

ON THE ACALEPHÆ OF DUBLIN COAST, WITH DESCRIPTIONS OF SEVEN NEW NAKED-EYED FORMS. BY JOSEPH R. GREEN, HON. SEC. DUBLIN UNIVERSITY ZOOLOGICAL AND BOTANICAL ASSOCIATION; ASSIS. SEC. ROYAL ZOOLOGICAL SOCIETY, IRELAND.*

IF we take any group of living beings and carefully observe the several species which are found in any given locality, considerable service will be rendered to science. This more especially applies to the Acalephæ, the distribution† of which interesting class has hardly received from naturalists the attention which it deserves. "Pelagic as these animals are, there is reason to believe that the range of the species is extremely limited, and that they afford a valuable means of defining zoological provinces in the open sea."—(Professor E. Forbes's "Report on Egean Invertebrata," 1843.)

The Acalephæ of the Irish shores have as yet been but little investigated, and it is highly probable that many rare and beautiful forms yet await the notice of some patient observer.

* Read before Section D at the Meeting of the British Association, Dublin, August 26, 1857.

† Many details, too, in connexion with the development of several of these forms have only recently been brought to light, and our knowledge of their history is still incomplete. Any classification of them in accordance with their real nature would probably be considered premature. I, however, wish it to be understood that I agree entirely with the views of Dr. Carpenter and others as to the true position which the Discoid Medusæ ought to occupy, and that they are not to be regarded as distinct animals, but rather as the reproductive zoids of certain zoophytic structures. The discovery of the beautiful analogy which exists between the flower-bud of a plant and the Medusoid of a Zoophyte may justly be regarded as one of the most important steps which zoological science has recently made. A modification of the above view is proposed by some naturalists, who consider the Gymnophthalmata as divisible into two groups, namely—1. True Naked-eyed Medusæ, as *Willsia*, *Thaumantias*, which produce ova, to be developed into the likeness of their parents by continuous reproduction. 2. Medusoids, which are merely generative zoids, as *Steenstrupia*, *Cladonema*, &c. But such a separation is unsupported by facts, for no instance of a Discoid Medusæ having been produced without the intervention of a Zoophyte has yet been established. Moreover, the figures of the Medusoids developed from some of the Campanularidæ, as observed by Van Beneden on the coast of Ostend, are stated by Professor Forbes to bear a striking resemblance to *Tima* and *Geryonia*, which, certainly, cannot be ranked among the lower forms of the group; nor can any essential difference be shown to exist between the forms thus widely separated from one another. It is true that many observations are still wanting before the evidence in favour of the necessity of entirely altering the present system of classification can be considered complete; and the abolition of a large group of animals is a step of too serious a nature to be carried into execution without much careful consideration. But there can be little doubt that the researches of future observers, if properly conducted, will ultimately show the necessity of such an alteration. Meanwhile, we are not to refrain from recording the forms which present themselves to our view, nor even to give those a name, even though we should feel sure that the latter must eventually be done away with. These remarks are appended lest it might be supposed that I attach a false value to the description of species as given in the text. With regard to the Ctenophora, there can be little doubt as to their affinity with the Actinozoa; not only their development, but also their anatomical structure, entitle them to be ranked as a distinct class parallel with the Actiniadæ.

The following is a list of the species which I have hitherto obtained on the Dublin coast:—

ORDER DISCOPHORÆ.

SUB-ORDER I.—STEGANOPHTHALMATA.

Rhizostoma pulmo.		Cyanea capillata.
Cassiopcea lunulata.		Cyanea Lamarckii.
Aurelia aurita.		Chrysaora hyoscella.
Aurelia campanulata.		

SUB-ORDER II.—GYMNOPHTHALMATA.

Family Equoreadae.

Stomobranchium octocostatum.		Equorea formosa (n. s.).
------------------------------	--	--------------------------

Family Geryoniadae.

Geryonopsis delicatula.		Thaumantias typica (n. s.).
Thaumantias neglecta (n. s.).		Thaumantias inconspicua.
Thaumantias Thompsoni.		Thaumantias lucifera.

Family Sarsiadae.

Sarsia tubulosa.		Diplonema Islandica (n. g. and s.).
Bougainvillea Britannica.		Steenstrupia Owenii (n. s.).
Bougainvillea dinema (n. s.).		

ORDER SIPHONOPHORA.

Agalmopsis elegans.

ORDER CTENOPHORA.

Beroe cucumis.		Cydidippe pileus.
Cydidippe pomiformis.		Mnemia Norvegica.

Twenty-five species are here enumerated. The above, for a local list, can by no means be regarded as scanty, for Professor E. Forbes, after careful exploration of the Egean, observed but eighteen species in that region. Every British species of Steganophthalmata, except Pelagia, is here mentioned. The *Cassiopcea lunulata* is given on the authority of my friend, Mr. E. Percival Wright; with this exception all the species enumerated in the above list have been observed by myself. I have captured, in Belfast Bay, two species of *Thaumantias* not found on the Dublin coast, namely, *T. lineata*, and a new species, *T. Pattersonii*.

I shall reserve my remarks on the Steganophthalmata for a future occasion, and for the present confine myself to the naked-eyed forms alone. Since the publication of Professor E. Forbes's monograph, about twenty additional species of these beautiful animals have been found on the British shores. Agassiz has studied their distribution on the coast

of North America, while the Mediterranean seas have yielded valuable results to more than one able observer. To the researches of Leuckhart and Gegenbaur we are particularly indebted. The former, in his "Notes on the Medusæ of the Seas of Nice" (Wiegmann's "Archiv," 1856), describes ten new naked-eyed species, six of which belong to established genera, and are named as follows:—*Thaumantias corollata*, *Oceania coccinea*, *Euphysa globator*, *Steenstrupia lineata*, *Cunina moneta*, and *Cunina costata*. The four remaining species are made into as many new genera: namely, *Phialidium viridicans* (which bears some resemblance to *Thaumantias*), *Calyptra umbilicata*, *Pyxidium truncatum*, and *Paryphasma planiusculum*; all four presenting novel and remarkable varieties of structure. Gegenbaur's paper ("Zeitschrift für Wissenschaftliche Zoologie;" Siebold and Kolliker: Leipzig. Vol. viii. 1856) is, if possible, still more interesting, containing not merely an account of several new species, but also an original method of classifying these animals. His arrangement of the families and genera differs from that of Professor Forbes; and there can be no doubt that the discovery of many additional forms must materially alter our views of the classification of the present group. For the name *Gymnophthalmata*, employed by Forbes, the term *Craspedota* is substituted. A reference to both of these papers will well repay perusal.

To revert to the British species: Forbes, in his description of the *Stomobrachium octocostatum*, states his regret at not being able to submit the specimens which he captured in 1839 to a sufficiently careful examination. Since that period he had never again met with it. In the summer of the present year I was so fortunate as to procure a specimen of this beautiful *Acalepha*. The umbrella is campanulate and convex, more pointed than in Professor Forbes' figure, and so transparent that to all appearance the sub-umbrella seems to form the true outline of the animal. The sub-umbrella is about half the length of the umbrella, but is more depressed than the latter, so as not to correspond with it in shape: it is bordered by a marginal vessel and veil. The vessels are eight in number, simple, of a pale-yellow tint. The ovaries were leaf-like, furlbelowed, short and broad, not so linear, as in Professor Forbes's figure; of a bright golden yellow hue, very conspicuous. They were situated along the course of the radiating canals, near the peduncle. This last was yellowish, nearly circular, very simple, short and fimbriated. Round the margin were 40 ($8 \times 4 + 8$) tentacles, highly contracted, presenting a pilose appearance under the microscope, springing from rather large, though not very conspicuous bulbs. Between each of these was a smaller tentacle, at the base of which an otolithic vesicle seemed to be placed. This *Medusa* was nearly half an inch in length. Its favourite position seemed to be when it balanced itself in the water by means of its smaller tentacles, and then curved backwards, and extended the larger ones. Nothing can be conceived more elegant and graceful than this posture: the tentacles reached upwards to more than five times the height of the umbrella, becoming finally so delicate as to be completely invisible.

I have no special remarks to make on the other naked-eyed *Medusæ*.

above mentioned, save with regard to the seven new species, which I shall now proceed to describe.

EQUOREA FORMOSA, *n. s.* (*mih*). Plate XIV., Fig. 2, *a*.

Subsequent to the publication of his monograph (in which no species of *Equorea* is mentioned), Professor Forbes, in Nov., 1851, read a paper before the Zoological Society of London (*vide* "Proceedings" for 1851), "On a new species of *Equorea* inhabiting the British Seas." This he termed *E. Forskalii*. It differed from all other British naked-eyed Medusæ, both by its large size (6 inches in diameter) and also the great number (136) of its radiating canals. Mr. Gosse, in his "Devonshire Coast," describes two other species, in which the vessels were not quite so numerous; and I have now to add a fourth, in which their number is reduced to ten.

The umbrella of this Medusa is slightly convex, depressed, smooth, and beautifully transparent, from one-third to half an inch in length, and the same in diameter at its orifice; sub-umbrella occupying nearly half the length of umbrella, traversed by ten simple vessels, which though colourless, are easily recognisable by the naked eye. A marginal vessel and veil border the sub-umbrella. Peduncle short and wide, of a very pale-brown colour, fringed at its edge, ten-lobed, and nearly circular; the stomach in this animal was in fact almost an open cavity, sixty tentacles surrounded the margin, each springing from a minute bulb. Two only of the vessels were provided with ovaries. These were leaf-like, of a pale-brown hue, placed very near the base of the stomach. When living, this Medusa formed a most beautiful and attractive object. To the naked eye it seemed almost perfectly colourless; its tentacles were exceedingly elastic, at one moment extending to two inches in length, the next contracted into little wart-like nobs. Its movements were active and vigorous. At first I was of opinion it might be the young of some larger species of *Equorea*, but an examination of many specimens has now convinced me that it is worthy of being ranked as a separate species.

THAUMANTIAS PATTERSONII, *n. s.* (*mih*). Plate XIV., Fig. 3, *a*.

I have named this species after Mr. Robert Patterson, of Belfast, whose book on "Zoology for Schools" has so largely contributed to the extension of zoological science, and whose papers on *Cydidpe* and *Bolina* form so valuable a contribution to the history of our native *Ciliograda*.

The present animal is allied to *T. melanops*, corresponding with it in the general shape of its umbrella, &c. The margin was bordered by 208 tentacles. At eight equidistant points these were interrupted by as many abortive bulbs, each containing a conspicuous black ocellus, reminding one of the cysticles in *Aurelia aurita*. The peduncle was long, terminating rather abruptly in four broad lips. The ovaries were very linear, of a pale-brown hue. Parasitic on these was a small species

of leech, agreeing in all respects with the *Monopus medusicola* found by Mr. Gosse on *Willsia stellata* (vide "Ann. Nat. Hist." for 1855). Two or three of these leeches occurred on each ovary. This was a hardy species of *Thaumantias*: five out of seven specimens captured in Belfast docks lived in captivity for a fortnight, having in the meantime borne a journey from that city to Dublin. They were gregarious, great numbers occurring in the above locality, so that I was thereby enabled to subject several individuals to examination. This Medusa varies from one-third to two-thirds of an inch in length.

THAUMANTIAS TYPICA, n. s. (*mih*i). Plate XIV., Fig. 4, a.

The umbrella of this species is very conical, smooth, and exceedingly transparent. The sub-umbrella is much more depressed than the umbrella; a marginal vessel and veil surround its opening. The tentacles are twenty-four in number ($5 \times 4 + 4$), very elastic, springing from yellowish bulbs containing an otolithic vesicle, distinctly marked. These tentacles were pilose and granular. The stomach is short and broad, terminating in four fimbriated lips. Radiating vessels, four simple, interrupted by four ovaries, short, leaf-shaped, of a pale yellowish-green tint; when magnified, exhibiting a cellular structure. I obtained this Medusa on August 21, 1857. Its length was two-thirds of an inch.

THAUMANTIAS NEGLECTA, n. s. (*mih*i). Plate XV., Fig. 5, a.

Umbrella strictly hemispherical, transparent, colourless, and smooth, of rather large size, measuring from a half to one and a half inches in diameter; sub-umbrella corresponding in shape with umbrella, but rather more depressed, occupying not quite two-thirds of its length. A marginal vessel and veil surround the opening of the umbrella, which is bordered by thirty-two ($7 \times 4 + 4$) very contractile tentaculæ. These spring from as many colourless though distinct ocelli. The sub-umbrella is traversed by four radiating vessels. The ovaries are four in number, of a faint blue tinge, and an elongated ovate form. They were very conspicuous when the animal was in motion. Peduncle of a pale-yellow colour, wide at its base, then narrowing, and terminating rather suddenly in four long, slightly fimbriated lips.

This *Thaumantias* resembled *T. hemispherica*, differing in the colour of most of its organs, which in that species is pretty constant; also in the shape of its peduncle and general appearance. The present Medusa is gregarious. I have met with it in considerable numbers on more than one occasion in the same locality (Kingstown Harbour). It is rather a delicate animal.

BOUGAINVILLEA DINEMA n. s. (*mih*i). Plate XV., Fig. 6, a.

The umbrella of this species is globose, but rather elongated, contracted at its opening. In shape it bears some resemblance to the *Bougainvillea nigritella*. Its margin is bordered by four groups of tentacle bulbs, somewhat similar to those in *B. Britannica*, but the tentacles, in-

stead of being as many as the bulbs, as in that species, were only two to each group, one being placed at each extremity of the latter. These tentacles were not apparently possessed of much contractile power, differing in this respect from *B. Britannica*, the tentacles of which are exceedingly elastic. They were generally carried (in the present species) in a stiff, extended position. The sub-umbrella is about two-thirds the length of the body, and is slightly truncated at its summit. Peduncle, four-lobed, yellow; viewed from above, it presents an appearance as of four leaves placed with their bases opposite to one another. The lip characteristic of the genus is in this species very complicated, dividing and subdividing a number of times. The animal is rather larger than *B. Britannica*, but is much less lively and interesting in its motions.

At the time of capturing this species, I also procured several individuals of *B. Britannica*. The difference between the two animals, which were confined in the same vessel, was thus very readily observable.

DIPLOHEMA, *nov. gen. (miki)*.

Umbrella globose, radiating vessels four simple, four conspicuous ocelli opposite the four simple vessels. From one of the ocelli spring two long tentacles; peduncle cylindrical, slightly contracted near its orifice, and terminating in four indistinctly lanceolate lips.

D. ISLANDICA, *n. s.* Plate XV., Fig. 7, *a*.

The umbrella of this Acaleph is slightly inflated, globose, intermediate in form between that of *Euphysa* and *Modeeria*. Its length is one-fourth of an inch; the opening is surrounded by a marginal vessel and veil. The ocelli are four in number, very conspicuous, of a brilliant crimson colour. Three of these are destitute even of rudimentary tentacles. From the fourth, however, two long translucent tentacles originate. These are nearly colourless, slightly widening near their bases, and curled as in *Modeeria*, when the animal is in motion. The sub-umbrella occupies about two-thirds of the length of the umbrella. From its centre depends a cylindrical peduncle of a pale-yellowish fawn colour, slightly contracted near the opening of the stomach, which is bordered by four not very well-marked lanceolate lips. There is nothing remarkable in the appearance of the four simple vessels. From the base of each of the two long tentacles there sprouted a wart-like body, strongly resembling those observed by Professor E. Forbes in the *Sarsia prolifera*. On one of the tentacles themselves, at some distance from its junction with the body, a third gemmule was observable. This was in a more advanced condition, the ocelli being perceptible. As reproduction by gemmation has been previously observed to take place from the peduncle and tentacular bulbs, and in the present instance from the tentacles themselves, the statement of Professor E. Forbes is fully verified, that gemmation may occur anywhere in the course of the granular tissues. The habits of this animal were lively and active, while its jerking movements, when confined in a vessel of sea-water, rendered it an interesting and

attractive object. Its true position is evidently between the genera *Modeeria* and *Euphysa*, since it possesses characters common to each, though at the same time its own peculiarities are sufficiently well marked to entitle it to rank as a distinct genus. But, though now first described as a British Acaleph, it is doubtful whether it has not already been observed elsewhere. Steenstrup, when treating of the development of the claviform polypes, in the second chapter of his essay on the "Alteration of Generation," describes a species of coryne, which he met with in Iceland, in the year 1840, from the base of the head of which certain bell-shaped bodies depended. From this circumstance he denominated the zoophyte "*Coryne fritillaria*." These bell-shaped bodies were furnished with ocelli, and after undergoing certain changes became detached from the body of the parent animal, and swam about in the water as free Medusa-like creatures. On a subsequent occasion, and in the same locality, he met with a free Medusa closely resembling the detached campanulate bodies just mentioned, differing from these last only in size, and by the presence of a lobate organ attached to the base of the tentacles. On comparing the representation of my Medusa with the figure and description of Steenstrup, the resemblance between the two will be found sufficiently striking. I think it probable that this Acaleph, though not, perhaps, identical with that described by the Danish Professor, is so closely allied that we may consider it the Medusoid of some species of *Coryne*. It is distinct from the Medusoid of the *Syncoryne sarsii* described in 1843 by Dujardin, under the name of *Cladonema*, which agreed with the Medusoids obtained lately at Bamborough by Mr. Alder, and "referred by him to the *Coryne Listeri*." We cannot, in all cases, be acquainted with the zoophyte to which certain Medusoids should be referred; this should not hinder us from describing and recording any of the latter animals with which we come in contact (see Forbes, page 72). It is much to be regretted that the development of our native Tubulariadae has as yet been insufficiently studied.

STEENSTRUPIA OWENII, n. s. (*mih*). Plate XV., Fig. 8, a.

This Medusa is $\frac{1}{4}$ th of an inch in length; umbrella nearly globular, slightly contracted near its orifice; the sub-umbrella occupies rather more than two-thirds the length of the umbrella, with which it is connected by a cord. Round the margin are four elongated ocelli or tentacular bulbs, of a pale-yellow fawn colour, very similar to those in *S. flaveola*; only one of those is furnished with a tentacle. The latter is five and a half times the length of the umbrella, of a moniliform and granular structure. Round the base of this tentacle three tubercular bodies had their origin, evidently the granules of future Medusae; two of these were in a low state of advancement; the third presented distinct traces of an interior cavity. The radiating canals were four in number, very conspicuous and broad. From the centre of the sub-umbrella depended a short, broad peduncle, of the same colour as the vessels and tentacular bulbs. Within the peduncle at its base was a cluster of cells forming the ovary. Except in the form of its umbrella the present differs little from the pre-

viously described species of *Steenstrupia*: there can, therefore, be no doubt that it is rightly referrible to that genus. I have taken the liberty of naming this species after the distinguished author of "Parthenogenesis."

Concerning the development of these animals, our knowledge is still insufficient. The production of Medusoids from hydraform zoophytes has been ably investigated by Dr. T. Stretchill Wright (*vide* his papers in the "Edinb. New Phil. Journal"). To Mr. Peach we are indebted for an interesting account of the curious metamorphosis of a zoophyte-like animal, which he obtained in March, 1855, on an old valve of *Psammobia ferroensis*. These creatures were of a hydra-like form, attached to the shell by a short footstalk. The upper part was rather inflated, and furnished with a slightly raised and rounded centre, from which extended four long and four short leaf-like arms, each granulated down the centre. The description of these anomalous animals can hardly be reconciled with that of any known species of zoophyte.

After a few days the form of the animals began to change, and they subsequently became transformed into true naked-eyed Medusæ: for a full account of these changes, see Mr. Peach's paper and figures published in the "Ann. Nat. Hist." for 1856. The Medusoids showed some resemblance to *Lizzia* and *Sarsia*. The production of fixed polypes from the ova of *Turris* has been observed by Gegenbaur ("Compt. Rendus," Sept. 1853). Mr. Hincks ("Ann. N. H.," 1852) has described the Medusoids of *Campanularia volubilis*.

During the past summer I have repeatedly submitted living specimens of *Laomedæa* to examination. The Medusoids of *L. geniculata* are generated in the same manner as those of *L. gelatinosa*, observed by Van Beneden, namely, in the interior of the so-called ovarian capsules. The Medusoids so produced speedily detached themselves, and moved rapidly through the water. This is at variance with the account given of the development of *L. geniculata* by Loven, who affirmed ("Wieg., Archiv," 1857) that the Medusæ-like bodies in this species never become detached, but merely expanded at the summit of the ovigerous capsules discharged ever in the form of ciliated gemmules, which subsequently attached themselves, and developed into hydraform Zoophytes. The researches of Loven are detailed with considerable accuracy, so that there arises a difficulty as to the manner in which we are to explain the occurrence of the reproductive zooids, under a twofold aspect, in the same species. Perhaps it is due to difference of sex. The Medusoids of *L. dichotoma*, as observed by Mr. Peach and the late Sir J. S. Dalzell, were free and detached; and the figure of Mr. Peach (in Johnston's "Brit. Zoophytes," vol. i. p. 119) exactly coincides with the Medusoids of *Laomedæa* above noticed. It will be remembered that Sir J. S. Dalzell bestowed on these animals, the extraordinary name of *Animalculum tintinnabulum*. In describing the development of any of the *Campanulariadae*, writers should carefully note the specific characters of the Zoophyte observed, as the British species of this group are not yet sufficiently known. Much yet remains to be done before our knowledge of

this interesting subject can be considered as even approaching completion; of the reproduction of several forms we may be said to know nothing. Were it not for this comparatively backward state of our knowledge, I would not have ventured to bring forward these meagre and incomplete researches. On a future occasion I trust to have the pleasure of laying before you a more full and ample account of the present state of our knowledge of these strange and beautiful organisms.

NOTE ON A CURIOUS MONSTROSITY OF THE COMMON SHELL (*FUSUS ANTIQVUS*).*
BY G. C. HYNDMAN, BELFAST.

PLATE VIII.

THE specimen exhibited was obtained by dredging off Groomsport, in the county of Down, by Mr. Samuel Vance, along with Mr. Murray. Unfortunately, the animal was not preserved, as the shell was boiled along with a number of others before its singular form attracted notice. I have no hesitation, however, in referring to it as a curious and interesting monstrosity of the *Fusus antiquus*, although its convolute form more nearly resembles that of the foreign genus, *Delphinula*. The colour and structure of the shell, together with the projection of two or three turns of the original apex from the centre of the coil, confirm my view, and, no doubt, the abnormal form has been occasioned by some accident befalling the animal whilst in the young state, which obliged it to change the usual angle of the body whorl with the central spire, and thus the shell has become convolute, as we see.

ON THE EMBRYO STATE OF *PALINURUS VULGARIS*.* BY R. Q. COUCH,
M.R.C.S. ENG., ETC. ETC., NORTH PENZANCE.

PLATE XVII.

At the time of the publication of Professor Bell's admirable work on British Crustacea, by some inadvertency the particulars respecting the embryo condition of *Palinurus vulgaris* were overlooked, and up to the present time have not been published. As several years have now passed, and the subject has not hitherto attracted the attention of any other observer, I would wish to publish the following observations:—

The metamorphoses of the Decapod Crustacea may now be considered as established by observations made in every part of the world. The first announcement of the discovery came from *Ireland*, from experiments made near Cork by the late J. V. Thompson.

The form under which the young Decapods first appeared was announced as belonging to the genus *Zoea*, and all subsequently published

* Read before Section D at the Meeting of the British Association, Dublin, August 26, 1857.

PLATE XIV.

ILLUSTRATIVE OF A PAPER, BY JOSEPH R. GREEN, ON ACALAPHE
OF DUBLIN COAST.

Fig.

- 1A. *Stomobrachium octo-costatum*, magnified.
- 1B. Ditto, seen from above.
- 1C. Ovary of ditto.
- 1D. Portion of marginal canal.
- 2A. *Equorea formosa*, magnified.
- 2B. Ditto, seen from above.
- 3A. *Thaumantias Pattersonii*, magnified.
- 3B. Ditto, seen from beneath.
- 3D. Portion of marginal canal.
- 3C. One of the ovaries, showing leeches parasitic on ditto.
- 3E. One of the leeches, magnified.
- 4A. *Thaumantias neglecta*, magnified.
- 4B. Ditto, seen from beneath.
- 4C. Ovary of ditto.
- 4D. A single tentacle, magnified.

Vide page 242.

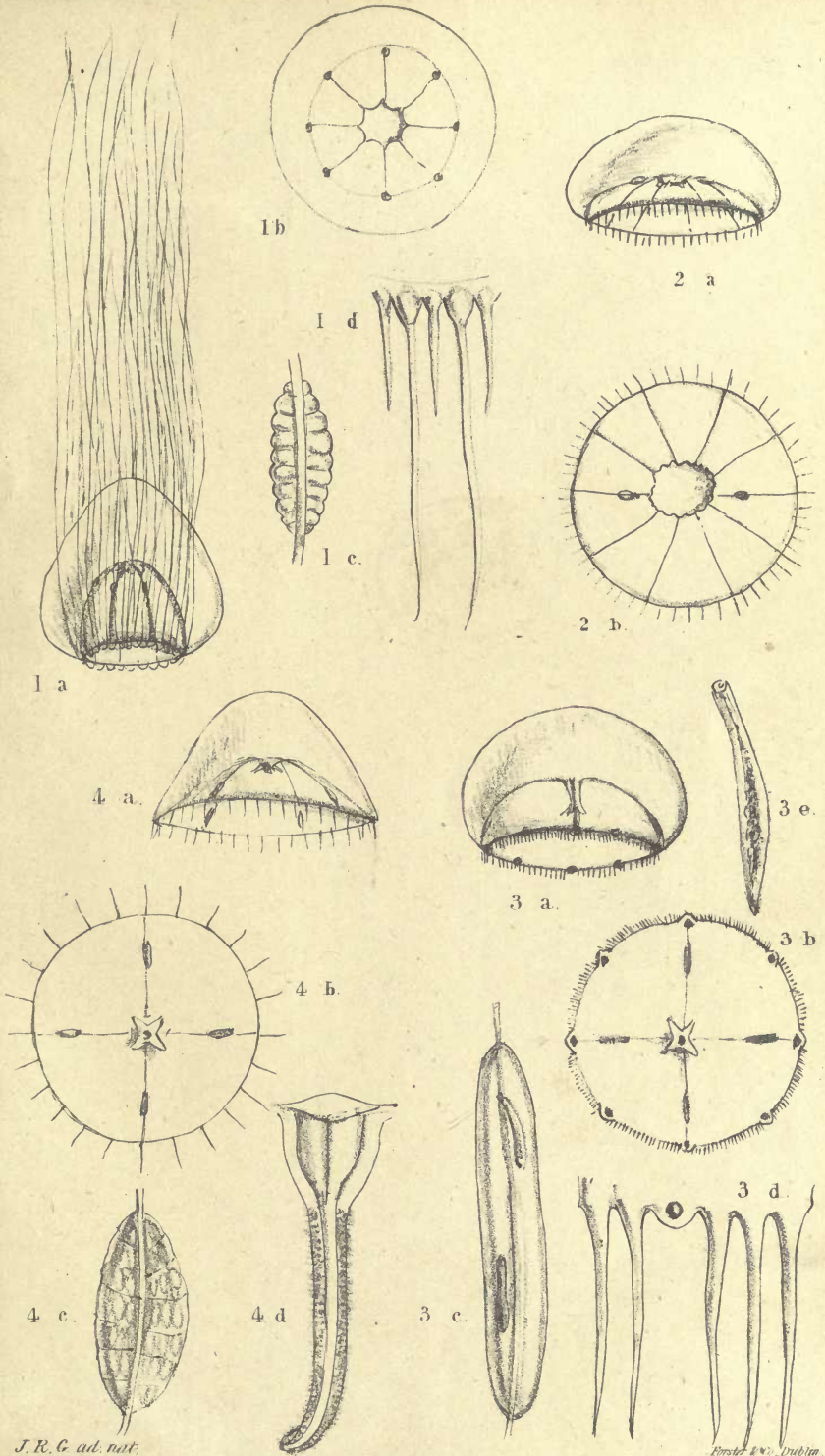
PLATE XV.

ILLUSTRATIVE OF A PAPER, BY JOSEPH R. GREEN, ON ACALAPHE
OF DUBLIN COAST.

Fig.

- 5A. *Thaumantias typica*, natural size of large specimen.
- 5B. Ditto, seen from beneath.
- 5c. Peduncle of ditto,
- 6A. *Bougainvillea dinema*, magnified.
- 6B. Ditto, seen from above.
- 6c. One of the compound tentacular bulbs, magnified.
- 6D. Peduncle of ditto.
- 6E. Ditto, seen from above.
- 6F. One of the tentacular lips, magnified.
- 7A. *Diplonema islandica*, magnified.
- 7B. Tentacles of ditto, showing gemmules sprouting therefrom.
- 8A. *Steenstrupia Owenii*, magnified.
- 8B. Peduncle of ditto.
- 8c. A portion of the tentacle, highly magnified.

Vide page 242.



J. R. G. ad. nat.

Berster & Co. Dublin



