

XXII.—The Nudibranchiata of the Scottish National Antarctic Expedition. By  
Sir Charles Eliot, K.C.M.G. Communicated by Sir JOHN MURRAY, K.C.B.

(MS. received March 24, 1905. Read May 15, 1905. Issued separately June 9, 1905.)

The nudibranchs collected by the Scottish National Antarctic Expedition comprise only six species, but these include two new and interesting genera.

The species are—

1. *Notaeolidia gigas*, gen. et spec. nov.
2. *N. purpurea*, sp. nov.
3. *Tritonia appendiculata*, sp. nov.
4. *T. pallida*, Stimpson.
5. *Tritoniopsis brucei*, gen. et sp. nov.
6. *Scyllaea pelagica*, L.

The *Scyllaea* was caught on the return voyage, in the Atlantic, 32° N., 33° W.; *Tritonia pallida*, off Dassen Island, forty miles north of Cape Town; *Tritoniopsis brucei*, off Gough Island, 40° 20' S., 9° 56' W.; and the three remaining species in Antarctic waters.

The most remarkable point about the collection is the entire absence of Dorids. The collection made by the *Discovery*, which has also been entrusted to me for examination, shows the same character, and contains only one Bathydoris,\* but several Aeolids and Tritonids (not the same as in this collection), one Doto and one Notaeolidia. The results of Northern Arctic expeditions are similar. The Dutch "Willem Barent" Expedition obtained five Aeolids and two Dendronotus; the Danish "Ingolf" Expedition two Tritonids, two Dendronotus, seven Aeolids, one Bathydoris, one Doridoxa, and only three normal Dorids out of a total of sixteen species. In the Tropics the proportion is reversed. Semper's collection from the Philippines contained only five kinds of Aeolids and fifty-four of Dorids.

None of the animals appear to have been brightly coloured. Most were, as far as one can judge, white or pinkish. *N. purpurea* is, as preserved, of a dull purple. In all, eyes are either absent or minute.

With these nudibranchs were two small holothurians (identified by Mr F. JEFFREY BELL as young specimens of *Psolus*), which closely resemble Dorids superficially. It is not clear that this resemblance is of any advantage to the animals, and it is probably due to mechanical reasons. Both *Psolus* and Dorids are slug-like animals, of moderately tough consistency, and possessing a clearly differentiated ventral creeping surface, and

\* A second Bathydoris has been sent to me since.

branchial or tentacular appendages at one extremity of the body. Similarly, Elysiadae and Planarians are much alike in form, and constantly mistaken for one another; both are thin sheets of living matter, which progress by creeping and swimming.

*Notaeolidia*, gen. nov.

This new genus seems worthy to form the type of a new family intermediate between the Aeolididae and such forms as *Dendronotus* and *Lomanotus*. Externally the animals resemble the Aeolids, and are chiefly remarkable for their great size. They have no frontal veil, but large oral tentacles, perfoliated rhinophores without sheaths, and numerous cerata, arranged somewhat as in *Gonicolis*. The internal digestive organs, however, deviate from the type of *Aeolis*. The portion of the hepatic system within the body cavity consists of a folliculate mass as well as of tubes, and lies under the large hermaphrodite gland; the radula consists of a few rows (generally eighteen), each containing nine or sometimes eleven teeth. On the one hand, it is practically the radula of *Coryphella* and *Gonicolis* enlarged and extended; on the other, it presents resemblances to that of *Dendronotus* on a small scale.

Two or three species are known. *N. gigas* and *N. purpurea* described below are perhaps only varieties of one form, and differ chiefly in size and colour. *N. depressa*, obtained by the *Discovery*, which will be shortly described by me, is flatter, and superficially resembles *Lomanotus*, as it has only a single row of cerata on the mantle margin. It resembles *N. gigas*, however, in all essential points, and the radula is similar, though specifically distinguishable, the laterals being narrower and the denticles larger.

The characters of the genus, which are at present those of the family, are as follows:—

Large animals of Aeolidiform appearance. Oral tentacles large: rhinophores perfoliate without sheaths. Foot rounded and grooved in front. Dorsal margin undulated, and bearing one or more rows of close set cerata. Jaws not denticulate. Radula consisting of a central tooth and four (rarely five) laterals on each side. Central tooth with strong median cusp and side denticles; laterals denticulate on inner side. The liver forms a lobed flocculent mass within the body cavity, and in the body walls a thick spongy layer, from which rise the diverticula which enters the cerata. The hermaphrodite gland lies above the liver.

*Notaeolidia gigas*, gen. et spec. nov.

The collection contains six specimens, which, though differing considerably in size and somewhat in appearance, all seem referable to the same species. The largest (to which the details given in the description below refer unless otherwise stated) is no less than 122·5 mm. long. The measurements of the others are as follows:—

	Length.	Breadth, including Cerata.	
	mm.	mm.	
(2)	108·5	33·5	
(3)	50	33	This specimen is exceptionally broad.
(4)	59	19	Long and slender.
(5)	43·5	20	
(6)	broken in two, but about 54,	19	

All the specimens except the last were captured at Station 325, Scotia Bay, South Orkneys, in 9–10 fathoms. In two cases it is recorded that the temperature was 29° Fahr. The last specimen was found in a shore pool, Scotia Bay, South Orkneys; temperature, 30° Fahr. It is much damaged, nearly all the cerata being broken though not detached, but it probably belongs to the same species as the others, the anatomy being identical.

The body, rhinophores, and tentacles are of a dirty white; the cerata are of a faded pink, but this tint is stronger in the large specimens than in the smaller ones. The skin appears to be naturally smooth, but in some specimens is covered with wrinkles and blisters, apparently caused by the preserving fluid. When the integuments are held up to the light (but not otherwise), a network formed by intersecting bundles of fibres can be seen within the skin. This pattern is much more developed in some specimens than in others.

The largest specimen is 122·5 mm. long, 35 high, and 39 across the broadest part of the back, including the cerata. The shape and proportions of the body somewhat recall Tritonia, but the external characters are those of an aeolid. The foot is broad, with expanded margins, and measures 30 mm. at its widest part. It is rounded and grooved in front, with no trace of tentacular prolongations at the sides.

There is no trace of a frontal veil, but the oral tentacles which rise on each side of the mouth are unusually large and stout, being about 20 mm. long and 6 wide at the base. They are curved upwards and inwards, so as to present the appearance of a crescent when seen from the front. Between them is a slight prominence. The rhinophores are about 6 mm. behind the oral tentacles and close to one another, the interval between them being only 4·5 mm. They are 10 mm. high, and bear respectively fifteen and seventeen rings, most of which run completely round the stalk, though the last few are less regular, and interrupted here and there.

The cerata amount to about 800 on each side, that is, 1600 in all. They are set upon the dorsal margin, which is sinuous as in Lomanotus, with five undulations outwards and as many inwards. They begin slightly before the rhinophores, but on the lateral, not the anterior margin of the body, and are continued until its posterior termination, the tail projecting only 5 mm. They are of varying size, the tallest being about 18 mm. high, 4 mm. broad at the base, and 2 at the tip. The colour is faded pink. The largest are inside; the smallest, which are mere tubercles, less than 1 mm.

high, outside. They are not at all caducous, or even easy to detach. They are not set in groups, though the undulation of the dorsal margin produces a superficial appearance of such an arrangement, but are all crowded close together, except a few large ones which stand further inside, 2-3 mm. from the rest. The bare space in the middle of the back measures 15-20 mm., and the row of cerata which forms the border, though very irregular, is generally four or five deep, and consists of two large and two or three small ones. The shape of the cerata varies greatly. Some are symmetrically tapering, some cylindrical with blunt tips, and some, particularly the larger ones, are swollen at the bases, and taper somewhat suddenly in the upper half. The outline is irregular, and often presents knots and projections. The hepatic diverticula within the cerata are, like the cerata themselves, of irregular outline, and covered with knots, but are not ramified. They are similar in substance to the liver in the body, and in colour vary from brown to dull pink. In many cerata, at any rate, the liver cavity communicates with a small cavity above, which, in its turn, communicates with the exterior by a pore, which is sometimes visible externally. This cavity contains nematocysts of two shapes, spherical and elliptical. Mr G. H. GROSVENOR, who has made a special study of these organs and kindly examined for me some from *Notaeolidia gigas*, informs me that the spherical nematocysts contain a convoluted cord inside and are of a type found in actiniae. In the elliptical nematocysts the cord is hard to see, but, as far as it can be followed, is straight.

The large pericardial prominence lies a little to the right of the centre of the back, and is 18 mm. long by 14 broad. The genital orifices are about 38 and the anal papilla 52 mm. from the anterior end. This papilla lies just under the cerata, and its margin bears five crenulations, which are perhaps not natural.

On opening the body, the large heart is seen. It appears to be as usual. On the auricle are two lumps, possibly glandular. Considering the size of the animal, the central nervous system is small, the eyes in particular being minute specks. The ganglia are yellowish-white, and arranged as usual in the Aeolididae. The cerebro-pleural ganglia are elliptical, the pedal rather rounder. On the buccal commissure are situated the two elliptical buccal ganglia, separated from one another by a considerable interval, and connected with the gastro-oesophageal ganglia. The other commissures appear to be united in a common sheath.

The buccal mass measures 11 mm. by 14. The front part of it is formed by two moderately elongate jaws, which do not enclose the sides. They are brownish-yellow, and not very strong. The length is 8 mm., the breadth 6 mm. at the top, 3 at the bottom. The masticatory process is 3.2 mm. long; the edge is not denticulate, though it bears a few lumps and irregularities here and there.

The radula consists of eighteen rows of yellow teeth, and this number was constant in the five specimens dissected. Each row consists of a central tooth and normally four laterals. In some rows the outermost lateral is lost, and in one or two there appears to be a fifth rudimentary plate. The radula is brittle, and the central tooth liable to

split in two. This central tooth (fig. 1) is broad, and bears a strong pointed median cusp and eight lateral denticles on each side. The divisions between the denticles are continued as striæ on the body of the tooth. The first lateral (fig. 2) tooth is roughly triangular in shape, and bears about twelve fine distinct denticles on the inner side, facing the central tooth. The second lateral (fig. 3) is similar, but the top part is somewhat straighter and more pointed, and the denticles rather fewer (eight to nine). The third lateral (fig. 4) is still narrower and more pointed, but has about the same number (eight to nine) of quite distinct denticles. The fourth lateral (fig. 5)

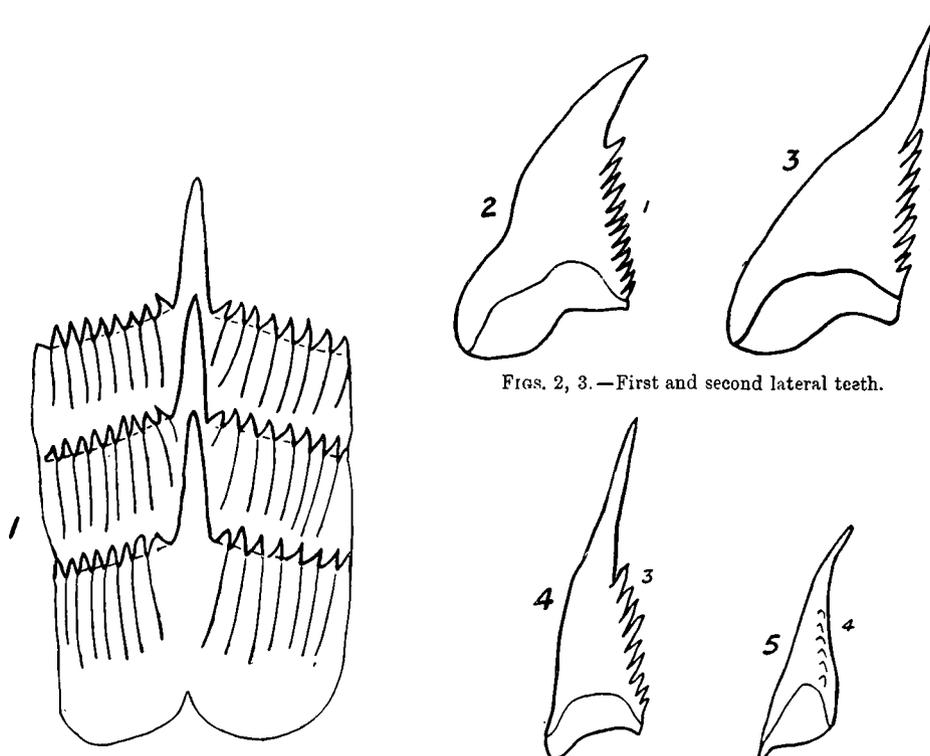


FIG. 1.—Three median teeth, from above.

FIGS. 2, 3.—First and second lateral teeth.

FIGS. 4, 5.—Third and fourth lateral teeth.

FIGS. 1 to 5.—*Notaeolidia gigas*.

is smaller, and bears about seven indistinct and inconspicuous denticles. The fifth, when it exists, is a minute elongate smooth plate.

The salivary glands are two long white flocculent bands, 23 m. long and 4.5 wide. The digestive organs are almost empty in the larger specimens, and so crushed and compressed by the various parts of the reproductive system as to suggest that the animals do not take much nourishment during the breeding season. The rather short œsophagus leads straight into the stomach, which lies on the top of the much swollen mucous gland. The interior of the stomach is laminated. From it proceed two tubes, which enter the body wall right and left. Just below them issues the intestine, which goes first to the right and then turns backwards. At its commencement it bears

several ridges on the outside, and there is a glandular mass at the point where it leaves the stomach. Internally, both the intestine and the adjacent parts of the stomach bear very strong laminae, which resemble plates but are not detachable. Posteriorly, the stomach is produced into a prolongation which extends to the end of the body cavity, and gives off on each side, at points not exactly opposite to one another, six branches, which enter the body wall. In front the stomach adheres pretty closely to this wall, and the liver is almost entirely within the sides of the body, but posteriorly it lies also within the cavity of the body, and covers the arrangement of tubes described with a dull purplish-brown mass of irregular shape, consisting of many lobes formed of minute convoluted tubes. The branches of the digestive system are not subdivided in the body cavity, but as soon as they enter the sides they are extensively ramified and form a thick spongy layer of tubes covered with liver cells, from which arise the diverticula which enter the cerata. This feature seems similar to the arrangement found in *Gonieolis typica* by BERGH (R. Bergh, *die Nudibr. gesammelt während d. Fahrten d. Willem Barents in das nördl. Eismeer*, 1885, p. 17).

The hermaphrodite gland lies on the top of the liver, and the posterior two-thirds of the body are almost entirely filled by a large mass of genital products, falling roughly into two halves, lying on the right and left. These halves are divided into numerous lobes of irregular shape, about 10 mm. long, 7 broad, and 4 thick. The lobes are composed of packets (about 2 mm.  $\times$  1 mm.), consisting of a number of yellowish bodies set in colourless jelly. They contain two different kinds of elements, which are presumably ova and spermatozoa, the first round, the second more or less elongate but of varying shape. The anterior portion of the body is filled chiefly by the huge mucous gland (about 33 mm.  $\times$  22 mm.) which lies under the stomach. It is white, rather slimy, and formed of innumerable windings. Inside it is the much smaller yellow albumen gland. The spermatheca is of moderate size and roundish; the vas deferens much convoluted. The verge is cylindrical, not tapering, and unarmed. Within it is seen a twisted channel. The external orifices of these organs are protected by ample folds, one of which lies in front of them and the other behind, with a continuation below.

The species is distinguished by its great size, high shape, and numerous cerata set in several irregular rows.

*Notaeolidia purpurea*, sp. nov.

One specimen captured in Scotia Bay, 10 fathoms. It is of a uniform dull purplish-brown, and the preserving fluid has also become purplish. The form is rather elongate, the measurements being, length 41 mm., breadth across cerata 17, height 14. The left oral tentacle is missing, having apparently been bitten off; the right one is very large, 19 mm. long and 5 broad at the base, but tapering. It curves straight backwards, and not at all outwards. The other external characters are as in *N. gigas*.

The rhinophores bear about fifteen perfoliations, which become less distinct at the top. The dorsal margin makes five distinct undulations, so that the cerata appear to be set in groups. But this is not really the case, the arrangement being as in *N. gigas*, though perhaps the line of cerata is thinner and the bare space in the middle of the back larger. There are a few large cerata inside the line. The longest measure 16 mm., but most are short.

The internal anatomy is as in *N. gigas*. It is hard to formulate any real difference for the radula ( $18 \times 4.1.4$ ), but perhaps the denticulation of both the lateral and rhachidian teeth is more distinct, and the innermost denticles of the latter are set higher up on the side of the central cusp.

I am doubtful if this form should be regarded as a separate species, or merely a variety of *N. gigas*, but its general appearance and colour are different; it is much smaller, though apparently sexually mature, and the oral tentacles are proportionately longer.

#### *Tritoniadae.*

This family comprises the genera *Tritonia* and *Marionia*, the former without stomach plates, the latter with them. To them, I think, should be added *Atthila*, which BERGH makes the type of a separate family. It appears to me difficult to maintain the distinction between the genera *Tritonia*, Cuv., and *Candiella*, Gray. According to BERGH, the "margo veli frontalis" is in the former "papilligerus" and in the latter "digitatus": the former has many and the latter few lateral teeth. Yet *Tritonia exsulans*, Bergh, has 8-9 "einfache Finger" on each side of the frontal veil and a radula with a formula of about  $41 \times 61.1.1.1.61$ , whereas *Candiella ingolfiana*, Bergh, has "six fingers" on each side of the veil and a radula of  $67 \times 83.1.1.1.83$ . I am, however, inclined to add to the family two new genera, *Tritoniopsis* and *Tritoniella*. The former, described below, has a divergent radula. *Tritoniella*, which I propose to describe among the nudibranchs found by the *Discovery*, resembles *Tritonia* in most points, but has dorsal ridges, and instead of ramose branchiæ, simple projections or crenulations. Some of the specimens are exceptionally well preserved, and it seems clear that no appendages are lost.

BERGH's list of *Tritonia* and *Candiella* in the *System der Nudibranchiaten Gasteropoden* contains sixteen species, to which the following have since been added:—

17. *T. diomedea*, Bergh.
18. *T. exsulans*, Bergh.
19. *T. incerta*, Bergh.
20. *T. gigantea*, Bergh.
21. *T. (candiella) australis*, Bergh.
22. *T. (candiella) ingolfiana*, Bergh.
23. *T. (candiella) villafranca*, Vayssière.
24. *T. appendiculata*, sp. nov.

*Tritonia appendiculata*, sp. n.

One specimen marked "9 Fathoms. April 1903. Harbour S Orkneys." (Station 325. Scotia Bay.)

The animal has the usual shape of *Tritonia*: on the left side is a large blister, probably accidental. The length is 51.5 mm., the maximum height and breadth 12 and 16 respectively. The colour is a uniform dirty greenish-yellow. The back is thickly covered with small round flat warts. The oral veil is 12.7 mm. wide. It does not project much from the head, and bears twelve simple digitate processes, most of which are about 2 mm. long, but two are very small tubercles. At the ends of the veil and below the outermost process on each side is a large grooved tentacle, of the shape usual in the genus. The lips project on each side of the mouth as distinct ridges, prolonged at the top into free cylindrical processes 2.5 mm. long, resembling tentacles.

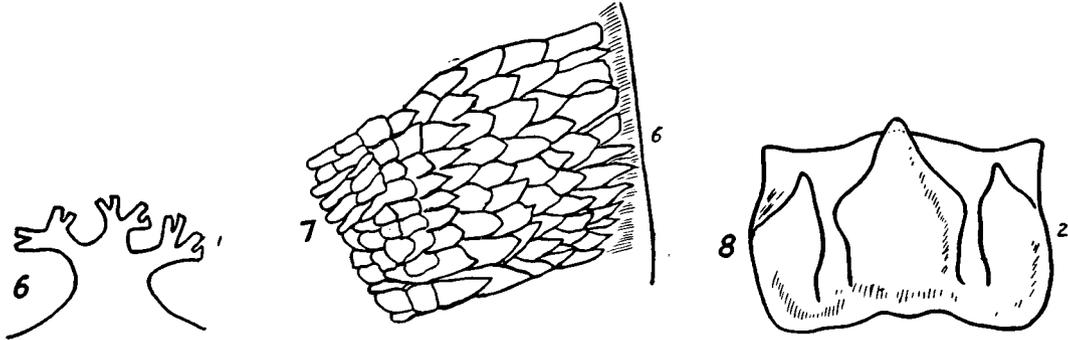


FIG. 6.—Branchia.

FIG. 7.—Portion of edge of jaw.

FIG. 8.—Median tooth.

FIGS. 6 TO 8.—*Tritonia appendiculata*.

The sheaths of the rhinophores are 3 mm. high and 3.5 mm. broad; the margins are jagged. The rhinophores are thick clubs, surrounded by about ten simply pinnate or bipinnate plumes, white, with greenish tips, and hard to separate from one another. The dorsal margin is distinct, 3 mm. broad, and starts from the back of the rhinophore sheaths, to which it is attached, giving them a somewhat elongated appearance behind.

On each side are nineteen branchiæ (fig. 6) of various sizes, but those on the left are, on the whole, rather larger than those on the right. They are scanty, and not foliaceous. The smaller are simply bifid; the larger consist of three processes set on a common prominence; each process is twice bifurcate. The anus is 22 and the genital orifice 15 mm. from the anterior end of the body. The former is just under the dorsal margin, the latter half-way up the side of the body and surrounded with ample folds.

There is no tail separate from the body. The foot is rounded and grooved in front, where it is thickened by a layer of what appear to be glands.

The pericardium and heart are as usual. The central nervous system is large, but no eyes were found. The ganglia are yellow and smooth, showing no signs of granula-

tion. The pedal ganglia are round, the cerebro-pleural elliptical, with traces of a division into two parts.

The jaws are strong, horny, elongate, yellow, with black edges. They are 10 mm. long and 4.3 wide at the broadest part. The region of the hinges is straight and flat. The rest of the jaw curves outwards and is convex. The edge (fig. 7) itself is smooth, but behind it are about six rows of stout denticles, which are blackish in the jaw and yellowish on the short (1.5 mm.) masticatory process. Behind them are about fifteen rows of flatter, roundish prominences, not amounting to denticles. The radula is of the type usual in *Tritonia*, with a formula of  $29 \times$  about 50.1.1.1.50. The median (fig. 8) tooth is tricuspid, the central cusp, pointed, those at the side blunt. The first lateral (fig. 9) is of the usual clumsy shape: the rest (fig. 10) are hamate, moderately stout

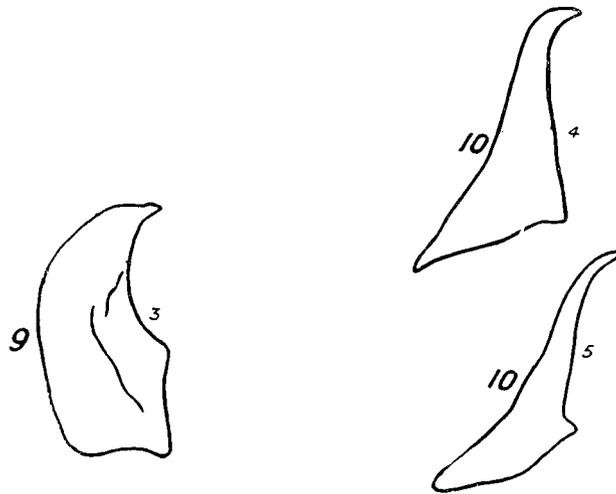


FIG. 9.—1st lateral.

FIG. 10.—Laterals.

FIGS. 9 and 10.—*Tritonia appendiculata*.

and moderately curved. The tips are often broken off, particularly near the middle of the radula.

The salivary glands are 8 mm. long, thin, ribbon-shaped above, slightly flocculent below. The oesophagus is at first narrow, but rapidly broadens out and enters the thin membranous stomach. About half of the stomach is surrounded by the brownish-yellow liver, which is itself surrounded by the hermaphrodite gland. The intestine leaves the stomach at the point where it emerges from this covering of liver and gland. It is strong and thick, and turns to the right after a slight bend forwards. Both the stomach and the intestine were filled with blackish matter, with which were mixed some bright red spiculous animal fragments.

The hermaphrodite gland consists of bright pale-yellow bodies set in colourless jelly. The mucous and albumen glands are large, both greyish-yellow. The spermatheca is elongate, with a short duct. The vas deferens is convoluted. The verge is broadly conical at the base, with a thin pointed top.

This species offers many points of resemblance to *T. challengeriana* (Bergh. TRANS. ROY. SOC. EDIN., VOL. XLI. PART III. (NO. 22.)

*Challenger Reports*, Nudibranchiata, p. 45), but the veil is different, and the grooved tentacles are, as preserved, below it; there are more tubercles on the back, and the branchiæ are fewer in number. The tentacular prolongations of the lips are also remarkable. Rudiments of such formations may be seen in other species, but here they are unusually distinct.

Though I hesitate to refer the specimen to *T. challengeriana*, it is quite possible that the two species may not really be distinct.\*

*Tritonia pallida*, Stimpson. Stimpson, *Proc. Acad. Philadelphia* (1854), p. 388.

One specimen, with the label "8 m. N. of Dassen Island in 35 fath." (Cape Colony.)

The animal is perfectly smooth and white; the yellowish viscera can be seen through the semitransparent integuments. It is somewhat bent and measures 35 mm. in length, equivalent to at least 40 if it were straightened out. The breadth is 14 and the height 12.5 mm., the foot is 12 mm. broad.

There appears to be no tail distinct from the body. The back is bordered by a distinct dorsal margin, projecting about 2 mm., and bearing seventeen branchial plumes on each side. The foot also has an expanded lateral margin and is rounded in front. The middle of the anterior margin is drawn up towards the mouth, but not notched.

The branchial plumes are of various sizes. The largest are the third, fifth, ninth and thirteenth on the right, and the fourth, seventh, eighth, ninth and eleventh on the left. The two or three foremost and hindmost are quite small. The largest plumes stand out from the back about 4 mm., and measure 6 mm. across. The primary axis is bifurcate; each bifurcation bears two to four secondary branches, and these branches in their turn bear irregular, simply pinnate projections. The smaller branchiæ are from a quarter to half the size of the larger ones and simpler, generally consisting of a short bifurcate stem, bearing on each side two or three simply pinnate plumes. The genital orifices are not conspicuous, and are situated under the fourth plume on the right side, rather high up. The vent lies just under the dorsal margin, between the sixth and seventh plumes.

The frontal veil (fig. 11) is of moderate size, about 8 mm. wide and projecting 3 mm. from the head, not counting the appendages. There are four of these on each side, digitate, and about 3 mm. long. The veil is divided into two halves by a central curve inwards, in the middle of which is a very small papilla. There are only slight and uncertain traces of a tentacular groove on the outermost process.

The rhinophore sheaths are wide and open, 2 mm. high and 3 wide, with irregularly crenulate edges. The club of the rhinophores is quite simple and surrounded by about ten plumes, united at their bases and of various sizes, simply pinnate or bipinnate, and occasionally imperfectly tripinnate.

\* Since writing the above I have examined the type specimens of *T. challengeriana* in the British Museum. They are almost smooth, whitish, and, in addition to other differences, the branchiæ are more numerous, finer, and more elaborately ramified than in *T. appendiculata*.

The central nervous system is much as in *Candiella lineata*. The ganglia are smooth and yellowish; the nerves white. There is a large common commissure. The cerebro-pleural ganglia are pear-shaped, and show signs of a division into two halves. The pedal ganglia are round, and separated from the cerebro-pleural more clearly than in *C. lineata*. The eyes are black and very small. The pericardium is white, and as usual in the genus.

The buccal mass is rather elongate, measuring 12 mm. by 5.5, and strongly muscular. The inner parts and the radula have a faint yellowish tinge. The jaws are yellow, about 7 mm. long and 4 broad in the widest part, somewhat curved outwards. The edge of the jaw and the masticatory process bear five rows of very distinct denticles of somewhat varying shape. The radula consists of forty-one rows. Those in front are much worn and incomplete. The longer rows contain forty teeth or slightly more on each side of the rhachis, so that the formula is about  $41 \times 40.1.1.1.40$ . The central tooth (fig. 12) is tricuspid; the first lateral (fig. 13) of the usual clumsy shape; the



FIG. 11.—Frontal veil.

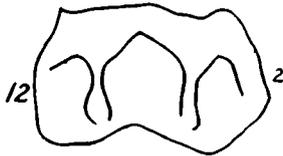


FIG. 12.—Median tooth.

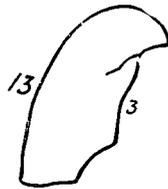


FIG. 13.—First lateral.

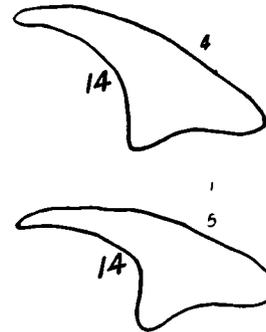


FIG. 14.—Other laterals.

FIGS. 11 TO 14.—*Tritonia antarctica*.

remaining laterals hamate, and slightly curved at the tip. None of the teeth bear any denticles, and the bases are not large.

The salivary glands are 5 mm. long, white and flocculent. The oesophagus is rather broad, 12 mm. long by 3.5 wide, with rather thin walls, irregularly laminated internally. It dilates into a stomach of moderate size, the greater part of which is enclosed by the liver. The liver is greyish, and surrounded below as well as above by a thick layer of the hermaphrodite gland, which consists of pale yellow bodies set in a colourless jelly. There is no trace of stomach plates. The stomach is filled with a yellowish mass, containing numerous black particles.

The spermatheca measures 5 mm. by 3, and is yellowish, slightly striated, and apparently empty. Its duct is 5 mm. long. The albumen and mucous glands are moderately large and both white. The vas deferens is longish, not much convoluted; the verge conical, sharply pointed, unarmed, with a coiled duct inside.

I think that this specimen may be identified with *Tritonia pallida*, Stimpson, from Table Bay, Cape of Good Hope. Differences are not wanting: the white line mentioned

by STIMPSON is not visible, and the arrangement of branchiæ is not quite the same. But though STIMPSON'S description is very slight and superficial, the similarity in colour and in the structure of the frontal veil seems sufficiently great to warrant identification in specimens from the same coast.

This form offers resemblances to *Tritonia (candiella) australis* and *ingolfiana*, but both of these have the first lateral tooth denticulate, and differ in other details.

*Tritoniopsis*, gen. nov.

The teeth of this form seem to differ from those of *Tritonia* too decidedly to allow of its being included in the same genus. Whereas in *Tritonia* the median tooth is broad, and the first lateral lower and of a more clumsy form than the others, in *Tritoniopsis* the median tooth is narrow and pointed, without wings or accessory cusps. The first lateral does not differ markedly from the others, but the outer laterals are very long and almost filamentous in appearance.

In the only known species there is one longitudinal and several transverse ridges on the back; the rhinophore sheaths bear appendages resembling branchiæ.

I have dedicated the species to Mr BRUCE, leader of the Expedition.

*Tritoniopsis brucei*, gen. et spec. nov.

Three specimens. The label says "April 22, 1904. Fathoms 10. Temperature 55° F. Gough Island." 40° 20' S., 9° 56' W.

The animals are of a transparent white (in one specimen with a slightly bluish tinge), allowing the yellow viscera to be seen through the integuments.

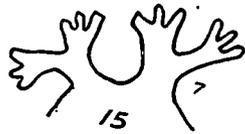


FIG. 15.—Branchia.



FIG. 16.—Frontal veil from below.

FIGS. 15 and 16.—*Tritoniopsis brucei*.

The largest specimen is much bent, but would measure about 22 mm. in length if stretched out. The breadth is 8 mm., the height 8.5. The others are slightly smaller. In all the shape is high and rather narrow, rising up from the head to the centre of the back, and then sloping down to the tail.

On the dorsal margin, which does not project, are twelve to fourteen branchial tufts (fig. 15), of which the alternate ones are larger and set more inward, whereas the smaller are directed outwards. The longest do not project more than 2 mm. from the body and are stout, but not at all arborescent or foliaceous. They consist of two or three stems, arising from a prominence which hardly amounts to a common stalk. Each of these

stems is bifurcate, more rarely trifurcate, and each of these secondary divisions ends in three (sometimes only two) small blunt points.

Down the middle of the back runs a low distinct ridge, sending off side ridges to the large branchiæ but not to the small ones. There are two branchiæ on each side before the first of these ridges. There are four of the transverse ridges in the anterior part of the body, but in the posterior portion both the longitudinal and transverse ridges become obliterated.

The veil (fig. 16) is ample, not bilobed, 9 mm. wide and projecting 2.5 from the head without the processes. It bears at each end a grooved tentacle of the shape usual in *Tritonia*, and twelve to fourteen digitate appendages, large and small, alternating with fair but not absolute regularity. The larger measure 2 mm., the smaller are about half the size.

The rhinophore sheaths are rather low (2 mm.), fairly wide, with a wavy margin.

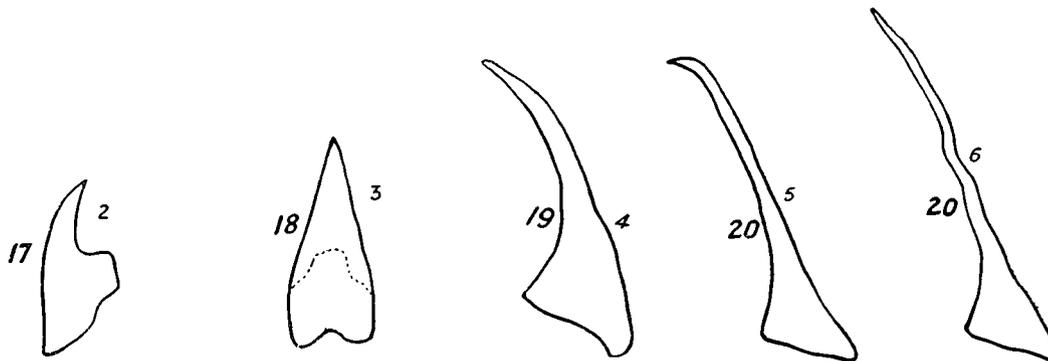


FIG. 17.—Central tooth, from the side.

FIG. 18.—Central tooth, from above.

FIGS. 19, 20.—Lateral teeth. 4 is nearer the rhachis than 5 and 6.

FIGS. 17 to 20.—*Tritoniopsis brucei*

In front they carry two or three appendages, each bearing three points, and suggesting that a branchia is fused with the sheath. The club of the rhinophore is smooth and is surrounded by about twelve appendages, many of which are quite simple, while others bear a few pinnæ.

The orifices are not at all conspicuous. In the specimen in which they can be seen best the genital orifices lie below and between the fifth and sixth plumes, and the anus between the seventh and eighth, rather higher up but some distance from the dorsal margin.

The central nervous system resembles BERGH'S figure of this organ in *Atthila ingolfiana* (*Nud. Gasteropoda of the Ingolf. Exp.*, pl. v. fig. 12). The four ganglia are all of much the same size and round. They are mottled and apparently granulate. The cerebro-pleural ganglia are not pear-shaped or larger than the pedal, and show no signs of a division into two halves. The buccal ganglia are rather large. No eyes are visible.

The jaws are yellowish, fairly hard and strong, rounded, not elongate, very convex.

The edge is smooth, and there seems to be no masticatory process. The radula is colourless and transparent. Seen from above, the median teeth (fig. 18) appear as simple, straight, pyramidal spines, rising from broadish bases; seen from the (fig. 17) side they are slightly bent downwards towards the tip, and somewhat resemble the teeth of *Favorinus*. They are quite smooth. The first laterals (fig. 19) are rather stouter than the others, but not of a different shape, as in *Tritonia*. The remaining laterals (fig. 20) are very long and thin, sometimes almost like filaments. They vary somewhat in shape: those nearer the rhachis are more distinctly hamate, those in the outer half of the row have a wavy or almost straight outline. They are difficult to count, as they seem to lie in sheaves, but the number on each side does not much exceed thirty at most.

The short and broad oesophagus leads straight into a rather small membranous and fragile stomach, almost entirely covered by the liver, and with no trace of plates. The liver is of a pale yellowish colour, covered with a thick layer of the hermaphrodite gland, which is of much the same hue, but still lighter. The albumen and mucous glands are greyish and of moderate size. The spermatheca is yellow, roundish, small, with a long duct. The vas deferens not much convoluted. The verge is long, pointed, not armed; as preserved, it is curved at the end.

*Scyllaea pelagica*, L.

Ten specimens, captured on 1st July 1904, off floating gulf weed, 33° 53' N., 32° 27' W.

They vary in length from 7.5 mm. to 13.5 mm. The colour is semitransparent white, with occasional minute spots of opaque white and a certain amount of yellowish-brown pigment, found chiefly on the margins and bases of the appendages, and differing in intensity and quality in the different individuals.

In some specimens there is nothing that can be called a caudal crest, the tail being merely rudder-like, and not raised above the level of the dorsal surface; but this peculiarity is not accompanied by any anatomical variation from the type, and passes into the normal form through intermediate stages.