Description of New and Little known Species of Ceylon Nudibranchiate Molluscs, and Zoophytes. By E. F. Kelaart, M. D., *Staff Surgeon; F. L. S., Honorary Member of the Royal Dublin Society, &c. &c.*

Having, in the course of my Military service, been now for the third time stationed in Trincomalie, in Medical charge of the European Troops in that Garrison, and still finding that there is nothing like the careful study of God's works, to divert the mind from the contemplation of diseased organic bodies, especially in this unhealthy and monotonous station, I have again resumed the researches of my leisure hours, which never fail to draw from me an earnest prayer that my health may be spared long enough to conclude these labours in this and other parts of the Island.

A recent visit to England made me acquainted with the value of the aquarium, and with the interesting researches of Messrs. Alder and Handcock, of Gosse, Johnson, and others, among the soft, gelatinous, marine animals found in European seas, which have been so much neglected by Indian Naturalists, owing to the difficulty either of observing their natural habits, or of preserving their forms. The curiosity thus excited was immediately increased, when, after several years absence, I was again in sight of the magnificent harbour and bays of Trincomalie. While some of my Ceylon friends contemplated my return to Trincomalie as a great evil, I became reconciled to my destination from an inward feeling, and I hope not an unworthy one, that I was again sent here, for a good and useful purpose. It is now nearly two years

since I returned to Ceylon, and I have every reason to feel thankful, that my residence in Trincomalie has enabled me to prosecute researches in more than one unexplored field of Natural History. I had for my guide the example of those great and good men, who deign to look upon even my labours as worthy of encouragement, and who do not consider the pursuit of the Naturalist as incompatible with the duties of a Military Surgeon. Dr. Johnson, himself a successful Medical practitioner and zealous Naturalist, (in his celebrated work on British Zoophytes,) observes, in his remarks on Doctors who are also Naturalists, that "that very activity of mind and perspicacity which originated and upheld their sagacity and success as practitioners, were sure to carry them far in whatever side-path the natural bent of their taste led them, for the occupation and entertainment of the leisure hours which the *busiest must have, or may create. Idleness has no leisure.* * * * There never was a time when it was necessary to vindicate, to any but the ignorant, the erratic excursions of medical men into the fields of science and literature, for assuredly the rank which the profession, as a body, has taken and holds in public estimation, depends for its patent, in part at least, on the scientific and literary character of its professors; and by continuing to support that character they will best secure it from the vulgarity of a common mercature, or the selfishness of a venal quackery."

My earliest researches, since my return to Ceylon, were directed (with the aid of the microscope) to those minute forms of animal and vegetable life called animalculæ, and Diotomaceæ. I have already communicated to another channel the observations I have made among these interesting microscopical creatures, found in fresh and sea water. In this paper, I propose to communicate to the Ceylon Branch of the Royal Asiatic Society, my researches among some of the least known, but most interesting, species of marine animals.

Finding that scarcely anything is known of the many naked Molluscs of this part of the Indian Ocean, I have availed myself of the present favorable opportunity offered by the Ceylon Government, for the investigation of the Natural History of the Pearl Oysters, to extend my researches also to a numerous family of Mollusca inhabiting these seas, which though not productive of pearly gems, or affording specimens for cabinet collections of Conchologists, or of amateur collectors, have attracted considerable attention in Europe, more especially since the publication of the splendid work of Alder and Handcock on the British Nudibranchiata.

The marine shells of Ceylon have long been known to the Naturalist, and they are also familiar to many in Ceylon, but the soft sea nymphs, or slugs, whose perishable charms often rival the more lasting beauties of the finest shell, had scarcely ever been noticed by any Naturalist or friend in the Island, till I had placed these creatures in the Vivarium. They have not only afforded amusement and instruction to myself, but, I hope, to others also, who have frequently seen these interesting creatures in their new homes. I must confess that some of my visitors were disappointed at the slimy nature of these animals, and failed to appreciate the beauty of many of my pet specimens; others, however, more alive to the beautiful, and to the wonderful works of God, did not despise the sea-born slugs, because they were so snail-like in appearance, and, like the land slugs, destitute of shells. Even the native shell divers, who procured me most of the living specimens, expressed their astonishment at the newly unfolded beauties of these Atta,* or slugs, which they found crawling on rocks and sea weeds; but it was not till the full formed Doris, or the sweet little Eolis, expanded their tentacles and plumose gills in the glass Vivarium, that these "men who go down to the deep" became aware, that the creatures which

* Tamul for sea slugs.

they so much despise are among the most elegant objects of the sea, and that, although a shell will preserve its colour for an almost indefinite period, the rich and variegated colours of these semi-gelatinous creatures, though shorter lived, are not less charming, or less worthy of admiration. It may, therefore, be hoped, that the interest recently created will continue to be attached to the naked Mollusca of Ceylon, and that, in a few years, they will be as well known to the Naturalist, as the European species. Although it may be long before we shall find an Alder or a Handcock to pourtray gracefully, and faithfully record their characters and habits, still it will always be gratifying for me to feel, that I was the pioneer to the labours of others more competent to do justice to the Ceylon *Nudibranchiata.*

It has always been my endeavour, though, I must own, often unsuccessfully, to describe in familiar language to my friends in Ceylon, the Natural History of animals found in the Island, and therefore, if I have not attained this object in the following pages, it will not be from the want of a wish to impart to others some of the pleasure I have derived in such congenial pursuits, or from the absence of a desire to be amusing as well as instructive.

Popular accounts of the Natural History of a country generally follow a scientific one. But I shall endeavour to combine both in one communication, for I cannot but suppose that, among many inquirers, there will be found even a few who are anxious to dive deeper into the characters of an animal than its colour or form. Having this object in view, I cannot introduce the following descriptions of sea slugs, or sea nymphs, by a more intelligible and useful preface, than an abridged description of the Anatomy and Physiology of the Class Nudibranchiata, given in the English Cyclopædia; promising, in the course of my own descriptive account of the species found in Trincomalie, to detail faithfully their habits and characters.

NUDIBRANCHIATA.

A family of Gasteropodous Mollusca, characterized by the possession of distinct, external and uncovered gills. The species of the family are all marine, and with few exceptions small in size. They are sometimes, with other forms of animals, called sea-slugs, arising from the fact that, like land slugs, they are destitute of shells. Their body is usually elongated and soft, and attached throughout its whole length to the foot, or disc, upon which they crawl. They are not unfrequently covered with a cloak, which in some is strengthened with calcareous spicula. The head is anterior, and frequently indistinct, having one or two pairs of tentacles, the upper pair of which are placed on the cloak when it is present, and behind them the eyes are situated. But the characteristic peculiarity of these molluscs is the appendages that constitute their breathing organs, placed upon the back, always symmetrically, in plumes, tufts or papillæ, either forming a circle on the central line, or arranged in rows upon the sides.

None of the Nudibranchiate *Mollusca* appear to have been known to the ancients, and even up to the time of Linnæus they remained, with one or two rare exceptions, entirely unnoticed. It was not until the appearance of the celebrated "*Memoires*" of Cuvier, in the Annales du Museum, that much attention was drawn to this subject. Since then, Lamarck and Blainville contributed something to the knowledge of their physiology and relations, but not much to the number of species.

Although little had been done up to this time by British Naturalists in augmenting the species of this beautiful family, they have been, since, the subjects of most accurate and fruitful research; and the Monograph now publishing by the Ray Society, on the "British Nudibranchiate Mollusca," may be regarded as one of the most remarkable contributions made to the literature of Natural History during the present century.—Continental naturalists have also added several new European species during the last half century.

With the imperfect knowledge of foreign species that we yet possess, it is scarcely possible to arrive at any satisfactory conclusion concerning the general distribution of the *Nudibranchiata* in the different regions of the globe. The tropical forms are, as usual, larger and more brilliantly coloured than those of colder climates, but the notices of extra European species are so scanty, that we cannot form any idea of their numerical preponderance. * * * * It cannot be doubted that a great deal of the apparent deficiency of other genera, in comparison with the Doridida, in foreign countries, arises from the want of proper examination, and from the little attention paid by collectors to the less conspicuous forms.*

In 1841, the celebrated Naturalist, M. Sars, announced the discovery, that these little creatures undergo a metamorphosis, having on their

* Having paid this attention to "less conspicuous forms," I am enabled to add considerably to several genera.—E. F. K.

extrusion from the egg a very different form and character from those which they are afterwards destined to assume. In this first stage of their existence, they have the appearance of small animalcules, swimming freely through the water by means of two ciliated lobes, and have their body covered by a nautiloid shell furnished with an operculum. Up to that time nothing approaching to a distinct metamorphosis had been known to exist in any of the true Molluscs.

The Nudibranchiata exhibit a high state of organization. They are all provided with a powerful muscular buccal apparatus, which has, in some instances, appended to it a gizzard. The oral aperture is guarded by fleshy lips, and the mouth is furnished with a tongue, bearing a spiny prehensile membrane, and occasionally with lateral corneous jaws.

The œsophagus, stomach, and intestines are well marked; the former is generally short, and passes from the upper surface of the buccal mass. The stomach is frequently buried in the liver. The intestine is always short.

The liver presents two great types of form. In the Doridida and Tritonidæ it is entire (excepting in Scylleæ, where it is broken up into 6 or 7 globular masses,) occupying its normal abdominal position; in the Eolididæ it is more or less diffused.

All the Nudibranchs are hermaphrodites, each individual being furnished with male, female, and androgynous parts. These organs, taken together, are very bulky, and occupy the greater portion of the abdominal cavity. They communicate with a common vestibule, opening upon a nipple-like process on the right side of the body, and always below the mantle, when it is present.

The organs of circulation and respiration consist of central organs of propulsion,—a systematic and portal heart,—arteries, veins, and sinuses or lacunes; and of laminated, branched, or papillose branchiæ; arranged either on the medial line, or along the sides of the back. The flow of blood is rapid; the pulsations of the heart varying, in the different species, from 50 to 100 in the minute.

The nervous system presents a high degree of concentration, perhaps higher than in any other group of Mollusca,—and is divided into two very distinct portions;—one, the cephalic or excito-motor; the second, the splanchnic or sympathetic; these two portions intercommunicate at several points.

All the Nudibranchs are provided with auditory capsules. Eyes are also universally present. The dorsal tentacles are the organs of smell, and, judging from their great development, this sense must be more acute in most of the Nudibranchs than it is in any other mollusc, with the exception perhaps of *Nautilus*. Touch undoubtedly resides everywhere in the skin, but is specialised in the oral tentacles and parts about the mouth. The lips and channel of the mouth are probably the seat of taste.

Their tenacity of life, when kept in confinement, varies much in the different species, but is greater than in many other marine animals.

Though patient and long-suffering in the endurance of hunger, they are very voracious. The greater number of them are carnivorous; living principally upon Zoophytes and Sponges. The Eolides do not scruple occasionally to devour the weaker among their own brethren.—*Abridged from English Cyclopædia.*

Hoping that the foregoing anatomical and physiological account of the *Nudibranchiata*, will draw more than ordinary attention to this family of marine creatures (found on almost every rock and sea weed), I shall proceed to give a descriptive account of upwards of a hundred species of marine-animals, including Sea-anemones and Planaria, found in the harbour, bays, and coves of Trincomalie. I cannot but regret, that not having with me Ruppel and Ehrenberg's work on species found in the Red Sea, I am not able to speak positively of *all* those herein described as being new to science. Some may, perhaps, have already been described by earlier observers, which, if ascertained to be the case, I shall only be too glad to take the earliest opportunity of acknowledging.

In concluding these prefatory remarks, I have to express my personal obligations to those authorities who have retained my military services in Ceylon, thereby enabling me to resume my Zoological labours, which were precipitately and unexpectedly shortened by my removal from the Island.

Trincomalie,
1*st November*, 1857.

CEYLON NUDIBRANCHIATE MOLLUSCA.

(NAKED MOLLUSCS.)

Sub-Kingdom. MOLLUSCA.

Class. GASTEROPODA.

Order. NUDIBRANCHIATA.

Fam. DORIDIDÆ.

Branchial plumes surrounding the vent on the medio-dorsal line.

Sub-Family. DORIDINÆ. With a cloak.

Genus. DORIS. *Linnæus.*

Animal oblong, covered by a mantle; four tentacles, two superior or dorsal, clavate or conical, retractile within cavities, sometimes slightly sheathed. The two inferior or oral tentacles placed on each side of the mouth, they are sometimes absent or replaced by flat appendages; eye specks immersed behind the dorsal tentacles, not always visible in the adult; lingual membrane with numerous lateral teeth; rachis often edentulous; stomach simple; liver compact; skin strengthened with spicula, more or less definitely arranged.

DORIS GLORIOSA. *Kel.* √

Synonym. Doris marginata? *Leuckart.*

Body nearly three inches long; oblong, of a pinkish colour minutely dotted with red and white. Mantle large, oval, broad, when expanded entirely covering the foot. Back mottled with pink, red, and yellow, and minutely punctulated with red and yellow; edged broadly with white, then by a

rich broad red line; adjoining this is a whitish space, and carried round the mantle, near the body, is a still more brilliant blood red line, with internal club-shaped prolongations of the same beautiful purple red colour. Interspace and for about $\frac{1}{4}$ inch of breadth of the back, the mantle is again whitish, with shades of purple and yellow nearer the beautifully mottled back. The underside of mantle has also a broad white edge, the rest brilliantly variegated with dotted purple, yellow, and red splashes. Branchiæ 7 or 8, large, branched; each rising from a separate cavity in a circle about half an inch from a protruding yellow coloured anal orifice. Plumes roseus, with red midribs. Dorsal tentacles large, clavate; apex pointed, slightly truncated, on inner edge laminated; colour pinkish and spotted yellow; ridge of cavity spotted with yellow and red. Head large, protruding nearly $\frac{3}{4}$ inch from mantle. Mouth near foot, situated in the centre of an oval projection, and on each side is a long broad toothed leaflet or oral appendage, red and dotted like the head. Foot long, broad, with parallel sides, rounded and transversely split in front. It has a broad lemon coloured edge with transverse striæ; the rest pinkish red, not spotted; a dark purple spot in centre given by the internal viscera.

This is by far the most beautiful species of Doris or Sea nymph I have ever seen, and none but a good artist could do justice to its resplendent beauties. The large ample surface of the mantle, with its soft, snowy white undulating edge, is best seen when the animal is swimming, and reflecting in the water the rich red folds near the golden speckled back, on which is placed a broad circle of rosy coloured feathery tufts. The live specimen, of which the above is but a faint description, was found under corals in low water near Fort Frederick. In another specimen from the same locality, the white edge of the mantle was replaced by a rich crimson red, which coalesced with the inner red line, leaving a faint white

line. Indeed, it is a question, which of the two varieties looked more beautiful; at night, however, the palm of beauty was awarded to the red margined specimen. They both lived for some days in a vivarium. When at rest, the mantle was turned inwards towards the back; in this position the white and red lines were hidden by the broad rolls on each side, displaying the rich profusion of red and yellow dotted splashes and undulating lines of the under surface of the mantle. In fact, it then looked like another species, but it is only when the mantle is fully expanded and floating on the water, that the unrivalled charms of this beautiful sea-nymph is seen to perfection. In the young, the mantle extends round the head, and may be mistaken for a distinct species. I have not had an opportunity of seeing the spawn of this species.

If this splendidly coloured sea nymph is identical with Leuckart's species, found in the Red Sea, and named *Doris marginata*, I should still prefer retaining the name I have given it, as "*Marginata*" would apply, equally as well, to several other species as to this.

Doris MacCarthyi. *Kel.*

Body nearly 2½ inches long; dusky grey. Mantle long, narrow, dusky grey; bordered with a bright blue line; edge crenulated, wavy. Dorsal tentacles long, conical, obtusely pointed; laminated obliquely, for nearly ⅔ of its length; of a pale blue colour with white streaks. Oral tentacles white, short, broad and rounded. Branchial plumes 12 to 15; irregular, most of them of unequal length; pinnated, and a few trifurcated; others have a small cluster of plumes rising from the middle or extremity. Foot white, and nearly as long as the mantle.

This curious, but elegant species is semi-gelatinous; and resembles a *Goniodoris* from its narrow mantle, which scarcely covers the foot; the body is almost exposed.

I have dedicated this beautiful species to one who has always encouraged my pursuits in the field of Natural History. To Sir Charles MacCarthy, the Colonial Secretary of Ceylon, I feel grateful for that assistance which his position in the Island enabled him to give me, whenever required; and I also feel thankful to him for the warm interest he has taken in my employment as Naturalist to investigate the Natural History of the Pearl Oysters, which has so abruptly been brought to a conclusion by my professional services being required in another part of Her Majesty's dominions,—the rebel polluted land of India.

Doris Cœlestis. *Kel.*

Body white, $2\frac{3}{4}$ inches long; flattened. Mantle coriaceous, white, clouded with dark purple minute rings, confluent or continuous with lighter coloured purple rings, set more widely apart. Dorsal tentacles white, long; apex clavate, lamellated, slightly truncated on the superior edge; pale green, tipped with orange; margin of sheath orange or golden. Oral tentacles long, acutely pointed; white minutely speckled purple. Branchial plumes 6, long, tripinnated; whitish, ribs purplish brown, edge of cavity orange. Foot white, shorter than mantle; grooved; lower lamella notched.

This beautiful purpled clouded *Doris* is of very retiring habits; scarcely ever seen moving. Obtained in August and September from rocks in Back bay. Ova white, in 3 or 4 broad coils.

Doris Funebris. *Kel.*

Body nearly $1\frac{3}{4}$ inch long; oblong, convex; of a waxy

white colour, and spotted black. Mantle coriaceous, granular; of an ivory white colour, and ornamented with jet black spotted circles and half rings or imperfect annular spotted figures. Dorsal tentacles large, clavate; apex black, laminated, without sheaths. Oral tentacles linear; white, tip black. Branchial plumes 6, large and drooping, tripinnate; white and shaded lavender grey; midribs of a dark brown colour. Foot waxy white; spotted irregularly on the margin of edges with small and large linear spots.

This elegant funereal looking *Doris* is, with the mantle, about $2\frac{3}{4}$ inches long, and $1\frac{1}{2}$ broad. Rarely seen. Lives for a long time in the aquarium. Deposits its ova in broad convoluted bands, which, when uncoiled, measure nearly 18 inches in length. A pair kept in the aquarium were seen to spawn in July. While one was depositing the band of ova on the side of the glass globe, the other kept watch, as it were, by moving in a circle round the former. The whole process lasted about half an hour.

The spots and markings of some specimens were of a dark brown colour. In others the spots were of an auburn colour.

Doris Gleniei. *Kel.*

Semi-gelatinous. Body nearly $1\frac{1}{2}$ inch long. Mantle broad, shorter than foot,—above, white, with a pinkish yellow shade; a large irregularly waved deep golden coloured patch on the back, bordered and spotted with purplish red.

The under surface of fore part of mantle, of a beautiful light purple colour. There is also a purple line on each side of the white body. Dorsal tentacles white, with golden coloured laminæ; long, conical and pointed. Oral tentacles short, white. Branchial plumes 7 to 9, short, lanceolate, pinnated; white, bordered with golden yellow. Foot pinkish white; edge pure white.

This beautiful species I have named after my friend the Rev. Owen Glenie, Colonial Chaplain of Trincomalie, who was often the cheerful companion of my Zoological pursuits, and who will, I hope, on my departure from the Island, continue those researches which he has so well begun.

This is perhaps next to *Trevelyana Zeylanica* (*n. s.*) and *Doris Gloriosa*, the most remarkably coloured species in Ceylon. Found in the Inner Harbour in deep water, as also at Cottiar, opposite Fort Frederick.

Doris Leoparda. *Kel.*

Body $\frac{7}{8}$ inch long, grey spotted. Mantle carneous, granular; grey, and spotted with dark grey and blackish circular spots; the latter in the central parts; each spot composed of smaller spots, separated from each other, by white reticulations, seen more distinctly with the aid of a magnifier. Dorsal tentacles green; large, broad, ovate, lamellated for nearly the whole length. Oral tentacles short, linear, acutely pointed. Branchial plumes 6, grey, speckled with darker grey, all united for nearly half the length; and the other half fringed with short plumes of a light green colour. Foot whitish, speckled; covered by mantle.

This Leopard-spotted Doris is of a regular oval form. Found in Dutch Bay among Coral rocks.—Ova white.

Doris Amabilis. *Kel.*

Body 4 lines long, oblong, narrow, convex, white, spotted purple on sides. Mantle smooth, white, and spotted with purplish crimson spots; beneath white, not spotted. Dorsal tentacles of moderate length; apex conical, pointed; closely lamellated; of a golden yellow colour. Branchial plumes 5

or 6, small, bi-pinnate; white, with purple spots at their base. All retracted within a cavity, without a rim. Head rounded, spotted purple, on each side of mouth a short linear tentacle, white. Foot narrow, longer than the mantle, slightly expanded in front, spotted purple on the upper surface.

This lovely little Doris is rarely found. Two specimens, obtained in May, are still alive in a finger glass, generally resting on the side of a stone. At night it crawls out of its hiding place and creeps along the sides of the glass, and is sometimes seen floating on the surface of the water on its back. When touched with a feather it adheres by its foot, and can be kept dangling in this position by the aid of the mucous thread secreted by the surface of the foot. Several Eolidæ were kept in the same vessel, and it has survived them all, though attacked repeatedly by the Eolis. Ova white, deposited on side of glass in a thread-like coil.

Doris Fidelis. *Kel.* √

Body $\frac{2}{3}$ inch long; narrow, convex; white. Mantle oblong, with parallel sides; shorter than the foot; of a waxy white colour, the edge lined with red and irregular tooth-like transverse internal prolongations of the same colour; those on sides, longer, alternated with short ones. Branchial plumes 7 or 8, black; lanceolate, pinnated, few branched at tip. Dorsal tentacles oblong, flattened, pointed; apex black, lamellated. Oral tentacles small, acutely pointed. Foot white, narrow, slightly dilated in front, and pointed posteriorly.

Found on coral rocks at low water mark, in August and September. This singularly marked species looks, when the tentacles and branchiæ are retracted, like a large bean. Its jet black plumes and tentacles appear very conspicuous, above

the red margined white mantle. It is very tenacious of life Ova deposited in narrow white coils.

Doris Preciosa. *Kel.*

Body white, $\frac{2}{3}$ inch long. Mantle pale greenish yellow, very light coloured on sides, where there is also a blueish shade; closely speckled with small reddish brown spots; margin marked with a narrow purple red line and a light orange shade. Dorsal tentacles short, with reddish purple apex, clavate, laminated. Oral tentacles triangular, sharp pointed. Branchiæ short, pinnated; reddish purple. Foot white, shorter than mantle.

This gem-like, elegant species, is of the same size as *D. Fidelis*, and not unlike it in appearance. The deep blood red branchial plumes, and the red margined speckled cloak, sufficiently separate it from the last species. They are both found in the same locality, and at the same time. The characters of the young species are also very marked, as in the adult specimens.

Doris Nivea. *Kel.*

Body $\frac{2}{3}$ inch long, convex, elliptical, snowy white. Mantle coriaceous, granular; white, occasionally seen speckled indistinctly with small grey spots. The purplish coloured viscera seen through the opaline back. Dorsal tentacles pure white, short, conical, pointed slightly, lamellated at tip. Oral tentacles linear. Branchial plumes 6 or 7, white, bipinnate. Foot white, shorter than mantle.

This snowy white opaline *Doris*, is probably only a variety of *Doris pallida* of Leuckart, found by Ruppel in the Red Sea. It has not, however, all its characters; the cloak resembles that of *D. repanda* in some respects. It has white, nerve-

like lines on the margin. I have only seen one specimen, which lived for a few days.

Doris Marmorata. *Kel.*

Body 2½ inches long, oblong, convex, coriaceous; white, speckled reddish brown. Mantle broad and long, covering the foot; thick, hard, granular; marbled with black and reddish brown, and irregularly spotted white. Under surface white, and mottled with irregular shaped purplish red spots. Branchial plumes 6, united at base, superior half plumose, tripinnated, grey and grizzled with brown. Dorsal tentacles large, clavate, laminated; brown and speckled white. Sheaths granular. Head small; oral tentacles long, linear, acutely pointed. Foot white, deeply notched and grooved in front; spotted reddish brown.

This large marbled Doris lived only for a few days. They are found on rocks near Fort Fredrick at low water mark. Some are of a darker brown colour than others.

Doris Cerisa. *Kel.*

Body ⅓ inch long, convex, oval; of a vermillion red colour. Mantle of a cherry red colour, covering the foot. Branchial plumes 6 or 7; very small, straight and stiff; bipinnated; of a crimson red colour. Dorsal tentacles small, conical, lamellated, purplish red; speckled white, tip grey. Oral tentacles indistinctly seen. Foot pinkish.

I have only seen one specimen of this exceedingly pretty species. It lived for several months in a finger glass. It cannot be mistaken for the young of any other Ceylon species herein described. Ova red, in 6 narrow tape-like coils. The ova of *D. rubra* (*mihi*) are white.

Doris Rufopunctata. *Kel.*

Body ¾ inch long, oval, compressed; of a white colour. Mantle coriaceous; of a light brick red colour, and speckled with circular spots of a darker reddish brown colour. Branchial plumes 5, small, bipinnate; greyish, speckled rufous. Dorsal tentacles short, clavate, pointed, laminated, without sheaths; of a rufous brown colour. Oral tentacles white; linear. Foot whitish; short, grooved and notched in front, speckled rusty. Under part of cloak whitish, and also speckled rusty.

This stiff-looking Doris is occasionally seen in a circular form. Rarely found, among Pearl Oysters: very tenacious of life.

Doris Grisea. *Kel.*

Body 1½ inch long, gelatinous. Mantle of a dark ashy brown colour, closely speckled with reddish brown and white spots, and two or four longitudinal rows of larger blackish irregular spots. Tentacles clavate, laminated; ashy brown, speckled white. Branchial plumes 5, whitish, speckled grey; tripinnate. Mouth surrounded with a white veil (?) Foot whitish, spotted reddish brown; notched in the fore part; covered entirely by the mantle. Some specimens are more reddish coloured than others. The young are nearly always more ashy coloured.

A very common species, found from March to September in low water, on rocks surrounding Fort Frederick, and also in the Inner Harbour. Lives a long time in the Aquarium. Ova white, in 3 or 4 white coils. This Doris can elongate itself into the shape of a leech.

Doris Papillosa. *Kel.* √

Body ¾ inch long, white, brown spotted. Mantle coriaceous, covered with large papillæ, each rising from a circular tubercular base, or ring. Buff, and spotted dark reddish brown; a row of larger spots round the margin. A dark brown line runs from base of tentacles to branchiæ. Dorsal tentacles large, apex clavate, laminated, of a light green colour, speckled white. Oral tentacles short, linear. Foot whitish and spotted with rusty brown; shorter than mantle. Branchial plumes 6; short, tripinnated. Posterior three plumes rusty coloured; anterior ones whitish.

This species resembles *Doris rufopunctata*, but its green dorsal tentacles, and papillose tubercles on mantle, sufficiently distinguish it from other species. Ova white, laid in 4 narrow waved coils.

Doris Rubra. *Kel.* √

Syn. Doris Solea. ? *Cuv.*

Body 1½ inch long, oblong, pellucid red, Mantle crimson red, and maculated with irregularly shaped dark brick red or purple spots; those on the back larger. Tentacles large, clavate; apex red, laminated. Branchiæ six, of a light rose colour; large, tripinnate. The two anterior ones smaller than the rest. Foot oblong, broad, of a pinkish red colour; longer than mantle; rounded in front and transversely grooved; anterior lamina notched in centre. Oral tentacles linear. With mantle extended, nearly three inches.

This beautiful red species is found in great abundance in and out of the harbour of Trincomalie; and is generally seen on mossy rocks a few feet below the surface of the water. When confined in a glass Vivarium, it becomes, at night,

nearly throughout, of a pellucid pinkish white colour, which hue it retains till dawn, when gradually it assumes its brilliant red diurnal costume. Spawns in the months of May and June; ova deposited in 3 or 4 large, white, ribbon-like convolutions.

Doris Osseosa. *Kel.*

Body one inch long. Mantle hard, cartilaginous, granular and pitted; granules of a whitish colour; on the median line is a narrow ridge extending from base of tentacles to branchial plumes, which are 4 or 5 in number, emerging horizontally from under the posterior termination of dorsal ridge. In some specimens there is a large pitted protuberance on centre of ridge. Dorsal tentacles with large granular sheaths; apex conical, lamellated; of a pale green colour. Oral tentacles white. Foot small, narrow. Branchial plumes small, bipinnated.

This curiously formed *Doris* resembles a piece of bone, or piece of worm eaten white stone. Its habits are those of the other Doridæ.

Doris Constantia. *Kel.*

Coriaceous. Body $\frac{3}{4}$ inch long; light yellow. Mantle yellowish brown, granular; dark brown spots on edge. Dorsal tentacles yellow, conical, swollen at the apex, laminated; tip produced, white. Oral tentacles small, linear. Branchial plumes whitish, 5 or 6, small, bipinnate. Foot small, covered by the mantle. Under parts yellowish.

I have only seen one of this species, which lived for many months in a Vivarium. It came nightly to one of the Oysters,

and apparently fed on the back of the shells, upon the atoms of life found there.

Doris Luteola. *Kel.*

Semi-gelatinous. Body ¾ inch long. Mantle granular, yellowish, and shaded with darker yellow. Dorsal tentacles long, black, lamellated apex. Oral tentacles short, white. Branchial plumes long, bipinnate; greenish. Foot white, shorter than mantle.

This elegant species is found in shallow water; spawns in October. Ova light green, in 2 narrow tape-like convolutions.

Doris Viperina. *Kel.*

Body 2 inches long; white. Mantle coriaceous, oval; covered with short spinous tubercles, of a grey colour; and beautifully spotted with dark grey and purplish brown spots having a blueish shade. Under surface of mantle white, with purplish spots, a purplish line runs near the edge; border transversely streaked. Dorsal tentacles, greenish, long, white, slightly truncated, laminated clavate tops. Oral tentacles white; long, pointed. Branchial plumes 6; short, broad, bipinnate; of a greenish white colour. Foot oblong, entirely covered by the broad oval mantle; white, spotted with smaller purplish spots than those seen on the under surface of mantle.

Found in deep water, near French Battery.

Doris Atrata. *Kel.*

Body half an inch long, and ⅓ inch broad; ovate, convex; of a smoky black colour. Mantle broad, when expanded

covering the foot; smooth, edge semitransparent, the rest jet black. Branchiæ 8; small, of a smoky black colour, bipinnate; two sets of 4 each, all entering the same cavity round anus. Foot long, narrow, rounded in front, slightly projecting behind, when in progression; of a pale smoky colour. Mouth indistinctly seen. Oral tentacles linear. Dorsal tentacles pellucid, with clavate apex; black; tips white, looking like eyes set on the tentacles. Ova white, in 3 or 4 small narrow tape-like coils.

This species may prove to be either identical with *Doris fumata* of Leuckart, or *D. fumosa* of *Quoy et Gaym*, the latter more probably, as the remarkable, white tipped tentacles (always present), could not have passed unobserved by Ruppel. The branchiæ however, of *D. fumata* would appear to correspond with those of the Ceylon species. The next species too, which I regarded at one time as only a variety of *D. fumata*, must, I think, be considered distinct, as it was not found in April with *D. atrata*, but subsequently, when the latter became scarce.

Doris Atroviridis. *Kel.*

Body 10 lines long, of an invisible green colour. Mantle broad, undulating, of a greenish black colour; edge streaked with a pale crimson line. Tentacles and branchiæ as in *D. atrata*. Foot of a pale invisible green. Ova like those of the preceding species. Some of the specimens had the mantle indistinctly, but regularly, spotted white; these spots, composed of several smaller spots round a centre, looked, through a magnifier, like little stars.

The young of this species is of a jet black colour, with a broad brilliant crimson line round edge of *mantle* and *foot*. If I had not specimens of different ages to compare with,

and observe the gradual diminution of the intensity of the red line, till it became almost obsolete in the larger specimens, I should be inclined to consider the characters of the young to be those of a distinct species; so very great are the external characters of the young and older animals. The presence of the red line in the young of this species, and its non-existence in the young of *D. atrata*, still more confirms me in the opinion already advanced, that they are not identical species. Both are very sluggish in their habits; generally, two or more lie locked in each other's embraces, under a stone or a coral branch. In confinement they live longer than any species I have had under observation.

Doris Variabilis. *Kel.*

Body 6 lines long, pellucid green; the red viscera seen through it. Mantle greenish brown and marked with longitudinal rows of reticulated whitish spots. Dorsal tentacles clavate, laminated; greenish brown, speckled; tip white. Branchial plumes 8, small, round a central cavity, tripinnate; brown, speckled white. Foot pellucid green; shorter than mantle.

This species is found in great abundance on rocks in Dutch Bay at low water mark. They vary much in depth of colour; green however always prevailing. In habits like *D. atrata.*

Doris Exanthemata. *Kel.*

Body 5 inches long; pinkish or light purple colour. Mantle long, broad; covered with large and small, smooth conical and rounded nodules, rising from smooth elevated bases. The upper surface is of a deep olive brown colour,

having several white splashes; edge of a lemon colour. Under surface of mantle pinkish, and near the body there is a broad undulating reddish band, terminating abruptly on each side, below the foot; not unlike in appearance to some cutaneous disease. Dorsal tentacles long; pinkish and smooth for $\frac{2}{3}$ of its length, apex clavate, laminated, truncated; of a pale brown colour. Oral tentacles long, conical; pinkish. Branchial plumes 6; large, pendant, tripinnated; plumes pinkish red and speckled white; midribs greenish. Foot much shorter than mantle, deeply grooved and notched in front, obtusely pointed posteriorly; of a light pink colour, except the edge which is of a lemon colour with transverse striæ.

The whole animal gives one more the idea of a horrid disease than the charms of a sea nymph. This species is semi-gelatinous and very glutinous on the surface, particularly the mantle. When dead it rapidly dissolves, and cannot be preserved in spirits. The largest specimen I have seen measured 8 inches long and 5 inches broad. It will not live more than a few days in the Aquarium. Ova of a beautiful red colour; coil $\frac{3}{4}$ inch broad, and 18 inches in length. This species resembles *Doris carbunculosa*, but the smooth nodules, and the red ova of the former will always be sufficient marks of distinction.

Doris Carbunculosa. *Kel.*

Body nearly $4\frac{1}{2}$ inches long; oblong, oval; of a pinkish purple colour. Mantle semi-gelatinous, broad and long, and of an oval form; purplish brown colour, studded with numerous large warty nodules, and larger ones rising from a raised *tubercular ringed* base. Nodules of a deeper brown colour; some have also a greenish tinge and others are variegated

with white. Dorsal tentacles long, produced, clavated, truncated superiorly, laminated; of a pale purplish colour. Mouth with a small triangular shaped veil. Branchial plumes 5; large, broad and long; closely tripinnated; of a rusty red colour, grizzled with white. Foot short, oblong, oval; of a purplish pink colour; sides of under surface veined and of a pink colour.

The mantle of this inelegant *Doris*, is not unlike some carbuncular formation. The under surface is pinkish and shaded with purple. It is a very unsightly object. The edge of the mantle of the young is mottled yellow. The whole animal is nearly 5 inches long, and $3\frac{1}{2}$ broad in the centre. Ova white, deposited in narrow tape-like form in 4 or 5 broad coils. The white ova alone sufficiently distinguish this ugly Sea nymph from her rival *D. exanthemata.*

Doris Intecta. *Kel.*

Body one and a quarter inch long. Mantle warty; of a dark brown colour, nearly black; on the medial line is a thick white pasty line. Dorsal tentacles brown; clavate laminated. Oral tentacles long, linear, pointed; of a bright brown colour. Branchial plumes 6, tripinnated; of a golden brown colour. Foot golden brown; narrow, longer than mantle.

This warty Doris is easily distinguished from others of a brown colour by its rufous warty mantle, and the dirty white line on back. Even the young have the white dorsal streak. Very common in low water in the months of September and October.

Doris Lanuginosa. *Kel.*

Body $\frac{1}{3}$ inch long; of a pale green colour. Mantle green, covered with short downy hair. Dorsal tentacles green,

lamellated, pubescent. Oral tentacles not observed. Branchiæ 10 or 12; small, of a sap green colour, bipinnated. Foot shorter than mantle; of a pale green colour, transparent.

Of this downy species I have only seen one specimen. It lived only a few days. Found near Nicholson's Cove.

Doris Spongiosa. *Kel.* ✓

Semi-gelatinous. Body nearly $3\frac{1}{2}$ inches long. Mantle broad, oval, covering the foot in all parts; of a dull yellow brown colour, deeply pitted; margin of pits granular; cavities spongious. The whole upper surface of mantle looks like the surface of some species of sponge. Beneath of a darker yellow brown colour. Dorsal tentacles large, with slightly truncated, laminated apex, sheaths large, funnel shaped; granular. Oral tentacles (?) Branchial plumes 5, grey, drooping much; bipinnated. Foot broad, long.

This very curiously formed *Doris* is found in deep water in the Inner Harbour. The young may be mistaken for a distinct species, from the lateral cavities or pits being deeper. The whole animal is nearly the size of *Doris exanthemata.*

Doris Striata. *Kel.* ✓

Coriaceous. Body $1\frac{1}{2}$ inch long. Mantle nearly smooth; white, with light brown wavy streaks. Under surface white, with linear wavy streaks near the body. Dorsal tentacles with short conical laminated apex. Oral tentacles white, linear pointed. Branchial plumes 5 or 6, small, bipinnated; white, streaked with brown. Foot pure white, narrow, oblong. Found in Dutch Bay.

Doris Corrugata. *Kel.*

Body nearly one inch long, oval whitish. Mantle coriaceous, corrugated and studded with small tubercles; those on the sides larger, and each has a spine; of a pale watery green colour; black spotted under surface, also greenish and spotted with small dots. Dorsal tentacles short, open, greenish, lamellated. Branchial plumes grey; 7 or 8, short, pinnated. Foot pale green; narrow; shorter than mantle. Oral tentacles short, triangular, pointed.

I have seen only one live specimen of this curious *Doris.*

Doris Picta. *Kel.*

Coriaceous. Body 2½ inches long. Mantle large, oval, covering entirely the foot; upper surface granular, of a yellowish brown colour, splashed with large and small irregular brick red spots; under surface white and near the body painted with small and large bright red spots. Dorsal tentacles, clavate, laminated, slightly truncated; sheaths large, granular. Oral tentacles, long, pointed, white, spotted red. Foot broad, shorter than mantle; white.

This remarkably painted *Doris* is found in deep water. Occasionally it burrows in the sand, where it lies for hours;—plumes and dorsal tentacles alone being uncovered.

Doris Bellicosa. *Kel.*

Coriaceous. Body 2¼ inches long. Mantle large, oval, upper surface granular and covered with small spines; of a dull brick red, or chocolate colour, and irregularly streaked with pale yellow. Under surface of mantle white, splashed and spotted with chocolate. Branchial plumes 6, large, bipin-

nated; of a dull rose colour, and speckled yellow in small specimens. Dorsal tentacles with small clavate, pointed apex. Oral tentacles white, short, pointed. Foot broad, oval, of a dark red colour with a pale whitish edge.

Found in deep water in the Inner Harbour of Trincomalie. The mantle of this species resembles much that of *D. picta*, but its spines and chocolate coloured foot sufficiently distinguish it from that species, which has a white foot and beautifully painted under side of mantle. They live for many months in a Vivarium.

Doris Castanea. *Kel.*

Carneous. Body one and a quarter inch long. Mantle thick, granular and tubercular; of a reddish chestnut colour. Dorsal tentacles red, short, laminated; tip produced, whitish. Oral tentacles short, linear, pointed. Branchial plumes 6 (?) short, bipinnated; of a purplish colour. Under parts deep vermillion red, and speckled with darker red. Foot short, red.

Found near Sober Island, Trincomalie Harbour.

Sub-genus. Onchidoris.

Onchidoris Leachii, *Blainv.*

Carneous. Body oval, about $1\frac{1}{4}$ inch long. Mantle granular and studded with filamentous granules. Those on the posterior third of mantle often large, and appearing like small branchial plumes. No dorsal tentacles. Two oral tentacles, which appear to protrude through notches, from under the anterior edge of mantle. The foot is broad and nearly

occupies the whole of the under part of mantle. Anus opens on the under surface of the posterior part of mantle. Orifice of the organs of generation on the right side.

Found on rocks in the Inner Harbour. I have scarcely any doubt, that this is the *Onchidore* described by *Blainville* from a specimen seen in the British Museum, whose *habitat* was not known.

The colour of the animal is of a light grey, mottled with black spots in some specimens. In spirits the filamentous granules are not seen, but when the animal is alive they are so distinctly, and the contractile character of the filaments are very observable, especially of the larger ones.

Trevelyana, *n. g.*

Body without a cloak. Two dorsal tentacles without sheaths, non-retractile. Mouth in front of head, without tentacles. Branchiæ in a circular disc on the back; non-retractile.

Trevelyana Zeylanica. *Kel.*

Body 1¾ inch long, narrow, elevated and inflated near the branchial plumes; semi-gelatinous, white and spotted with small dark orange red spots, set wide apart from each other. Head rather produced and rounded; also spotted red. Mouth circular, small; situated in front, without veil or tentacles. Branchial plumes 15 or 16, situated on posterior third of body, round a large disc, in the centre of which is the vent. Plumes long, downy, closely set; pure white, with a longitudinal bright red streak on the back of each; slightly contractile, but they do not retract into a cavity; when extended, they resemble a small tuft of marabout feathers. Genital

orifice in a nipple-like process, situated between the anterior and middle third of body. Foot long, and broad; terminating posteriorly in a lancet shaped point, about $\frac{1}{4}$ inch from body; white, with a delicate light orange red line on the edge of the foot; this line is carried partially on each side of head. Tentacles 2, dorsal; short, conical, pointed; upper half indistinctly laminated; of a light orange red colour at tip; base colourless, transparent. Ova yellow, deposited in bead-like coils. They generally deposit the coils on branches of sea weed. Sometimes, this *Doris* resembles a miniature fantail pigeon; particularly when perched on sea weed, and the small marabout plumes are elongated.

Found on rocks and sea weed near Sober Island.

This elegant creature does not resemble any of the described species. The form of the body is not unlike that of the genus *Ancula*. Its nearest approach, in other particulars, is to *Polycera*.

I venture to make a distinct genus of this *Doris*, and dedicate it to Sir Walter Trevelyan, to whom I am indebted so much for the liberal aid he has afforded me in my researches into the Natural History of Ceylon.

Fam. Tritoniadæ.

Melibœa. *Rang.*

Animal elongated, with a narrow, channelled foot and long slender tail; sides of the back with pairs of tuberculated lobes, easily deciduous; tentacles cylindrical, retractile into long trumpet shaped sheaths: head covered by a lobe-like veil; sexual orifices behind right tentacle; excretory behind first gill on the right side.—(*Woodward.*)

Scyllea Dracæna
Kelaart.

Elysia [illegible]ulva
Kelaart

Planaria Meleagrina
Kelaart

Melibœa Viridis. *Kel.*

Animal gelatinous, transparent, of a greenish vitreous colour. Body covered with hairy filaments. Head small, nearly circular, covered with filaments. Veil large and very expansive; circular opening lined with cilia. Tentacles 2, about $\frac{3}{8}$ of an inch long; capsule small, covered with filaments. Branchiæ 6 or 7 on each side, unequal, wedge shaped; placed alternately; base broad; slightly pedunculated, covered with cilia and filaments, giving a very hairy appearance; base brown; the other parts greenish and speckled with dirty white. Foot narrow, of pinkish colour on edge; and upper surface covered with short filaments.

Nearly 3 inches long.

Found on weeds near Inner Harbour; not common; can swim very actively. The veil over the head is used as a net doubtless to entangle its prey. The opening is very dilatable. Deposits its ova in a flat mass; ova white.

Scyllæa (?) Dracæna. *Kel.*

Animal green; elongated, narrow. No mantle. 2 tentacles placed anteriorly on side of head; non-retractile; tentacles folded or cylindrical, slightly granular. On the centre of the back there are *three* unequal wing-like denticulated lobes, of a green colour, with tooth-like processes, tipped red; sides of the posterior half of body also toothed with two lines of small pointed, red tipped tubercles. Foot narrow, channelled. Mouth protected by two small semi-orbicular flaps or veils. Orifice on right side. Length nearly one inch.

I have some doubts as to the propriety of placing this species under the genus *Scyllæa*. I could not discover any tufted branchiæ on the surface of the dorsal lobes. I propose

naming this genus, closely allied to Glaucus, if new, in honor of Dr. Templeton, late of the Royal Artillery (brother of the Belfast Naturalist) who has contributed considerably to the Fauna of Ceylon.

I have found only one specimen, on a branch of sea weed. It looked at first like a piece of green weed, but on placing it in fresh sea water, the lobes expanded and waved about very briskly. The red tips of the lobes contrasted beautifully with the bright green of the animal. It lived only a few hours.

Polycera (?) Ceylonica. *Kel.*

Body ½ inch long. No distinct mantle. Head covered by a membranous fimbriated veil; the long filaments slightly toothed. Veil continuous with a narrow membranous expansion on side of body, which are united at the tail. Large fimbriated filaments also on sides of body. A membranous crest runs on the medial line of back. Dorsal tentacles retractile in a sheath; clavate, laminated, incurved at the tip: brown, white tipped. Oral tentacles white; broad and short. Branchial plumes 5, short, bipinnated, retractile, placed in a circle, in the centre of the back, near the third pair of dorsal filaments. Colour above, bright orange red; beneath whitish, with red specks seen through the transparent foot. Ova, bright red; in narrow coils. The whole animal is scarcely one inch long; and its broadest part not more than ⅜ of an inch.

I have placed this species, very doubtfully, under the head of *Polycera*. I believe there is sufficient reason to make a new genus of the leading characters of this pretty little creature. The transparent membranous expansion is fully extended when the animal swims, which it does, more freely

than any known species. For 10 or 15 minutes it will keep floating and moving its body like an eel in the water. Very rare; a few specimens lived for many months in my Vivarium.

Fam. Eolidæ.

Animal with papillose gills, arranged along the sides of the back; tentacles sheathless, non-retractile; lingual teeth 0. 1.0; ramifications of the stomach and liver extending into the dorsal papillæ; excretory orifices on the right side; skin smooth, without spicula; no distinct mantle.

Eolis* Husseyi. *Kel.*

Tentacles 4. Both pairs of the same shape and form—but the anterior ones longer, of a limped orange hue, tipped with white. Back of a dull orange brown colour; a triangular white space behind dorsal tentacle. Branchiæ numerous, in 3 rows on each side of body, white and ringed with light purple, tip white. Foot dilated anteriorily, no lateral processes.

Rare; named in memory of a departed and beloved companion of my earliest scientific labours.

Eolis Bicolor. *Kel.*

Body $\frac{3}{8}$ inch long, slender; waxy white; a dusky spot on neck anterior to dorsal tentacles. Dorsal tentacles short, smooth, transparent white at base; corrugated or laminated at apex, of a deep orange red colour, becoming darker at

* *Etym.* *Æolis*, daughter of Æolus.

tip. Oral tentacles twice as long; pellucid white throughout; tapering, curved. Head small, rounded. Branchiæ medium sized; narrow, acutely pointed; white with a subterminal orange red ring; apex waxy white. They are set in 6 or 7 small clusters, the anterior ones composed of 34 or more branchiæ; the others of two, rarely of three; becoming smaller as they approach the tail. Foot linear; white, transparent; slightly expanded in front.

Found among sea weed in Back Bay, Trincomalie.

Eolis Effulgens. *Kel.*

Tentacles 4; 2 dorsal moderately long, laminated obliquely; dark orange, tipped white. The two anterior ones orange, with a whitish spot in centre, and tipped white, a dark shade behind dorsal tentacle. Branchiæ in 5 or 6 clusters on each side of back. The anterior clusters consisting of 12 or 15 narrow, obtusely pointed branchiæ; orange red at base, ringed with white and orange, tip white; a bluish line running longitudinally for nearly two-thirds of its length.

Found in great number in Dutch Bay, and other parts of the sea near Fort Frederick. Spawns in June and July. Ova white, in narrow thready coils.

Eolis Paulinæ. *Kel.*

Tentacles 4. 2 dorsal red, wrinkled. The two terminal tentacles pinkish, tip red, base white. Branchiæ reddish, numerous, short; anterior ones have a whitish central ring, tipped red. Posterior ones of a redder colour, tips more broadly tipped with red; the central white ring less distinct. Foot expanded, with a short, triangular-pointed process. Length $3\frac{1}{2}$ lines.

Eolis Tristis. *Kel.*

Four tentacles. 2 dorsal, about half the size of the two anterior ones; white with blackish rings. Body white, an interrupted blackish line on each side of back. Branchiæ in clusters of three or four; short, pointed, white, and ringed with black. Foot slightly expanded, and notched anteriorly. Length about 3 lines.

Found on sea weed in one of my Aquaria. Ova white.

Eolis Nodulosa. *Kel.*

Four tentacles; opaque white. Dorsal long, pyramidal pointed, with three nodular rings; oral tentacles short, narrow pointed, white with a yellowish shade. Head and back white. Branchiæ in 5 small clusters on each side; long, nodular, obtusely pointed; opaque white and spotted indistinctly with slight orange brown; base darker. Foot slightly contracted anteriorly.

Length about $\frac{1}{2}$ an inch.

Eolis Smedleyi. *Kel.*

Dorsal tentacles pyramidal, ringed; of a dusky grey colour. Oral tentacles long, pointed, white, with a central red ring. Branchiæ in 5 small clusters on each side; the anterior pair the largest. Papillæ short, conical; white, and ringed with grey. Foot long, with anterior tentacular processes. Length 4 or 5 lines.

I have named this species in remembrance of one who was a frequent visitor of my "Aquarian establishment," and who took a warm and friendly interest in all my scientific pursuits. This small *Eolis* was discovered on some sea weed growing in a Vivarium.

Genus Proctonotus. *A. and H.*

Animal oblong, depressed, pointed behind; dorsal tentacles 2, linear simple, with eyes at their base, behind; oral tentacles short; head covered by a small semi-lunar veil; mouth with horny jaws; gills papillose, on ridges down the sides of the back and round the head in front; vent dorsal.—*Woodward.*

Proctonotus Orientalis. *Kel.*

Animal semi-gelatinous, greenish. Dorsal tentacles 2, bifurcated and retractile. Oral tentacles short, pointed. Branchiæ, 4 or 5 rows on each side of body, those nearest the body smaller; wedge-shaped, rounded superiorly, flattened; green, spotted grey and green. Branchiæ carried round the head in 2 or 3 rows; middle ones longer, all of the same shape. Foot broad, long, grooved in foot. Length $2\frac{1}{2}$ inches. Ova white, in waved thread-like coils.

This exceedingly interesting animal may perhaps occupy a new generic place, as I do not observe the *bifurcated dorsal branchiæ* noticed in the other species of the genus Proctonotus. When coiled up it looks like a flower, with green petals.

Found in Trincomalie, in May and July.

Pterochilus Viridis. *Kel.*

Animal light green. Length $\frac{1}{2}$ inch. Tentacles two, simple, long, pointed. Head with small lateral lobes. Branchiæ very numerous, closely set; long, linear, acutely pointed. Branchiæ green, and spotted with darker green and grey. Foot linear. Found on sea weeds, and, owing to its colour, not easily recognised. Lives for a long time in confinement. Ova green.

Fam. ELYSIADÆ.

Genus. ELYSIA. *Risso.*

Animal elliptical, depressed, with wing-like lateral expansions; tentacles simple, with sessile eyes behind them; foot narrow.

ELYSIA GRANDIFOLIA. *Kel.* √

Head and body light green; white, and occasionally black spotted. Head and neck naked. Tentacles 2, folded longitudinally, on side of head; bronzed green, tip brown. Buccal tentacles 2, small. Membranous wing-like expansion on each side of body; broad anteriorly; acutely pointed posteriorly, and united at the tail. Membrane green. Edged with a black and a golden yellow line. No distinct foot. Orifice on the back (?) Mouth beneath.

The whole animal gives one the idea of a large leaf; and when moving, that of a butterfly. Found on sea weed. Some are more than 3 inches long; greatest transverse diameter, with wings expanded, $2\frac{1}{2}$ inches. Distinct veins, filled with fluid seen on the wings; the heart pulsating on the centre of the back. I have some doubts as to the propriety of placing this interesting creature under the head of *Elysia*. If on further investigation, it is found that it does not belong to any known genera, I propose naming it HYDROPSYCHE.

ELYSIA PUNCTATA. *Kel.* √

Smaller than the last species; largest specimen seen measuring $1\frac{1}{2}$ inch.

Animal of a lighter green colour. Tentacles dark brown,

spotted white. Back whitish green, dotted with black and green, and spotted like the black. Edge of mantle black, and shaded with golden; under surface of wings tubercular and dotted black.

Found on sea weed. Not easily distinguished from the young of *E. grandifolia.*

Elysia Cœrulea. *Kel.*

This is a very small beautiful species, about ¾ inch long; when the wings are folded, it is not thicker than a crow's quill. Tentacles 2; blue, with a central red ring, tip blackish. Body and wings blue; under part of head and fore part of foot red; edge of wing lined with black and red lines, the latter outermost.

Found on sea weed, in the Inner Harbour. All three species have the same generic characters, and doubtless belong to the same genus.

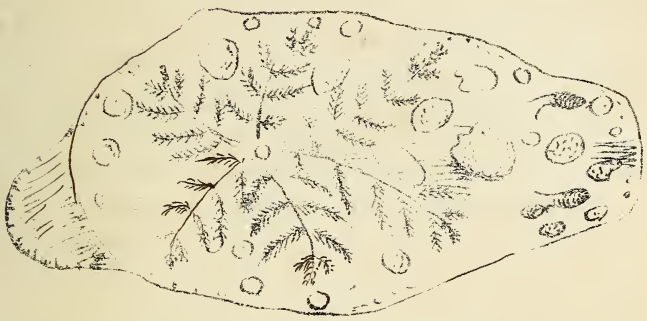
Order. Infero-Branchiata.

Genus. Phyllidia. *Cuv.*

Animal oblong, covered with a coriaceous tuberculated mantle; dorsal tentacles clavate, retractile into cavities near the front of the mantle; mouth with two tentacles; foot broadly oval. Gills forming a series of lamina extending the entire length of both sides; excretory orifice in the middle line, near the posterior end of the back, or between the mantle and foot; reproductive organs on the right side; stomach simple, membranous.

Phyllidia Zeylanicus. *Kel.*

Mantle tubercular; salmon coloured; three continuous black



Doris Funebris
Kelaart

Bolis Russeyi Kelaart

Pl. 7

A. Picknell lith.

lines run round the whole length. The internal one broader, taking within its circuit the dorsal tentacles and anal orifice; two other lines run parallel to this all round the mantle; the outer one narrowest. Dorsal tentacles large, conical, pointed; circularly laminated at the upper half, which is of a black colour. The two oral tentacles small, black. Foot whitish, notched in front; the blackish viscera seen through. Branchiæ whitish on sides of the body except in front. Anal opening on a black coloured tube, behind which, there are 4 or 5 large tubercles of the same form as those on the other parts of mantle. Length one inch; $\frac{1}{8}$ inch broad.

Very rare.

Genus. Diphyllidia. *Cuv.*

Syn. Linguella. *Blain.*

Animal oblong; mantle ample; gills limited to the hinder two-thirds of the body; head with minute tentacles and a lobe-like veil; vent at the right side, behind the reproductive orifices? lingual teeth 30. 1. 30.

Diphyllidia Formosa. *Kel.* ✓

Body pink. Mantle leaf-like; dark purple, with purplish black shades; edge yellow, streaked longitudinally with golden yellow, (broad lines alternated with very delicate narrow ones.) Veil purple black, except the anterior edge: beneath, of a lively pink colour. Foot pink, grooved in the median line of posterior half. Branchiæ buff; a whitish spot on anterior third of plumes. Dorsal tentacles emerging through notches on anterior edge of mantle; tentacles red with blackish tips and sides. No oral tentacle. Length $2\frac{1}{2}$ inches, $1\frac{1}{4}$ inch broad.

This very beautiful species is found in deep water. It occasionally buries itself in sand, with only the head and tentacles exposed, and lies for hours in this position.

Order. Tectibranchiata.

Animal usually provided with a shell both in the larva and adult state; branchiæ covered by the shell or mantle; sexes united.

Fam. Pleurobranchidæ.

Genus. Pleurobranchus. *Cuv.*

Animal oblong, fleshy, convex above with a very large and overspreading mantle. Foot large, equally outspreading, and thus leaving a wide canal all round the body. Head distinct, furnished with a veil, uniting on each side with the borders of the foot, and with two tubular tentacles, which are split anteriorly; mouth at the extremity of a proboscis; branchiæ composed of a double row of lamella, forming a plume on the posterior right side, between the mantle and the foot. Anus carried by a small tube behind the branchiæ. Organs of generation in front. Shell sometimes rudimentary, membranous, with a tolerably distinct apex hidden in the thickness of the mantle.—*Woodward.*

Pleurobranchus Citrinus? *Ruppel.*

Orange red; mantle darker than the other parts of the animal, and speckled with whitish spots. About 1 inch in length. Ova reddish, in circular broad coils.

Very common in Trincomalie. Found in low water, on coral stones and sea weed, nearly throughout the year. Spawns in May, June and July.

Pleurobranchus Reticulatus? *Gmel.*

Pale orange red, reticulated mantle, and spotted purple.

About 2 inches long. Found near Fort Frederick, Trincomalie, in shallow water, among rocks.

Pleurobranchus Zeylanicus. *Kel.*

Pale yellow, splashed with darker yellow and brown, and minutely spotted with rusty brown.

About 2 inches long.

Rare ; found in Back bay.

Pleurobranchus Purpureus. *Kel.*

Deep reddish purple. Mantle very dark purple, and spotted with still darker purple. There is a bright white zig-zag line on each side of the back of some large specimens. Length nearly 6 inches ; 4 inches broad. The young is of a lighter purple, and may be mistaken for another species.

Found in deep water, Trincomalie.

CEYLON ZOOPHYTES.

Radiata.

Order. Polypi.

Fam. Actiniadæ.

Animal single, fleshy, elongate or conical, capable of extending or contracting itself, fixed by its base, but with power of locomotion, mouth in the middle of the upper disc, very dilatable, surrounded by one or more rows of tentacula; oviparous and viviparous; marine.

Genus. Actinia. *Linnæus.*

Body conoid or cylindrical, adhering by a broad base; the space between the mouth and the rim of the upper disc occupied by one or more uninterrupted series of conical, undivided tubular tentacula, which are entirely retractile.

Actinia Wardii. *Kel.*

Body large, greenish yellow, except the upper half, which is of purplish colour and tuberculated; the other parts nearly smooth, indistinctly streaked. Disc buff, with darker radiating lines. Tentacles in 2 or 3 rows, about one inch in length;

narrow, pointed obtusely ; whitish ; base purplish, tip bright crimson, transversely striped with grey or dark buff.

Height 2½ inches. Breadth nearly 2 inches, when expanded.

Found in deep water on the oyster banks at Cotteaar, opposite Fort Frederick.

This handsome species I have dedicated to Sir Henry Ward, Governor of Ceylon, under whose auspices I have been enabled to prosecute my researches among marine animals, with more than ordinary success.

Actinia Tranchelli. *Kel.*

Body short, longitudinally striated with pale green, alternately with lines covered with yellow and white tubercles, small ovular granules round edge of disc. Disk circular, cup shaped; greenish and rayed with 4 or 5 white lines. Tentacles about an inch long, set in two rows, narrow, finely pointed, pellucid, and spotted with opaque, oblong, white and purplish spots. 1½ inch high and ¾ inch broad. The inner row of tentacles generally erect, and the outer curving over side of body.

Found in Dutch Bay. Named in compliment to Miss Tranchell, of Trincomalie.

Actinia Pudica. *Kel.*

Body opaque white ; irregularly striated and spotted with light crimson. Tentacles few, pellucid white ; short, conical ; set in two or three rows. Disc pellucid, and streaked with milky white.

This elegant Anemone, when detached, floats on water

like a globe, and may be taken for a species of the genus *Mayas*.

Found on small stones in Back Bay, Trincomalie.

Actinia Passiflora. *Kel.*

Body semi-carneous, brown. Tentacles few; short, stout, truncated, or capped? purplish white, the longer 5 or 6 have dark purple base and rings.

This may be a species connecting *Capnia* with *Actinia*. Height 1 to $1\frac{1}{2}$ inch, $\frac{2}{3}$ inch broad.

Found near Sammy Rock.

Actinia Refulgens. *Kel.*

Small, the largest seen scarcely one inch long; body white, translucent; tentacles short, in two rows; brown with golden spots.

Found on stones in Back Bay, Trincomalie.

Resembling a *Zoanthura*, but the clear diaphanous body and the disunited tentacles, at once show this creature to be an *Actinia*.

Actinia Vermicosa. *Kel.*

Very small. Body 3 lines in diameter and 4 lines in height; whitish pellucid. Tentacles from 12 to 18, small, worm-like; golden yellow or dark yellow brown. Very viscid. When the tentacles are withdrawn this little creature looks like the larva of an insect; oblong globose, with a golden coloured head.

Actinia Fluctuosa. *Kel.*

Body pale, flesh coloured; indistinctly longitudinally striated, with white spotted lines; several rows of pale blue granules near edge of disc.

Disc waved, tubercular, forming sometimes in triangular or quadrangular masses,—at other times circular; centre of disc pale—the rest white with radiating lines.

Tentacles numerous, in 3 rows, pale brown, occasionally greenish pellucid. The number on inner row fewer; extreme point white.

Height 1 inch. Breadth $1\frac{1}{4}$ inch.

Found in Back Bay, Trincomalie.

Actinia Samaragdana. *Kel.*

Small, disc of a beautiful bright emerald green, with white lines or radiating rays. Tentacles numerous, set in 3 rows; short, oblong, semi-conical, obtusely pointed; white at the base; beyond this, purplish brown, the rest very pellucid, dashed with purplish and white spots.

Body flesh coloured, longitudinally striated. Two or more rows of pale green rounded tubercles, on discal margin, inferior to outer rows of tubercles; at times these granules are of a white colour.

About 1 inch in diameter, and $\frac{3}{4}$ inch high. Found in deep water, Inner Harbour.

Actinia Austinii. *Kel.*

Body rounded, thick, reddish; covered with brick red tubercles. Disc pellucid white, or reddish. Oral opening $1\frac{3}{4}$ inch in diameter, margin surrounded with tentacular-like

bodies in two or three rows. Tentacles numerous, in four rows; nearly 2½ inches long, narrow, acutely pointed; pellucid, white, spotted on the inner side. Stands 2½ inches high.

This large Anemone is found in great abundance on the rocks near Fort Frederick in the months of May and June. Some, entirely free of the brick red colour, are of a pale greenish white ; others, have the disc one half purple and the other half grey. It adheres to the finger.

I have named this species in remembrance of a valued friend, who was one of the founders of the Ceylon Military Medical Officers' Museum,—Dr. Austin, late of the 97th Regiment.

On my recent visit to Colombo I obtained many specimens of a smaller Anemone from Mutwal rocks, closely resembling this species, but with short tentacles, and without the adhering qualities of the foregoing species. I am inclined to believe this to be a distinct species. Colours very changeable.

Genus. Anthea.

Body cylindraceous, adhering by a broad base ; tentacula disposed in circles round the mouth, elongated, tapered, and incapable of being retracted within the body.

Anthea Indiana. *Kel.*

Body transparent, almost colourless, globose at base, elongated; a few white spots near disc. Tentacles long, delicate, finely pointed, set in two rows on the edge of a greenish transparent disc. The inner set of tentacles more than twice as long as the external row. Tentacles pellucid, indistinctly ringed, alternately with grey and white. Oral opening sur-

rounded with an elevated hexagonal ring, taking the form of a cup, on the centre of which is the transverse slit of the mouth.

This parasitical Anemone is found on Pearl Oysters, in the Harbour of Trincomalie. It grows very rapidly in the Vivarium,—and is a good guide for ascertaining the quality of the sea water in which it is placed. When the water is impure, or any animal in it dead and decaying, this *Actinia* shrivels up and assumes a dark brown or blackish colour, and as the water is purified the creature regains its pellucid form.

Anthea Arachnida. *Kel.*

Resembling the A. Indica, but much smaller, and the disc is spotted black. The tentacles worm-like; pellucid white, and spotted dusky. Found on rocks and shells.

Anthea Aurea. *Kel.*

This is a very minute species; when elongated, nearly one inch high, and scarcely 4 lines in breadth. Body pellucid, tentacles few, short; golden yellow.

Found on rocks and shells.

Anthea Meleagrina. *Kel.*

Body short, broad, greenish, translucent, slightly tubercular. Tentacles numerous, of moderate length, narrow, pointed greenish brown, with darker brown rings. Mouth slightly elevated. Disc pale green.

Height $\frac{1}{2}$ inch. Breadth $1\frac{3}{4}$ to 2 inches when expanded.

Found in the Inner Harbour, in deep water, adhering to Pearl Oyster shells.

Actinodendron Argentea. *Kel.*

Body white. Disc granular, frosted white. Tentacles short, acute; silvery white, transverse granulated lines on inner surface; short pinnules on sides.

Height ½ inch. Breadth one inch. Very rare. Found in deep water.

Actinodendron Zeylanicus. *Kel.*

Body large, semi-gelatinous, yellow or buff, longitudinally streaked, alternately with lines of pearly tubercles. Disc broad, cup shaped, greenish brown, or purple, with numerous radiating lines of various colours; granular. Tentacles purplish brown; numerous, in 3 or 4 rows; broad, long, pointed, crossed on superior surface with white lines, which are laterally tubercular, or slightly pinnated. A row of large oval bodies on edge of disc. Height of the largest specimen seen 3½ inches. Breadth 3 inches. Tentacles 1 to 1¾ inch long, all of nearly equal length.

This handsome arborescent Anemone is found on rocks in the Inner Harbour, in two or three feet of water.

Actinodendron Horologia. *Kel.*

Body white, with pinkish streaks. Disc depressed, circular, pale brown, granular; a broad pale purplish circle, about midway between oral opening and tentacles, and on this ring

are twelve broad purplish streaks, placed equidistant. Tentacles in 3 rows; short, flattened, pointed; those nearest the oral opening larger. All have tubercular granules, placed in transverse rows, from 6 to 8 in number. Tentacles yellowish, a few white granules near edge. White tubercular lines placed in longitudinal rows on surface of body. Body when elongated about $2\frac{1}{4}$ inches high.

Found at Trincomalie, on small stones, in low water.

Actinodendron Viridis. *Kel.*

Body white, with greenish streaks and rows of white granules. Disc depressed, greenish; $\frac{3}{4}$ inch in diameter. Tentacles short, acutely pointed; granulated on edge; set in two rows. Those nearer the disc shorter, a row of larger white spotted granules on edge of disc.

$2\frac{1}{2}$ inches high; narrow at middle and base. Trumpet shaped above.

Distinguished from Horologia from the absence of the purple zone on disc, and from its longer tentacles. The tubercles too are less swollen, and there is a more marked space running longitudinally on tentacles.

Found with its body buried in sand in the Harbour of Trincomalie.

Dioscosoma (*Actinodiscus*)? Ceylonica. *Kel.*

Body thick, short; pinkish, minutely punctulated with bright red; near the disc the body is streaked longitudinally with closely spotted purplish lines. The body is expanded into a cup-like disc, of a bright vermillion red colour, with radiating white lines. Disc broad, expanded, and covering the

whole body, surface covered with small (three or four lines,) short, conical, truncated tentacles, disposed in rays, running from oral opening to edge of disc, alternated with shorter ones which proceed from middle third of disc with two other shorter ones, on each side, and the whole terminate at the margin in close compact rays. On each side of oral opening, is a semi-globular body with a central foramen, which communicates with the oviducts.

The colours of this singular form of Anemone vary much; at times, it is all of a purplish brown with greenish reflections, on other occasions the uncovered space of disc is of an earthy brown colour, or green, and the rays of tentacles either entirely green, or maculated with purple and white.

Breadth of disc when expanded from 4 to 5 inches.

If this Anemone is to be considered of a genus distinct from Actinia, I think of reinstating the generic term of *Actinodiscus*, given to a much smaller creature by *M. Blainville*, for it also, like the species of Leuckart's *Dioscosoma*, has two discs, and the animal, when waiting for its prey, is not unlike a depressed hour glass in shape. It can withdraw the superior disc within, when the red spotted body is seen to be of a club shaped form.

Peacha Gossei. *Kel.*

Body semi-carneous, covered by a brownish skin, corrugated, narrow and long. Tentacles from 19 to 21, long, narrow and acutely pointed; either of a green colour, or purple, marked on superior surface with transverse blue or white lines, some of which are arrow-shaped. Mouth on a conical eminence. Inferior opening giving passage to ova and excrementitious matter. Length 4 or 5 inches, and about $\frac{3}{4}$ inch

broad at base, when elongated. Very active in springing; it can adhere to sand or stones.

This is, I believe, the second species known of Gosse's new genus *Peacha*. I have dedicated it to the original describer of the genus. Mr. Gosse's description led me to observe this species very closely, although I was at first induced to consider it a species of Edwardsia. The inferior orifice admits of the passage of a moderate sized probe. The oral orifice has not that foliated appendage described by Gosse. It is for him to determine whether this is a generic character.

Zoanthura.

Zoanthura, sp.—green disc.

Z. Mammalifera.—brown disc.

Being now on the eve of embarkation for India, I have only time to notice the above two species of Zoanthura, which I trust will be described by other naturalists who may succeed me.

CEYLON ENTOZOA.

Order. Parenchymata.

This order includes all those Entozoa which have the body filled with a parenchyma, or pulpy matter, either in a cellular tissue, or simply in the cavity, in which there is no alimentary apparatus to be discovered, except a few canals, which carry nourishment to all these parts. The ovaries are also imbedded in the parenchyma; there is no abdominal cavity, no intestine, and no vent; and the signs of a nervous system are few and doubtful.—*Cuv.*

Fam. TREMADOTEA.

Have the under part furnished with cup-like discs, or suckers, by which they adhere.

Genus. PLANARIA.

Body flattened, depressed. Like the *Flukes* (which infest the liver of sheep), they are bisexual. Very voracious, and will even feed upon their own species. They multiply rapidly in the ordinary way, and also by division of the body—even spontaneous division as is alleged. Mutilated parts are also very readily reproduced, and a partial division of the body, will even produce an animal with two head or two tails, according as the anterior or posterior end is cleft. Several species inhabit the fresh waters, but larger ones are met with on sea shores.—*Cuvier.*

The species herein described are all marine, found on rocks and sea weeds in the harbour and bays of Trincomalie. They are exceedingly interesting creatures, some rivalling the tribe of Doridida in colours. They live for a long time in the Vivarium. The mouth, situated in most of the species near the anterior third of under part of medial line, opens and dilates like that of a Sea-Anemone. Ova of most species white, deposited in thin flakes on rocks and sea weed.

Further investigation will, I believe, lead me to separate the species into more than two genera; the majority of species correspond with *M. Dugè's* DERASTOMA, in which there is one opening, nearer the anterior edge than in PLANARIA. The presence of tentacles, or rudimentary ones, on the anterior edge, or on the back, will also perhaps form a generic distinction. I have attached the species without any appearance of tentacular appendages, to a new genus, PENULA, *mihi.* The mouth too in this genus is placed nearer the centre of under part.

Planaria Cerebralis. *Kel.*

Rudimentary tentacles anterior, formed by two folds of the margin. Upper surface of a yellowish brown colour and minutely streaked with fine wavy brown lines; border lined with a black line, streaked with white. Beneath, of a beautiful salmon colour. Mouth large, placed on the anterior third of lower part of body; the lips are white.

This is the largest species observed, nearly $3\frac{1}{2}$ inches long, and 3 inches broad. Ova greenish white.

Planaria Violacæa. *Kel.*

Tentacles as in last species. Upper surface violet purple colour, edged with bright yellow. Median line yellowish; under parts rose coloured.

About $1\frac{1}{4}$ inch long, and $\frac{3}{4}$ inch broad. This beautiful species, in a quiescent state, resembles some variety of pansy. Ova yellow.

Planaria Viridis. *Kel.*

Tentacles folded; green, spotted brown; edge dark grizzly brown. Under parts paler.

About $1\frac{1}{4}$ inch long.

Planaria Armata. *Kel.*

Tentacles folded, but more distinctly formed. Upper surface of a dark purple colour, covered with short, black spines. Beneath pale purple, smooth. About $1\frac{1}{2}$ inch long, and nearly $1\frac{1}{4}$ inch broad.

Planaria Papilionis. *Kel.*

Tentacles as in last species, black, white tipped. Upper surface yellow, covered with small black spines. Beneath pale yellow. Margin whitish.

Length about 1 inch.

Very like a butterfly moving in the water.

Planaria Purpurea. *Kel.*

Tentacles rudimentary. Upper surface of a beautiful purple colour; beneath paler purple.

About $1\frac{1}{2}$ inch long.

Planaria Fusca. *Kel.*

Upper surface dusky brown. Beneath paler brown.

About $1\frac{1}{2}$ inch long.

Planaria Elegans. *Kel.*

Tentacles red, situated on the anterior third of mantle. Upper surface pale yellow, shaded with greenish brown, black dots; margin black, lined with orange. Beneath whitish.

One and $\frac{1}{4}$ inch long.

Planaria Thesea. *Kel.*

Tentacles white, with red tips, rising from depressions, or cups, placed near the middle third of body. Upper surface of a chocolate brown colour, edge yellow. Mouth in the middle, below genital organs. Beneath pale purple.

One and $\frac{1}{2}$ inch long.

Planaria Striata. *Kel.*

Tentacles rudimentary. Upper surface brownish purple, streaked with brown. Beneath pale orange brown.

Length $2\frac{1}{2}$ inches.

Planaria Meleagrina. *Kel.* ✓

Tentacles of an oval form. Medial line reddish, edged with a black line, the rest striped with broad white and light purplish streaks; margin waved and edged with black. Length $1\frac{3}{4}$ inch. There are two linear appendages on neck, above eye spots.

Planaria Undulata. *Kel.* ✓

Tentacles rudimentary. In medial line purplish, the rest pale yellow, with undulating lines and spots of purplish brown; margin purplish. Length two inches.

Planaria Aurea. *Kel.*

Tentacles two, simple; pointed, rising from the anterior third of body. Upper surface golden and speckled with white and brown.

Nearly $2\frac{1}{2}$ inches long.

No drawing made of this species.

Planaria Dulcis. *Kel.* ✓

Tentacles rudimentary. Body brown in the medial line, the rest light green, minutely spotted with reddish brown. Margin white.

Length one inch.

Planaria Zeylanica. *Kel.*

Tentacles rudimentary. Upper surface of a dark purplish chocolate colour; margin white, with an internal adjoining orange and black line. Beneath paler.

Length $2\frac{1}{2}$ inches, and $1\frac{1}{2}$ inch broad.

Very abundant in months of May and June. Ova white.

Genus. Penula, *n. g. Kel.*

Animal gelatinous, flattened like Planaria, but without any appearance of tentacular appendages. Mouth placed beneath, near the central third of body. Eye spots on anterior third of back.

Ruppel figures one species of this form in his Work on Abyssinia.

Penula Ocellata. *Kel.*

Upper surface pale yellowish brown, with dark brown ocellated spots. Beneath, pale buff. Length 2 inches.

Penula Punctata. *Kel.*

White. Above minutely punctulated with reddish brown. About $1\frac{3}{4}$ inch long.

PENULA FULVA. *Kel.*

Yellowish, striated transversely.
Length $2\frac{1}{2}$ inches.

PENULA ALBA. *Kel.*

White throughout.
Length $1\frac{1}{2}$ inch. Narrow. Ova of all the species whitish.
Several other species I have no doubt will be yet obtained from Ceylon.

As these pages are going through the press, I have returned from Calcutta, and I am now preparing for the Pearl Fishery at Arripo, where I hope to obtain many curious forms of Zoophytes.