombergi,** not

an independent species. M. C. Miller (1958, unpublished thesis, cited from Thompson, 1962: 215) had come to the same conclusion. However, velum and rhachidian tooth are quite different in **alba** and **hombergi**.

The radula of Baba's **Tritoniopsis alba** from Japan (1949: 84, 165, fig. 103, pl. 34, fig. 122) has 30-48 x 5-6.1.5-6, with unicuspid rhachidian tooth, undifferentiated first lateral, and 5-10 faint denticles on the 2nd to 4th lateral tooth.

Marioniopsis Odhner, 1934: 286

Type species: **Tritonia cyanobranchiata** Rüppell & Leuckart, 1828; synonym: **Marionia arborescens** Bergh, 1890: 891, pl. 88, figs. 34-39.

References. — Odhner, 1936: 1801-1087, figs. 14, 15, 17; 1963: 50, 51.

Marioniopsis, known from the Red Sea, Amboina, and Japan, differs from **Marionia** by fused right and left livers. The velar processes bear two or more tubercles, like **Marionia**.

Paratritonia Baba, 1949

Type species: **Paratritonia lutea** Baba, 1949; 85, 166, figs. 104-106, pl. 34, figs. 123.

Reference. — Odhner, 1963: 49, 51.

Diagnosis. — Small, 20-35 mm long; veil straight with 6 simple appendages; rhinophore sheaths with even margins. Six to seven gills apart from each other; masticatory border of jaw plates with several rows of faint scales beside the single row of denticles. Radula 50 x 100-110.1.1.1.100-110; rhachidian tooth unicuspid; first lateral differentiated: laterals hamate, some of the outermost serrulated. Right and left liver fused. About 25 narrow chitinous stomachal plates, or ridges.

Japan.

Tochuina Odhner, 1963.

Type species: **Limax tetraquetra** Pallas, 1788; synonyms: **Tritonia gigantea** Bergh, 1884: 726-727; 1904: 26-28, pl. 4, figs. 29-32; **Tritoniopsis aurantia** Mattox, 1955: 8-13, figs. 1-6.

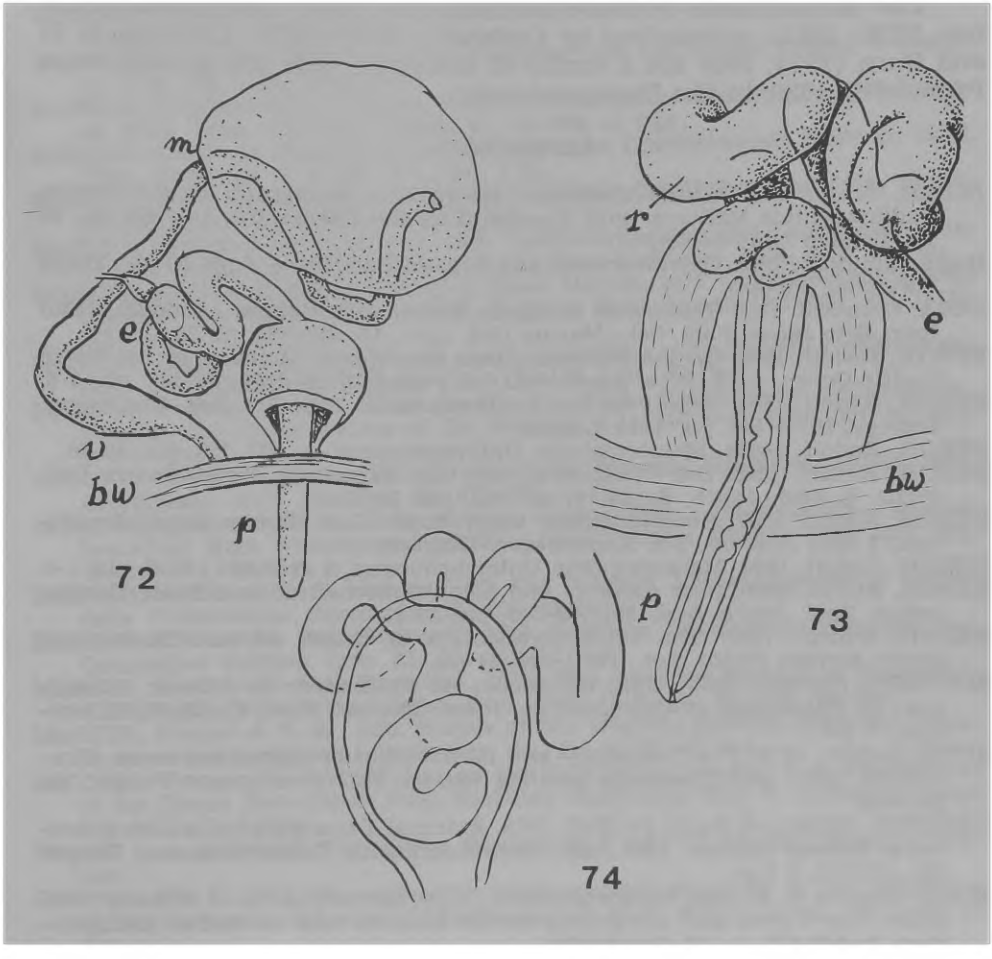
References. — Baba 1969: 134; Thompson, 1971: 334, fig. 1.

Diagnosis. — Up to 30 cm alive; veil entire, tuberculate; no anterior processes. Radula 94 x 250.1.250; rhachidian tooth narrow, unicuspid, first lateral not differentiated. No stomachal plates. Penis flagelliform.

North Pacific, Japan, Kurile and Aleutian Islands, Alaska, Vancouver, California.

Remarks. — The Arctic, 5 cm long **Doridoxa ingolfiana** Bergh (1899; 15, 17, pl. 2, figs. 3-15, pl. 3, figs. 1-3, pl. 5, figs. 29, 30) has neither appendages on the veil nor gills, and has perfoliated rhinophores. Odhner (1934: 233) transferred it to the Doridacea and Gnathodoridacea (1968: 857).

Bergh's family Atthilidae with the only species **Atthila ingolfiana** (1899: 21, 22) is a synonym of **Heterodoris** Verrill & Emerton, 1882, family Heterodorididae of the Arminacea (Odhner, 1926a: 6).



Figures 72-74 — *Marionia tedi*, spec. nov. 72. Reproductive organs. 73. Same, atrium opened. 74. Penis retracted in atrium. bw — body wall. e — efferent duct. m — female gland mass. r — prostatic par of efferent duct. v — vagina.

Thiele placed his Antarctic **Pseudotritonia quadrangularis** (Thiele, 912: 224) in the Notaeolidiidae (Thiele, 1931: 450, fig. 543). Odhner (1968: 880) considers it as Arminacea Charcotiidae.

The Marianinidae Pruvot-Fol (1930: 229), syn. Aranucidae (Odhner, 1936: 1091), redescribed by Carlson & Hoff (1973: 172, figs. 1, 2) and Burn (1974: 305) are a family of their own with one species, **rosea** Pruvot-Fol, 1930, in the Dendronotacea.

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