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MAGAZINE OF NATURAL HISTORY,

INCLUDING

ZOOLOGY, BOTANY, AND GEOLOGY.

(BEING A CONTINUATION OF THE 'MAGAZINE OF BOTANY AND ZOOLOGY,' AND OF
LOUDON AND CHARLESWORTH'S 'MAGAZINE OF NATURAL HISTORY.')

CONDUCTED BY

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rell's specimen was much smaller than mine, too much stress must not be laid on this circumstance. It deserves to be noticed, however, that this specimen had a gall-bladder like the *A. neglecta*, small yet quite distinct, which Mr. Yarrell's had not. Hence this organ is certainly sometimes present, and at other times absent, in the same species, unless we imagine, which I conceive very improbable, that the one here described was different from his.

The stomach was of the same form as in the *A. arvalis* and *A. neglecta*. The liver consisted of seven distinct lobes, five large and two smaller ones.

I have already stated that this specimen was taken at Aberarder, in Inverness-shire; and Mr. Thompson informs me, that, supposing it to be the *A. riparia* of Mr. Yarrell, he believes it to be the most northern British habitat for this species.

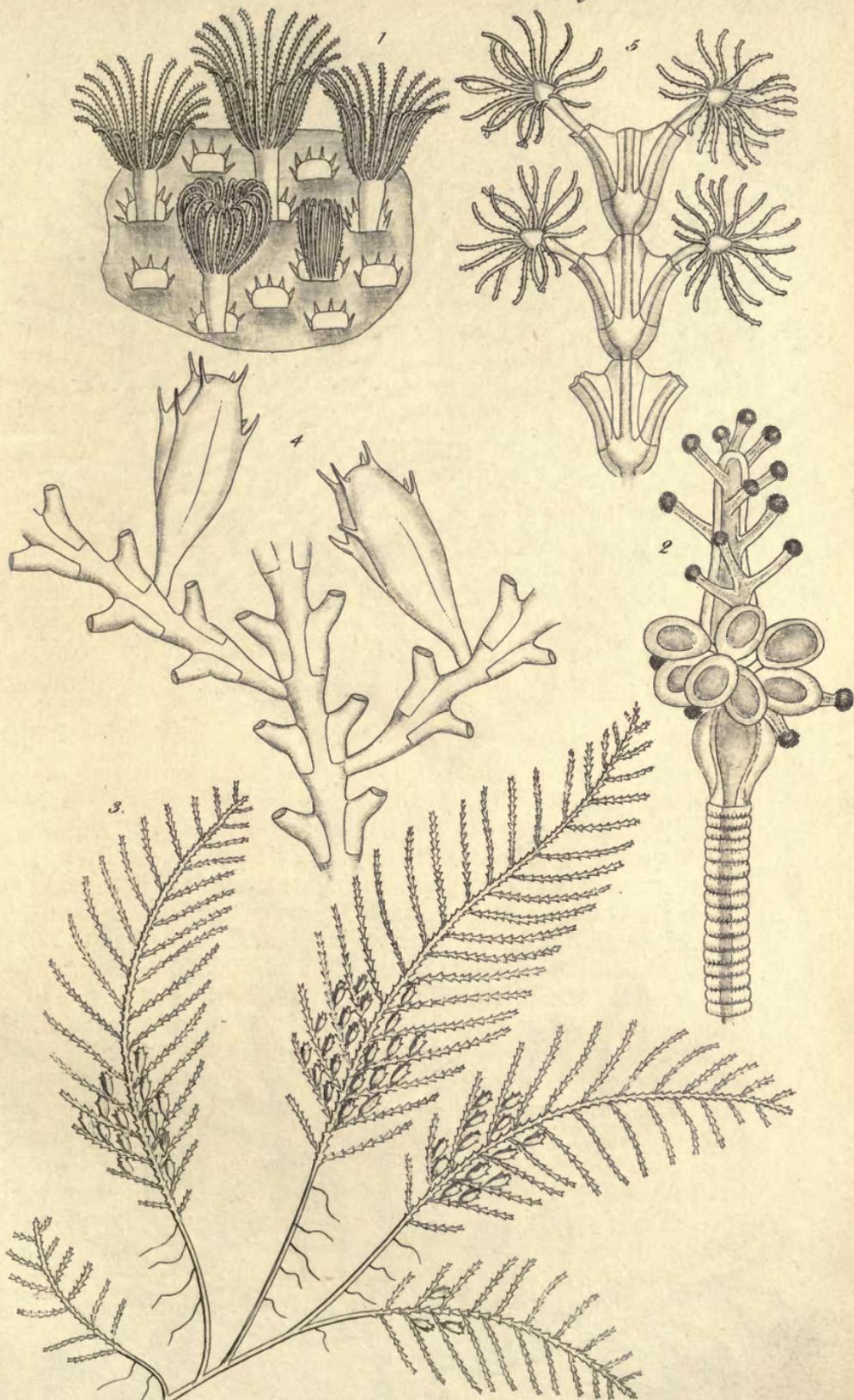
Swaffham Bulbeck, April 26, 1841.

XXXIII. — *Supplement to a Catalogue of Irish Zoophytes*. By ARTHUR HILL HASSALL, Esq. Read before the Natural History Society of Dublin, November 6th, 1840.

[With Five Engravings.]

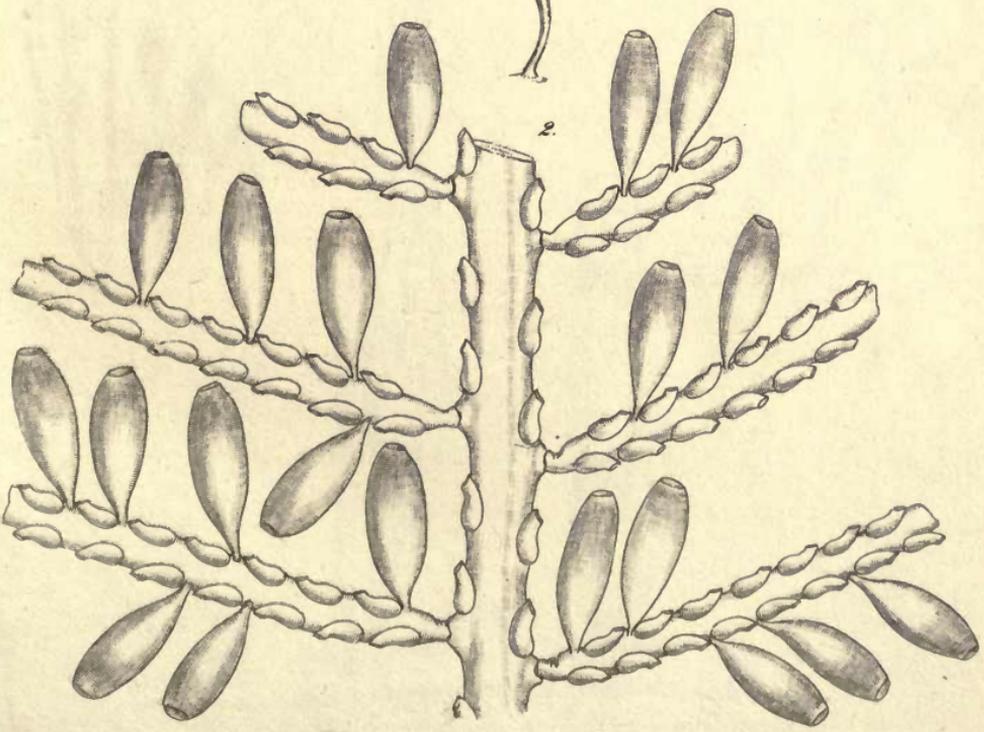
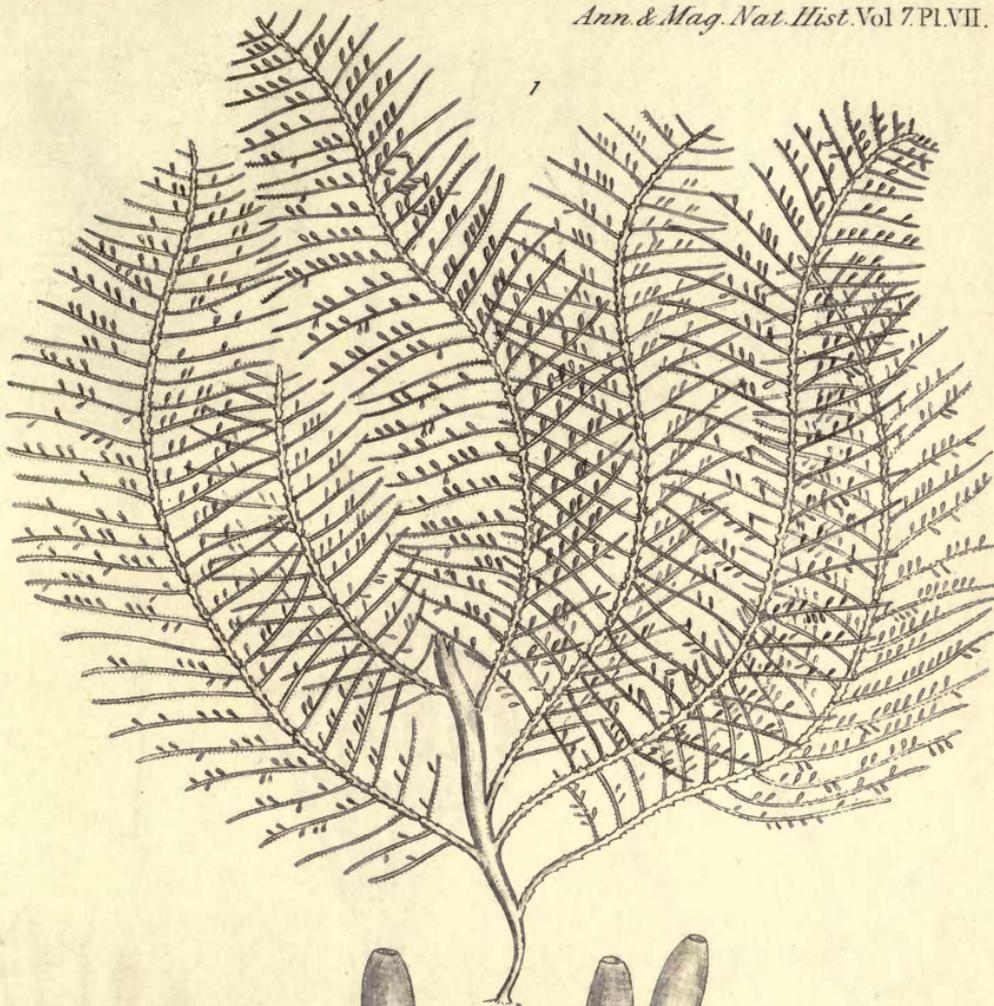
Mr. Chairman and Gentleman,

As to many of my hearers the subject of the present communication, entitled a 'Supplement to a Catalogue of Irish Zoophytes,' published in the November Number of the 'Annals and Magazine of Natural History,' may be altogether new, I propose, before entering upon the consideration of it, to make some observations on Zoophytes generally. This course will, I hope, serve both to interest my audience, as well as to relieve, in some measure, the tediousness of a mere enumeration or technical description of species, which, however valuable to science itself, possesses but little to attract or engage the attention. The most careless wanderer on the sea-shore must often have noticed the beauty and delicacy of the conformation of these interesting productions, rivalling in their purity and freshness the element which they inhabit and adorn, and have been struck with wonder and admiration at the evidence of designing care which they so remarkably exhibit even in their general appearance. Nor is the beauty and elegance so observable in their outward form diminished by a closer inspection. If the power of a microscope be applied to them, and their more intimate structure be disclosed, new beauties



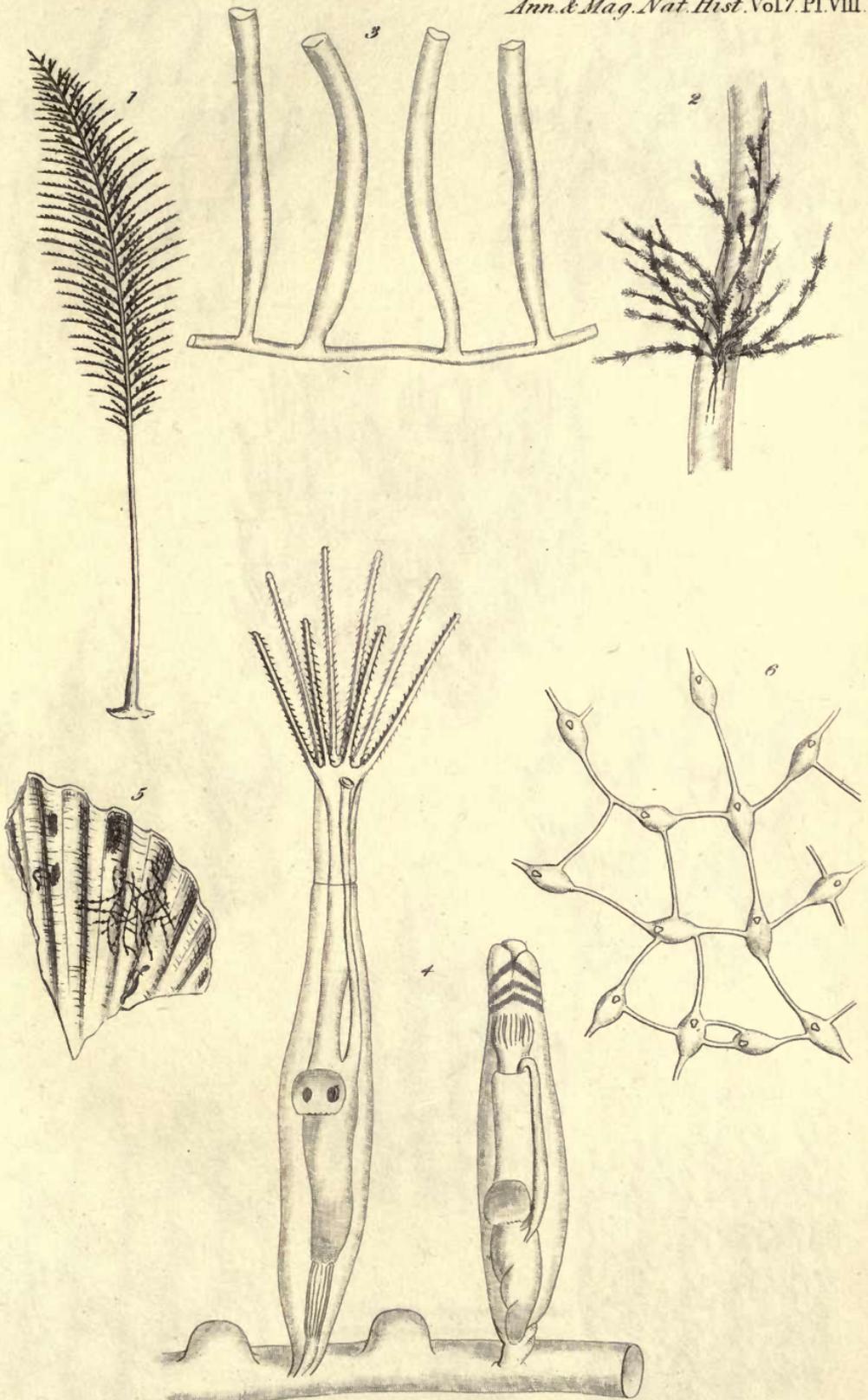
1. *Coryne squamata*. 3. 4. *Sertularia Margarita*.
2. *Hermia glandulosa*. 5. *pumila*.





Thuisiaria articulata.

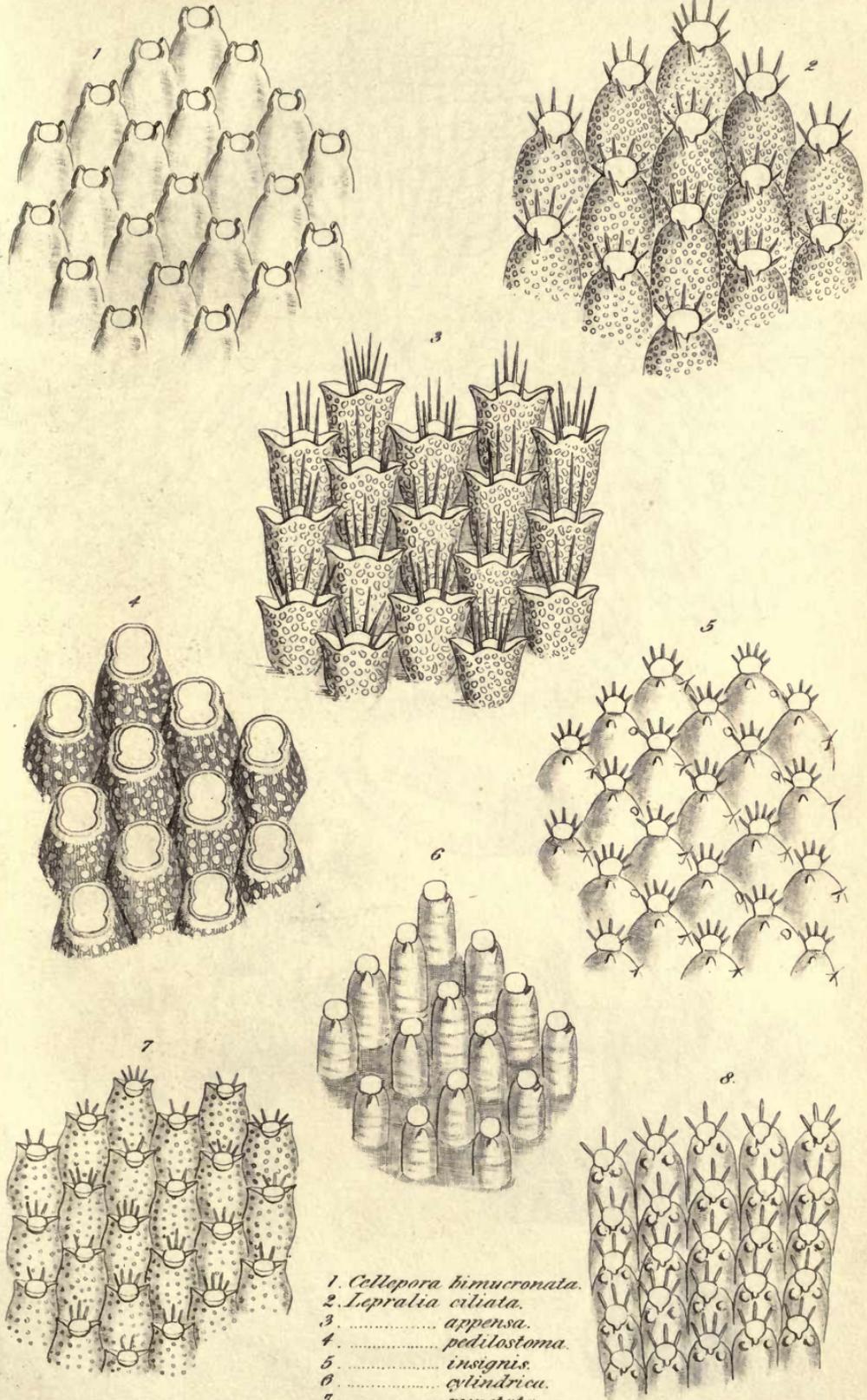




1. *Plumularia frutescens.*
 2. *Valkeria imbricata.*
 3. *Langenella repens?*

4. *Valkeria*, new species.
 5. *Hippothoa lanceolata.*
 6. d° mag.^d

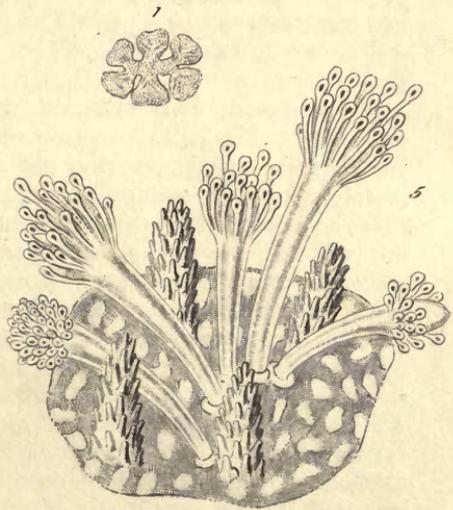
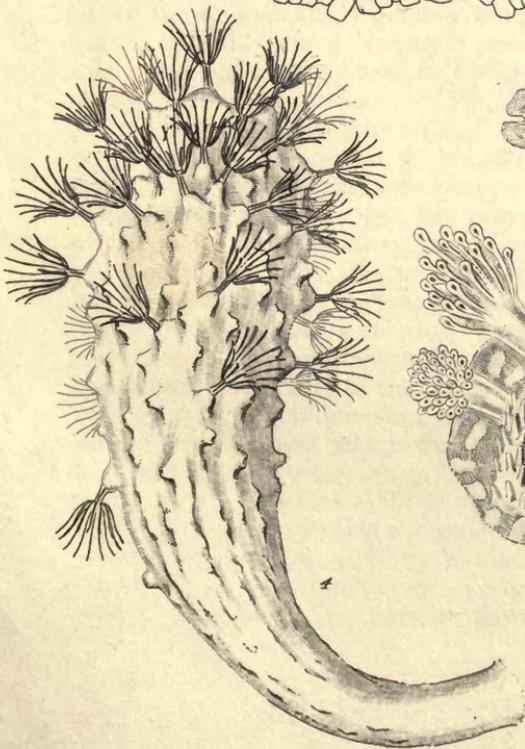
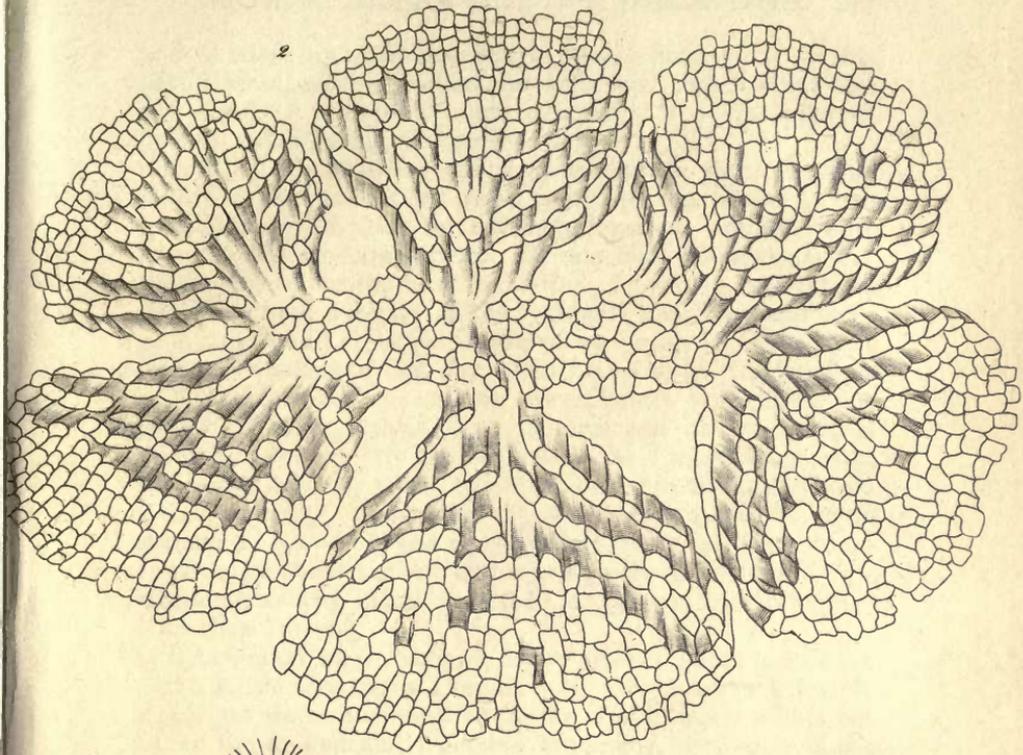




1. *Cellopora bimucronata.*
 2. *Lepralia ciliata.*
 3. *appensa.*
 4. *pedilostoma.*
 5. *insignis.*
 6. *cylindrica.*
 7. *punctata.*
 8. *linearis.*

AT THE BRITISH MUSEUM





1. 2. *Tubulipora lobatula*
 3. 3. *Alcyonidium hirsutum*
 5. *Bichinochorium clavigerum*

J.D.C. Sowerby sculp.



and wonders are made manifest to the admiring gaze. In this particular all natural productions differ from those of man and art, in whose works a minute examination renders apparent defects, rudeness and deformity.

But little more than a century has elapsed since the true nature of the productions about to occupy our attention was first discovered: prior to that period various opinions were entertained respecting them. By one class of persons, and these were by far the most numerous, they were regarded as the undoubted subjects of the vegetable kingdom, and were so arranged and classified in the various systems of the most learned botanists of that day. Nor is this to be wondered at, when we consider the striking resemblances which these objects bear to vegetables, both in form and habits; some of them being eminently arborescent in their mode of growth, and being fixed by roots, either imbedded in the sand, or attached to rocks, stones and other substances, in the same manner as sea-weed, and consequently being incapable of locomotion, a character at that time considered essential to constitute an animal, being possessed in common by all the animals then known.

By a second set of persons, at the head of whom stands the name of the illustrious Linnæus, all the horny and flexible Zoophyta were considered to hold a station intermediate between the animal and vegetable kingdoms, partaking of the nature of both. The Lithophyta were, however, arranged by him in the animal kingdom, on the supposition that lime was always an animal product. "The animalcules of the Lithophyta, like the testaceous tribes," he said, "fabricated their own calcareous polypidom, forming the whole mass into tubes, each ending on the surface in pores or cells, where alone the animal seems to dwell; but the polypes of the proper Zoophyta, so far from constructing their plant like polypidoms, were, on the contrary, the productions or efflorescences of it; just as the flowers do not make the herb or tree, but are the results of the vegetative life proceeding to perfection. Polypes, according to this fancy, bore the same relation to their polypidom that flowers do to the trunks and branches of a tree; both grew by vegetation: but while the one evolved from the extremities blossoms, which shrunk not under external irritation, and were therefore properly flowers, the other put forth flowers, which, because they exhibited every sign of animality, were therefore, with reason, considered animals." In a letter to Ellis he remarks, alluding to the Zoophytes, "they are, therefore, vegetables, with flowers like small animals." In his 'Diary' he further observes, that they are "vegetables with re-

spect to their stems, and animals with respect to their florescence."

By a third party Zoophytes were deemed to be of a mineral origin. This theory was particularly advocated by Henry Baker: "The rocks in the sea on which these corals are produced," he says, "are undoubtedly replete with mineral salts, some whereof, near their surface, being dissolved by the sea-water, must consequently saturate with their saline particles the water round them to a small distance, where, blending with the stony matter with which the sea-water always abounds, little masses will be constituted here and there and affixed to the rocks. Such adhering masses may be termed roots, which roots, attracting the saline and stony particles, according to certain laws in nature, may produce branched or other figures, and increase gradually by an apposition of particles becoming thicker near the bottom, where the saline matter is more abounding, but tapering or diminishing towards the extremities, where the mineral salts must be fewer in proportion to their distance from the rock whence they originally proceed; and the different proportions of mineral saline particles of the stony or other matter wherewith they are blended, and of marine salt, which must have a considerable share in such formations, may occasion all the variety we see. Nor does it seem more difficult to imagine that the radiated, starry, or cellular figures along the sides of these corals, or at the extremities of their branches, may derive their production from salts incorporated with the stony matter, than that the curious delineations and appearances of minute shrubs and mosses on slates, stones, etc., are owing to the shootings of salts intermixed with mineral particles; and yet *these* are generally allowed to be the work of mineral steams or exhalations." It is scarcely necessary to observe, that the whole of the theories of which I have given but a very short outline, highly ingenious and interesting as they are, are yet untenable: the beautiful and poetic hypothesis of Linnæus is, however, the nearest approximation to the truth. We learn from Dr. Johnston's excellent 'Introduction to his British Zoophytes', from which I have had occasion to quote largely, when speaking of the opinions of Linnæus, and to which I must again refer when mentioning those of Ellis, that Ferrante Imperato, an apothecary in Naples, was the first naturalist, according to M. de Blainville, distinctly to publish as the result of his proper observations the animality of corals and madrepores; and he is said to have accompanied the description of the species which fell under his notice with illustrative figures of considerable accuracy. His 'Historia Naturale' was printed at

Naples in 1599; but although again reprinted in 1672, the book and the knowledge it contained had sunk into such oblivion, that when Peyssonnel, in the year 1727, communicated the same discovery to the Academy of Sciences in Paris, it was received by the members of that learned body in a manner which is sufficient to convince us that it was entirely new to them, and exposed the author to the obloquy and censure which are the usual portions of an original discoverer.

To John Ellis, however, a merchant in London, is to be accorded the honour of having placed the fact of the animality of Zoophytes beyond all doubt or controversy. The inquiries entered into by this individual were prosecuted with an ardour and a diligence worthy of the subject, and affording a bright and refreshing example for others to imitate; and it is pleasing to notice, that the zeal he displayed and the labour he bestowed were amply recompensed by the importance of the results to which his investigations led. "There was nothing unformed or mystical in Ellis's opinion. Certain marine productions, which, under the names of Lithophyta and Ceratophyta, had been arranged among vegetables, and were still very generally believed to be so, he maintained and proved, with a most satisfactory fulness of evidence, to be entirely of an animal nature, the tenements and products of animals similar in many respects to the naked freshwater polype. By examining them in a living state, through an ordinary microscope, he saw these polypes in the denticles or cells of the zoophyte; he witnessed them display their tentacula for the capture of their prey; their varied actions and sensibility to external impressions and their mode of propagation; he saw further that these little creatures were organically connected with the cells, and could not remove from them, and that although each cell was appropriated to a single individual, yet was this united by a tender thready line to the fleshy part that occupies the middle of the whole coralline, and in this manner connected with all the individuals of that coralline. The conclusion was irresistible: the presumed plant was the skin or covering of a sort of miniature hydra,—a conclusion which Ellis strengthened by an examination of their covering separately, which he said was as much an animal structure as the nails or horns of beasts, or the shell of the tortoise: for it differs from sea-plants in texture as well as hardness, and likewise in their chemical production; for sea-plants, properly so called, such as the Algæ, Fuci, etc., afford in distillation little or no traces of a volatile salt; whereas the corallines afford a considerable quantity, and in burning yield a smell somewhat resembling that of burnt horn and other animal substances, which of itself is a

proof that this class of bodies, though it has the vegetable form, yet is not entirely of a vegetable nature."

Among the many recent cultivators of this interesting department of natural history, the name of Dr. Johnston of Berwick stands pre-eminent, whose excellent work on the British Zoophytes has done much to exalt the subject, and to diffuse a more general taste for its cultivation. I trust that ere long we shall be favoured with a second volume on the Zoophytes of Great Britain by that gentleman.

The term *Zoophyte* is applied to all those productions which, bearing a strong resemblance to vegetables in form and some other particulars, are yet of an animal nature. The more arborescent of them are often called corallines, a name which is peculiarly appropriate, being a derivative of the word coral, to which they are intimately allied, and by means of which such gigantic changes are daily being effected. Islands, and I might almost say, without incurring the charge of exaggeration, continents are being raised from the deep abysses of the ocean, to be, perchance, at some future period clothed with vegetation, and peopled like unto our own fair land—to be the arena on which many eventful scenes in the world's history are to be performed; and these mighty results are to be brought about by the agency of insects scarcely perceptible to our unaided sight, but whose operations, though slow, silent and invisible, are yet certain and unceasing:—

"Unconscious, not unworthy, instruments,
By which a hand invisible was rearing
A new creation in the secret deep.
Omnipotence wrought in them, with them, by them;
Hence, what Omnipotence alone could do
Worms did. I saw the living pile ascend,
The mausoleum of its architects,
Still dying upwards as their labours closed:
Slime the material, but the slime was turn'd
To adamant by their petrific touch;
Frail were their frames, ephemeral their lives—
Their masonry imperishable."

In nothing is God's infinity and man's littleness more strikingly exhibited and contrasted than in the operations of nature upon a grand scale, and this is particularly evident in the instance of the formation of coral islands to which I have referred. The extreme simplicity of the means employed for the attainment of such vast ends cannot but be a subject of astonishment and admiration to every reflecting mind, and this simplicity is apparent in all the ways and workings of nature. How different is it with man's designs; how compli-

cated are the means which he employs for the attainment of his projects ; and often how inefficient are they for the fulfilment of the end proposed, and how easily are they overturned and annihilated by the intervention of some natural cause—his greatest labours and most cherished hopes frequently being dashed to the ground or buried in the deep by some earthquake or storm !

“Zoophytes,” to adopt the language of Dr. Johnston, “present to the physiologist the simplest independent structures compatible with the existence of animal life, enabling him to examine some of its phænomena in isolation, and free from the obscurity which greater complexity of anatomy entails. The means of their propagation and increase are the first of a series of facts on which a theory of generation must arise ; the existence of vibratile cilia on the surface of the membrane, which has since been shown to be so general and influential among animals, was first discovered in their study, and in them is first detected the traces of a circulation carried on independently of a heart and vessels. The close adhesion of life to a low organization ; its marvellous capacity of redintegration ; the organic junction of hundreds and thousands of individuals in one body, the possibility of which fiction had scarcely ventured to paint in its vagaries, have all in this class their most remarkable illustration.”

I have ascertained that all the more transparent Zoophytes possess highly luminous properties. This fact I first discovered in a specimen of *Laomedea gelatinosa*, and subsequently in a great variety of other species. If a portion of it, adhering to the sea-weed to which it is attached, be taken from the water and agitated, a great number of bright phosphorescent sparks will be emitted ; these sparks proceed from each of the denticles of the coralline containing polypi, and the phænomenon is equally apparent, whether the specimen be in or out of water. The imagination could scarcely conceive a more beautiful spectacle than would be furnished by the shining of countless myriads of these tiny lamps, lighting up the dark recesses and caves of the ocean. I lately had an opportunity of beholding this novel and interesting sight of the phosphorescence of Zoophytes to great advantage, when on board one of the Devonshire trawling-boats which frequent this coast. The trawl was raised at midnight, and great quantities of coralines were entangled in the meshes of the network, all shining like myriads of the brightest diamonds. I would advise any person wishing to witness this beautiful spectacle on a large scale, to sally forth some dark night to the sea-shore, and disturb, either with a stick or the foot, the sea-wrack left by the

receding tide, among which numerous corallines will be imbedded, particularly if a high wind have prevailed during the day. Although I have not as yet had an opportunity of carrying into effect what I here recommend, I am convinced that any individual who would be at the trouble and possessed sufficient resolution to leave a warm fire at this uninviting season, and encounter the rough, but refreshing sea-breeze, would meet with an ample reward for the labour bestowed and self-denial exercised. The fact of the phosphorescence of one species of *Sertularia*, *S. pumila*, was, I have lately learned, discovered by Stewart some time since; but the announcement of it did not, it appears, lead to further inquiries into this interesting subject.

An important distinctive character between Ascidian Zoophytes and those of other classes, may be derived from the arrangement of the tentacula. In the Ascidian type of Zoophytes the tentacula are arranged in a determinate order, being disposed either in a crescent, as in some freshwater species, or in the form of a bell, as in the marine orders of this class; whereas in the Hydroid, Helianthoid and Asteroid classes they do not describe any regular figure, but are irregularly disposed around the mouths of the polypi. An Ascidian zoophyte, therefore, may at once be distinguished from all others by observing the arrangement of the tentacula, and without reference to internal organization. It is difficult to conceive anything more strikingly beautiful, on a small scale, than one of these Ascidian Zoophytes viewed under the field of a microscope: the regular and elegant cup-like form described by the tentacula; the ceaseless and rapid action of the cilia; the uniform direction of the current which flows over these, carrying with it numberless revolving particles, some whereof are destined for the little creatures' sustenance; and all these, if seen through a strong light, clothed in the brightest prismatic colours, cannot fail to elicit the admiration of the beholder. Should the slightest motion occur to disturb it, the polype instantly withdraws itself within the shelter of its little habitation, at once its home and its grave, and is concealed from sight; its beauties are however again displayed as soon as the agitation of the surrounding water ceases. It is difficult, I say, to conceive a more beautiful or interesting spectacle than is furnished by a *single* polype when thus viewed; but what must be the appearance formed by the countless thousands of these animals which daily thus display themselves, peopling cave, rock and pool! and yet nearly six thousand years have elapsed since their first creation before the eye of man rested on them.

Not amongst the least pleasurable of the emotions which we experience in the study and contemplation of these beautiful productions, is that feeling of health and vigour which attends us in our excursions in search of them. At one time wandering upon the smooth and golden strand, exploring among the tangled sea-wrack left by the receding tide for these minute treasures of creation; now diving into some deep and dark caverns, in which the waves roar and dash against the rocks with terrific violence, but still producing an effect upon the mind pleasing and enchaining; at another stretching oneself at full length beside some clear and liquid pool, in which the most beautiful and diversified landscapes may be described—rocks, trees, shrubs and flowers in miniature, all are palpable to the least imaginative mind, the colours of the sea-weed rivalling the brightest and most varied tints of an autumnal forest.

How superior, in the purity and satisfaction resulting from their pursuit, are the pleasures which we derive from the contemplation of the works of God, as manifested in the creation, to those sought after, by so many, and with such eagerness, in crowded and bustling cities!

“ I care not, Fortune, what you me deny ;
 You cannot rob me of free nature's grace ;
 You cannot shut the windows of the sky
 Through which Aurora shows her bright'ning face ;
 You cannot bar my constant feet to trace
 The lonely shore at dewy morn and eve.
 Let health my nerves and finer fibres brace,
 And I their toys to the *great* children leave :
 Of nature, feeling, virtue, nought can me bereave.”

Among the uses of these minims of creation, one of the highest appears to me to be, that of exciting in the mind of man a spirit of inquiry, calculated to detach his thoughts from the sordid selfishness of worldly occupation, and to raise them with feelings of admiration and love to that Omnipotent Being, who at the first formation of things pronounced all his works “very good.”

Entreating the attention of the Society for a short time longer, I shall at once proceed to the consideration of the matter of the ‘Supplement’ itself.

The species are enumerated in the order in which they occur in Dr. Johnston's ‘Zoophytes.’

Coryne squamata. Found growing upon *Fucus siliquosus*, opposite Sea-point, south side of Dublin Bay, above low-water mark.

Hermia glandulosa. This species sometimes attains a height of three inches. The glandular heads of the tentacula appear to be

furnished with minute cups, similar to those of the Cuttle-fish, by means of which the polypi are enabled to hold their prey; and not, as stated by Mr. Lister, covered with "short projections, like blunt hairs." The reproductive gemmules are supported on a short foot-stalk, and are fewer in number and several times larger than those of the preceding species.

Dublin Bay, on various Fuci; not common.

Tubularia larynx. Both varieties of this species are trawled up in great abundance off Howth and Lambay. They are also found attached to the under surface of stones, on the east side of Kingstown Harbour.

Thoa muricata.—Giant's Causeway.

Sertularia Margareta. Polypidom branched, branches alternate; rachis straight; cells nearly opposite, ovato-tubular, contracted on the outer side; vesicles 4-sided, armed with 8 long teeth.

This species, in the absence of its remarkable vesicles, requires a very careful examination to distinguish it from *S. abietina*. There are, however, well-marked differences between them. The stem in this species is straight, whereas in *S. abietina* it is flexuose; the cells are more nearly opposite, and are contracted on the outer side; apertures plain. The branches are alternate; there are three cells on the rachis in the interval between each branch. Vesicles 4-sided, very large, increasing in size at the distal end, and armed near the summit with 8 stout spines, two placed at each angle.

To this new and interesting species I have assigned the Christian name of a lady, distinguished not only for an ardent love of the works of nature, but as a zealous collector in various branches of natural history on these shores. See Plate VI. fig. 3, 4.

A *Sertularia* is figured and described in Ellis's and Solander's 'Zoophytes' under the name of *S. pinaster*, which bears a considerable resemblance to the above. I do not, however, believe them to be of the same species, as the vesicles in this are furnished with but four spines.

Dredged up off Howth sparingly; also found near the Giant's Causeway.

S. pumila. The number of tentacula in this species is not very constant, but usually about 16: they are not disposed in any determinate order, as they always are in the Ascidian type of Zoophytes, but are variously arranged.

Sertularia filicula. This species was incorrectly enumerated as among those found in Dublin Bay in my Catalogue. It is not met with upon that coast; I have, however, obtained a few specimens in the neighbourhood of the Giant's Causeway.

Thuiaria articulata. The stem in the specimens found in Dublin Bay is not naked on the lower half, as it is generally described, but is clothed with pinnæ to near its base, giving the polypidom a very beautiful appearance. See Plate VII. fig. 1, 2. The specimen figured in this plate is the finest I ever saw, and I could not resist the temptation of giving a drawing of it.

Not unfrequently obtained by trawling off Howth.

Plumularia pinnata. Is generally found growing on a long filamentous sea-weed, up the stem of which it creeps often for more than a foot in extent, and round which the root-fibres form a complete sheath. The specimens thrown up by the sea are usually denuded of the short branches which proceed from the pinnæ. The vesicles are produced in great abundance, pyriform, blunt and plain above: each vesicle contains 3 or 4 dark-coloured ova. Dr. Johnston, in a letter I lately received from him, remarks, "I long ago discovered the error of giving *toothed* vesicles to *Pl. pinnata*: they are only toothed from laceration, after the ova have escaped. It is curious that the ova should be produced in such numbers from the root-fibres; but such is a common occurrence with this pretty species."

Tolerably abundant in various parts of Dublin Bay.

Pl. setacea. The upper part of the vesicles of this species is prolonged into a short tube, affording an additional distinctive character between it and *Pl. pinnata*, which it so closely resembles.

Trawled up off Howth, very rare.

Pl. Catharina. Frequently trawled up off Howth and Lambay, in deep water, and but rarely cast upon the shore.

Pl. cristata. I have examined a specimen of this species, obtained by my friend G. J. Allman, Esq., near Cork, having plumes nearly three inches in length, and in which the ovarian vesicles are produced only from the main stalks or midribs, giving to the whole polypidom a very beautiful and unique appearance.

Pl. myriophyllum. Not common: obtained only by trawling off Howth and Lambay,

Pl. frutescens. I have met with but one specimen of this species, consisting of a single plume elegantly tapering to a point above. See Plate VIII. fig. 1.

Alcyonidium rubrum, Müller. Dr. Johnston considers this to be but a mere variety of *Alcyonidium digitatum*, or that species in its "primary crustaceous condition." That it is not *Alcyonidium digitatum* in its primary crustaceous condition, I am convinced, from the circumstance of having frequently met with it of a very large size, as large as the ordinary species ever occurred to me, nor do I consider it to be a variety; for although no difference exists in the number of the tentacula or in the form of the spiculæ, it yet, in my opinion, must be regarded as a distinct species, as I have always met with it of the same uniform deep red colour; neither have I been able to detect any gradations of colour between it and the common kind, as might be expected were it but a variety. I have occasionally, too, obtained both growing upon the same shell, each possessing its own peculiar colour; and this is a strong fact in favour of their distinctness, as the great difference in colour could not be accounted for by a reference to any external causes, both specimens being subjected to the same influences.

Actinia mesembryanthemum. Everywhere common off the coast of Dublin.

A. Bellis. "Body elongated; the lower part narrow, smooth, the

upper enlarged and glandularly warty : oral disc expanded, lobed : tentacula in several rows, variegated."—*Gärtner*.

This beautiful species is certainly no variety of *Actinia gemmacea*, as has been supposed by some from the perusal of *Gärtner's* description of it. It inhabits the fissures of rocks, in which the whole of the body of the polypus is concealed, the expanded cup-like head alone being visible above the margin of the fissure. The body is often lengthened to the extent of two inches ; its basis is contracted, but gradually widens upwards towards the calyx ; the lower portion of it is nearly colourless, higher up it becomes of a flesh colour, this changing into a greenish brown, of which it continues up as far as the feelers. The upper half of the body is covered with numerous small white glands, which possess great powers of suction. The diameter of the calyx, which is somewhat cupped, in the larger specimens often exceeds two inches ; its margin does not describe a perfect circle, but is variously festooned. The colour of the disc is dark brown, ornamented with broad bands of opaque white, and finely streaked and dotted with light yellow. The feelers are very small, placed on the edge of the calyx in several rows, to the depth of $\frac{1}{3}$ rd of an inch ; those nearest the disc, also, are about $\frac{1}{3}$ rd of an inch in length, and are the longest, the outermost tentacula being but little more than papillæ ; they are of a lighter brown than the disc, and are variegated with transverse bands and spots of white. The shades of brown in the different parts of each *Actinia* vary considerably with the specimens.

Found in a clear pool, opposite Dalkey Island, but little below high-water mark, the only locality in which I have ever met with it ; and what is not a little peculiar is, that it is confined to that one pool, although there are others in its immediate vicinity apparently equally suitable for it.

A. gemmacea. Everywhere common on the coast of Dublin.

A. dianthus. Frequently trawled up off Howth and Lambay.

A. maculata. The tentacula of this species are *not* contractile : in this particular it resembles the genus *Anthea* of Johnston.

A single specimen, trawled up off Howth.

Anthea cereus. Although this species has not the power of shortening its feelers in the same way as the Actinias, yet, if specimens be kept for some time in sea-water, their length becomes diminished, not by contraction, but by a process of invagination.

The three varieties of this species, described by *Gärtner*, are found in Sandy-cove, near Dublin ; the green one but sparingly. They usually adhere to Fuci, generally to *Fucus serratus*, and but rarely to stones. Below low-water mark.

Valkeria cuscuta. Branches opposite ; cells in clusters, oval.

The above is the correct definition of this species, which it was long ere I could identify by *Ellis's* description of it. He described the cells as being "in pairs, usually opposite," whereas they are really in clusters. *Ellis's* description is only applicable to the species in an imperfect and injured state. *Valkeria cuscuta* is readily di-

stinguishable from *V. imbricata*, with which it was at first confounded by me, first, by the more delicate texture of the whole polypidom; secondly, by the smaller size and oval shape of the cells. In *Valkeria imbricata* the cells are cylindrical; the clusters of cells in it, too, are more nearly approximated, and the number of cells in each cluster is more numerous than in *V. cuscuta*.

Abundant, Sandy-cove, near Dublin.

[To be continued.]

XXXIV.—*List of Phanerogamous Plants, together with the Cryptogamic Orders Filices, Equisetaceæ, and Lycopodiaceæ, observed in the Shetland Islands.* By THOMAS EDMONDSTON, Jun., Esq.

MONANDRIA MONOGYNIA.

1. *Hippuris vulgaris*. Deep muddy streams. Common.
2. *Salicornia herbacea*. Salt marshes. Frequent.

MONANDRIA DIGYNIA.

3. *Callitriche verna*. Pools and marshes. Common.

DIANDRIA MONOGYNIA.

4. *Veronica officinalis*. Not very common. Chiefly in dry stony places.—Var. β . *rigida*. Common in all waste grounds: stem erect; very rigid leaves, not serrated; all the plant glabrous; capsule very distinctly winged.
 ——— *montana*. Rare. Ollaberry; Northmavin.
 ——— *Beccabunga*. Rare. Near Tingwall.
 ——— *Anagallis*. Rare. Brook near Laxfirth Mainland.
5. *Pinguicula vulgaris*. Uncultivated grounds. Everywhere abundant.

DIANDRIA DIGYNIA.

6. *Anthoxanthum odoratum*. Common.

TRIANDRIA MONOGYNIA.

7. *Iris Pseudacorus*. Common in all damp places.
8. *Schænus nigricans*. Damp heaths. Abundant.
 ——— *albus*. Marshy places. Rare. Moola Unst.
9. *Scirpus cæspitosus*. Heaths. Very abundant.
 ——— *lacustris*. Rare. Loch of Lund, Unst: probably not indigenous.
 ——— *palustris*. Salt marshes chiefly. Common.
10. *Eriophorum vaginatum*. On the more elevated heaths, as Hermaness, Unst. Most common.
 ——— *polystachion*. All marshy places. Common.
11. *Nardus stricta*. Heathy grounds. Common.

TRIANDRIA DIGYNIA.

12. *Phalaris arundinacea*. Common.
13. *Phleum pratense*. On the richer grounds abundant.

membranaceous and cellular lungs without any gills for the *first* class; either gills in the early part of life, then cellular lungs in their adult state, or gills or some branchial apparatus, coexisting with cellular lungs through the whole of life, for the *second*; and gills only, without lungs, for the *third* class.

Norton House, Stockton-on-Tees, April 10th, 1841.

[NOTE.—Mr. Owen nowhere assumes that the nose, as an absolute zoological character, is equal in importance to the lungs; but believing, with other Comparative Anatomists, that the air-bladder of the fish is essentially a lung, and being able to trace its assumption of the true pulmonary structure within the undoubted limits of the class of Fishes, he is not disposed to allow the respiratory organ to be so important, in relation to the classification of the *Lepidosiren*, as the nasal organ, which manifests no essential alteration of structure in the class of Fishes; but exhibits, throughout that class, a marked distinction from the structure of the nose in Reptiles. Mr. Owen's arguments for the essentially ichthyic character of the *Lepidosiren* are based upon the cumulative evidence of its dermal, dental, osseous, digestive, sensitive and generative systems, rather than on any single and arbitrarily chosen character.—See his 'Concluding Observations,' Linn. Trans., vol. xviii. p. 350; also the Proceedings of the Microscopical Society at p. 211 of our present volume, containing Mr. Owen's examination of the structure of the teeth, which he finds to be altogether such as is peculiar to Fish. The new naming of the genus we cannot approve.—ED.]

XXXIX.—*Supplement to a Catalogue of Irish Zoophytes.* By ARTHUR HILL HASSALL, Esq. Read before the Natural History Society of Dublin, November 6th, 1840.

[Concluded from p. 287.]

Valkeria imbricata. "Cells in dense clusters, irregularly scattered on the polypidom," cylindrical. Plate VIII. fig. 2.

I have added to the usual definition of this species the word cylindrical, as the form of the cells is the most important practical point of distinction between it and the preceding species. *Valkeria imbricata*, in the first stage of its formation, consists of a single layer of cells spread over the surface to which it is attached (usually *Fucus vesiculosus*), and not rising from it in the form of an independent polypidom. In this stage of its growth it constitutes the *Bowerbankia densa* cf Dr. Farre. This fact I have ascertained from a comparison of Dr. Farre's figure and description of that species with it, and its concurrence with these is so close as not to admit of a doubt upon the subject. *Bowerbankia densa* is, therefore, not a distinct species, but merely a condition of the well-known one, *Valkeria imbricata*. Although the examination of numerous specimens of *V. imbricata* which I have made has resulted in the eradication of *B. densa* as a distinct species, I yet must not omit to notice the admirable memoir published in the 'Philosophical Transactions,' upon this and an allied species by Dr. Farre, the gentleman by whom *Bowerbankia densa* was first described and figured as a di-

distinct species, and to whom we are indebted for almost all we know of the anatomy of the Ascidian type of zoophytes.

Some time since, I forwarded to Dr. Johnston specimens under the name of *Bowerbankia densa* for examination: one of them was in fact *Valkeria imbricata* in the primary stage of its growth, that is, spreading over a plain surface; the other was elevated in the form of a distinct polypidom, the condition in which *V. imbricata* is usually met with. I remarked on these specimens somewhat to the following effect, not at the time recognising them as belonging to the species *Valkeria imbricata*, that they represented the species *Bowerbankia densa*, and that it did not always confine itself to the surface of the object upon which it grew, but sometimes rose from it as a separate polypidom. Dr. Johnston remarked upon them, that they represented "the species in its perfect state." In another letter Dr. Johnston writes, "Accidentally viewing your specimens of *Bowerbankia densa*, var. *ramosa*, it at once flashed on my mind that they were *Valkeria imbricata*, which is indeed the fact. *Bowerbankia densa* and *Valkeria imbricata*, are they not states of one and the same species? Your observations will probably result in the erasure of a spurious species." I have thus Dr. Johnston's testimony in favour of the identity of *Bowerbankia densa* and *Valkeria imbricata**.

Sea Point, Dublin bay: not common.

I may here observe, that many species of zoophytes, as well as the above, spread over the surface of attachment in a single layer, prior to becoming elevated into separate and independent polypidoms. This with many species appears to be a law of their growth, and is very obvious in the Flustras.

V. pustulosa. Not common: Dublin Bay.

Langenella repens. Some weeks ago I forwarded a zoophyte to Dr. Johnston which I conceived might be *Langenella repens*. Dr. Johnston observed on the specimen sent, "This may be *Langenella repens*, but it is not so like as to make one certain; your conjecture is very probably correct, and then it throws light upon a thing which has puzzled us.....If you will turn to my figure of *Flustra membranacea*, you will find some processes or tubes figured, which, in the description, are left undecided as to their nature. These I now consider to belong to *Langenella repens*, or an allied and solitary species." Since the receipt of the letter containing the above observations, I have made a particular examination of these tubes, and have arrived at the conclusion that they are not zoophytes at all. On *Flustra membranacea* the tubes are unconnected with each other, and appear to form shut sacs, no opening being visible at either end, and certainly none is present at its free extremity. Their bases are fixed to the back of the polype cells, and each tube is filled in a recent state with a clear fluid. The use of these processes on *Flustra membranacea* appears therefore to me to be still involved in obscurity. Plate VIII. fig. 3. represents a few of the cells of the

* The cells of *Valkeria imbricata* first manifest themselves on the main stems as mere buds or protuberances, and in this stage of their formation are imperforate.

zoophyte which I thought might be *Langenella repens*. I have given a figure of it in order to avoid any error.

I have recently met with a single specimen of a species of *Bowerbankia*, or, perhaps, I should rather say, of *Valkeria*, differing both from *B. densa* and *V. imbricata*, but in some measure uniting the characters of each. The polypi have only eight tentacula, and the cells are nearly as large as those of *Bowerbankia densa*, but are of a different shape, the upper half of the cells being much narrower than the lower. See Plate VIII. fig. 4.

PEDICELLINA, Sars.

Corpora gelatinosa, nuda, pedicellata, clavata, in surculo tereti repente verticalia. Clava oblonga, compressa varie dilatabilis, supra serie tentaculorum coronata. Tentacula cylindrica cirrata. Os et anus vicina in extremitate superiore excavata.

Pedicellina echinata, pedicellis echinatis.

The above are the characters of a very curious and remarkable zoophyte, imperfectly figured and described, first by Ellis and subsequently by Lister, and of which mention is also made by Fleming under the name of *Hydra coronata*. When in Belfast a short time since, among other works which Mr. Thompson was kind enough to procure for my examination was a copy of Sars's 'Beskrivelser over Polyp.,' &c., published, I believe, in 1835; on looking over which I discovered a figure and description of this but little known species under the name of *Pedicellina*; which name, as well as Sars's generic and specific characters, I have adopted. Sars has described a second species belonging to the genus *Pedicellina*, distinguished from the former by the foot-stalk being destitute of hairs. This species I have not met with. To Ellis is due, I believe, the credit of having first noticed the species of which I am about to give a detailed account.

Before meeting with Sars's work, I had ventured to change Fleming's decidedly incorrect generic appellation of *Hydra*, and to substitute in its place that of *Cardua*, retaining the specific term. I was induced to confer this name upon it from the great resemblance which the polypes of this zoophyte bear to the heads of thistles, and this resemblance is strengthened by the presence of hairs upon their surface. A descending gullet, stomach, and ascending rectum, are distinctly visible. Just above the stomach and apparently connected with it, a yellow body may be noticed: this is in all probability a liver; it is not a gizzard, as no food was seen to pass into it, although I was able to trace its passage in its whole course along the intestinal canal. Above this yellow body a dark, ill-defined mass is seen, the nature of which I am not able to determine. The tentacula are about $\frac{1}{3}$ rd the length of the head of the polypus, and are about sixteen in number, tuberculated, and thickly ciliated, as is also the interior of the whole line of the alimentary canal. Near the junction of the stomach and ascending rectum, and contained within them, a small dark body may often be observed in active rotatory movement; the nature of the body, which has been noticed in some other zoophytes, and the cause of its motion, have not, I

believe, been fully understood: it is nothing more than fæcal matter kept in constant rotation by the action of the cilia lining the whole internal surface of the alimentary canal, and which, by their peculiar arrangement, drive it on towards the place by which it is to make its exit—thus supplying the office of proper propelling muscles. The polypi are usually non-symmetrical, one side being more bulged out than the other, but they are capable of assuming various other forms and appearances. The tentacula, too, vary much in their disposition, being sometimes directed either outwards or upwards; at others they are curved inwards, usually to a small extent, but occasionally so much so as to be entirely lost to view, being concealed by the outer tunic of the polypus. The motions of the polypi of this species are very lively and peculiar. All the Ascidian zoophytes are much more vivacious and active in their movements than the Hydroid, and this is the necessary result of their higher organization. "The stems, though commonly still, have free power of motion; and when one is disturbed it bends quickly to and fro, so as to strike one or two more; these again strike upon others, and thus for a few seconds all are in action; but they soon return to quietness, and the arms, which during the commotion had been doubled up, open again."—*Lister*.

I much regret that I was unable, from want of time, to carry my observations further on the anatomy of this species, so well adapted, both from its size and the circumstance of its being the only known naked Ascidian zoophyte, for anatomical examination. I have sent a more perfect figure than has yet been given of this species to Dr. Johnston.

On *Vesicularia spinosa*: very rare: Dublin Bay.

Crisia aculeata. Milne Edwards has figured this species, which I described in the 'Annals of Natural History' for November 1840, in the 'Annales des Sciences Naturelles' for April 1838, under the name of *La Crisie ivoire*. How Milne Edwards could have confounded this somewhat rare species with the common one *C. eburnea*, I am at a loss to conceive. Upon this latter species in no case have I ever met with spines; and had they ever existed, traces of them would have been visible on the sides of the cells, as they always are in *C. aculeata*, even when the teeth themselves have been broken off.

Rarely found on stones, east of Kingstown harbour.

Hippothoa lanceolata. See Plate VIII. fig. 5, 6, for a representation of this elegant species.

Trawled up off Bray on old valves of *Pecten communis*.

Anguinaria spatulata. On stones east of Kingstown harbour, abundant; also at the Giant's Causeway, on Fuci.

Tubulipora verrucaria, Milne Edwards. This species in its perfect state, as it occurs in Dublin Bay, resembles in outline a pentapetalous flower, being *slightly* five-lobed. This peculiarity has not, I believe, been noticed. Some time since, not knowing that it had been described, I gave it the name of *Tubulipora floriformis*, to express this peculiarity of form. To Mr. Thompson of Belfast the credit of the discovery of this as a *native* zoophyte is due, a fact of which I

was ignorant when I published a former paper on Irish zoophytes. Mr. Thompson has also been the fortunate discoverer of one or two other undescribed and beautiful species of *Tubuliporidae*.

Monkstown, Dublin Bay, on the frond of *Laminaria digitata*: not common.

T. lobulata? Polypidom six-lobed; cells irregular, united.—A. H. H. Polypidom divided into six lobes of unequal size; tubes joined, of irregular form and size. See Plate X. fig. 1, 2. Of the above *Tubulipora* I have met with but a single specimen; its appearance and development however is so different from any hitherto described, that I conceive myself justified in considering it to be a distinct species.

Cellepora ramulosa. Not common: obtained by trawling off Howth.

C. bimucronata. Cells ovate, disposed in a single layer; apertures circular, with a slight excavation below, armed on each side with a short strong process.—A. H. H. A species of *Cellepora* is described by Lamarck under the name of *Cellepora bimucronata*, and which I conceive to be identical with that defined above. Although I am inclined to consider this as a distinct species, I yet do not feel assured that it is really so; if not, it is to be regarded as *C. pumicosa* in the first stage of its formation. See Plate IX. fig. 1.

Berenicea hyalina. On the roots of *Laminaria digitata*, Bray Head: not uncommon.

Lepralia nitida. *Lepralia costata* or *thoraciformis* would not be an inappropriate name for this curious species, resembling, as each cell so accurately does, a miniature human thorax; the cross pieces representing the ribs, and the broad band into which these are inserted being analogous to a sternum. A distinct spine is frequently to be observed on each side of the lower angle of the mouth of the cell.

On stones east of Kingstown harbour: rare.

L. coccinea. On stones below low-water mark, east side of Kingstown harbour: common.

L. variolosa. On a bivalve, Sea Point: rare.

L. ciliata. "Cells ovate-globose, frosted; the aperture contracted, circular, armed with from five to seven long spines."

The lower border of the mouth of each cell is prolonged into a spout-like process, beneath which, in perfect specimens, a pointed tooth, somewhat shorter than those surrounding the aperture, is visible. See Plate IX. fig. 2.

Rather abundant on stones, shells, and fuci, Dublin Bay.

The following species of *Lepralia* have never, I believe, been described as British zoophytes; whether they are altogether new I cannot say. I have not, however, been able to identify them with certainty with any hitherto described, although I have consulted numerous works with this view; among others, Delle Chiaje's 'Anim. senza Vert. di Napoli,' in which many *Lepraliæ* are figured.

L. appensa. Cells somewhat raised anteriorly, frosted, larger above than below; aperture quadrangular, surrounded by four or five

long slender spines of nearly equal lengths; the lateral walls of each cell are prolonged into large, triangular, winged appendages, which are hollow, and communicate with the interior of the cells. See Plate IX. fig. 3. These appendages are always present.—A. H. H. The front wall of each cell rises into the mouth in the form of a strong pointed process.

L. pedilostoma. Crust spreading irregularly; walls of the cells reticulated; aperture calceoliform; margin plain, everted.—A. H. H.

The crust of this species in a recent state is always of a red colour. The cells are but little raised, and are closely approximated to each other. Their divisions and arrangement are often rendered unequal and irregular by the rough surface on which they are developed, being usually found in the crevices of rocks and on stones. See Plate IX. fig. 4.

Blackrock and Portmarnock: not uncommon. I have also found specimens of this species adhering to the bottom of an old hulk, the Olbers, in Plymouth Sound.

L. insignis. Cells raised, ventricose; aperture armed with from five to seven spines. A long spinous process rises out of the cell, low down and to one side.—A. H. H.

This singular species is readily distinguished from all others by the position of a sharp spine or tooth, which proceeds, not from near the aperture, but low down, from the side of the cell, in the wall of which a hole is visible if one of the spines be broken off. The aperture of the cells describes $\frac{3}{4}$ ths of a circle, the lower part being straight. In addition to the spines which surround the aperture, and which gradually diminish in length on each side, a short process rises from the front of the cell, just below the aperture. See Plate IX. fig. 5.

Dublin Bay.

L. cylindrica. Crust opaque; cells cylindrical; aperture circular, plain, slightly contracted: a single broad triangular tooth rises from the anterior wall of the cell just below its aperture.—A. H. H.

This species bears a considerable resemblance to *Berenicea hyalina*, from which, however, it is estranged by the opacity of the crust as well as by the presence of the tooth. There is a neck or collar joined to the aperture in *B. hyalina* not present in this. See Plate IX. fig. 6.

A single specimen on the root of *Laminaria digitata*, Dublin Bay.

L. punctata. Cells oval, not much raised; apertures subquadrangular, having the lower lip thickened and somewhat everted. On each side of the opening of the cell a small triangular process is seen, and from the upper margin of the aperture three or four short teeth arise. The walls of the cells are perforated with small holes, which give them a dotted appearance; this is an invariable character of the species. See Plate IX. fig. 7.—A. H. H.

On stones, east of Kingstown harbour.

L. linearis. Cells much depressed, radiating in lines from a centre, and increasing in size towards the edge of the crust, upper

part rounded; aperture contracted, circular, with a minute spout-like elongation below; teeth either three or four, surrounding the upper half of the aperture: on either side of the small spout-like elongation referred to, a short blunt process is visible. See Plate IX. fig. 8.—A. H. H.

On stones east of Kingstown harbour, and at the Giant's Causeway: not common.

Membranipora stellata, Thompson. A species has been described by Mr. Thompson in the 'Annals of Natural History' for April 1840, p. 101, under the name of *Flustra* or *Membranipora stellata*. This supposed species I have ascertained to be merely *Membranipora pilosa*, with the bristle abortive, on an expanded surface. I wrote to Mr. Thompson upon the subject, at the same time forwarding specimens for examination, and that gentleman's reply was confirmatory of my opinion. Mr. Thompson was, I believe, the first who described *M. pilosa* to assume the *stellate* form, and to have the cells disposed in the manner indicated in the description of *M. stellata*.

Flustra truncata.—Giant's Causeway, abundant; but not found upon the coast of Dublin.

F. avicularis. This species in a recent state is of a reddish colour, but becomes of a grayish black in drying; this change of colour in drying is, I believe, peculiar to this species, and the cause of it I am not acquainted with. I have sometimes observed the bird's-head appendages (whose motions are so very peculiar and unaccountable) described as belonging to *C. avicularia*, on this species.

I now find that this species is very abundant in Dublin Bay.

F. lineata. Not uncommon on *Patella cærulea*: Bray.

F. tuberculata. Not common: Merrion, Dublin Bay.

F. distans. Polypidom encrusting, grayish, calcareous, reticulated; cells oval; margin broad, having its inner edge slightly crenulated; two short processes are visible at each upper angle of the cells.

I am informed by Dr. Johnston that this species was discovered some years ago by Mr. Bean, but that the habitat of his specimen was unknown. It is on this account, I imagine, that no description of it has as yet been given in Dr. Johnston's 'British Zoophytes.' Dr. Johnston, in a recent letter to me, remarks, "yours is the only native specimen I have seen." From a comparison of specimens of this with *Flustra tuberculata*, I cannot help suspecting that they are in fact one and the same species. When at Belfast a short time since, I saw several fine specimens of this species in Mr. Thompson's cabinet, obtained some time since upon the coasts of Down and Antrim.

On stones east of Kingstown harbour: not common.

F. carnosa. This species, which is undoubtedly no *Flustra*, ought to be raised to a generic rank and placed in the family *Alcyoniduleæ*. Pallas asserts (I quote from memory) that the tentacula vary from 18 to 30: this assertion I am not able to verify, having constantly

found the number of tentacula in each polype to be the same, viz. 30.

Dublin Bay : abundant on *Fucus siliquosus*.

F. Hibernica. I have now ascertained that this species, which I described in my Catalogue of Irish Zoophytes published in the 'Annals' for November 1840, is not a *Flustra* but a *Lepralia*, which I have again figured and described in this paper under the head of *L. pedilostoma*. The figure given with the Catalogue represents a posterior view of the cells, the wall of each cell posteriorly being absent. The error of figuring the cells posteriorly instead of anteriorly, and the absence of the posterior wall, are thus accounted for. The specimen from which the figure was taken adhered to an *Ascidia*; this *Ascidia* grew on the under surface of a rock, in removing which, the *Lepralia*, which covered the rock before the *Ascidia*, also came away,—the *mouhths* of the cells adhering to it, and the wall still remaining attached to the rock. The detection of an error of this nature is almost as pleasing as the discovery of a new species.

Cellularia avicularia. This species I now find to be abundant in the Bay of Dublin and about the neighbouring coast.

Alcyonidium gelatinosum. Occurs in long rope-like masses, and is rarely obtained except by trawling. Rare, off Howth and Lambay.

A. hirsutum. The polypidom of this species in its young state is clavate, and not branched. As in this condition it might, possibly, be mistaken for a distinct species, I have given two figures of it, one representing it of its natural size; the other is a magnified view of it, with many of the polypi protruded. When under the microscope it presented a very beautiful appearance, some faint idea of which the drawing, Plate X. fig. 3, 4., is intended to convey.

A. parasiticum. Polypidom encrusting, spongy; cells polygonal, but irregular in size and arrangement. Polypes with sixteen tentacula.

The nature of this production, which has long been involved in obscurity, I have at last succeeded in determining. By very many it was not considered to be a zoophyte at all; I have, however, ascertained, beyond all doubt, that it is a true polypiferous production of the genus *Alcyonidium*. Dr. Johnston describes the polypidom as "entirely composed of particles of sand cemented together with mud or clay." Were this really its character, this fact alone would be sufficient to decide that it could not be a zoophyte; for the polypidoms of all true zoophytes are growths, and not artificial formations. Numerous sandy particles are certainly found in connexion with it, but not, in my opinion, incorporated with it; their presence, I believe, being confined to cells vacant by the death of the polypi. If previously dried, and then dropped into water, it immediately sinks to the bottom, and does not remain there wholly unaltered, but slowly absorbs a portion of the fluid until it has attained its original dimensions. I also believe that I have detected a few siliceous spiculæ, and certainly numerous siliceous granules,

which are to be distinguished from the particles of sand by their much smaller size. In a recent state a membrane is attached to the edges of each cell; this rises up in a globular form, and bears a near resemblance to the papillæ on *A. hirsutum*. The polypi correspond so closely with those of the other species of *Alcyonidium*, that I have thought it superfluous to give a separate figure of it, having the same number of tentacula, viz. 16.

Encrusting various flexible corallines, Dublin Bay: common.

A. echinatum. It is not a little remarkable, that the polypi of this common species should have remained hitherto undescribed. I was lately so fortunate as to meet with some specimens in which I had an opportunity of examining the animals in a living condition. The result of this examination proves, that it is not only not allied to the family with which it has up to this time been classed, but that it is a true Hydra zoophyte, related closely to *Coryne squamata*, between which and *Hermia glandulosa* it forms a new and distinct genus. This new genus it was my wish to have dedicated to Dr. Johnston, the author of the work on British Zoophytes, in acknowledgment of the valuable services rendered by that gentleman to this interesting department of natural science. In this desire I have, however, been disappointed, from the circumstance of a genus in botany having been dedicated to Dr. Johnston, the editor of Girard's 'Herbal.'

The generic name which I have adopted was suggested to me by my friend G. J. Allman, Esq.

The following are the characters of the genus

ECHINOCHORIUM, *Hassall*.

Polypidom encrusting; surface raised into numerous rough papillæ; polypi hydroid, naked, pedicellated.—A. H. H.

Echinochorium clavigerum. Polypidom muricated with rough spinous papillæ about a line in height. Polypi more or less clavate, not retractile within cells; tentacula claviform, about $\frac{1}{3}$ rd the length of the body, retractile.

There are numerous indentations on the surface of the polypidom, in each of which the base of a polype is inserted; this latter is about $\frac{1}{4}$ th of an inch in height and is of a white colour; its head is somewhat enlarged, and is surrounded with numerous contractile club-shaped tentacula; the number of these varies considerably, but frequently amounts to between twenty and thirty. The tentacula are not arranged in any determinate order, as they always are in the Ascidian type of zoophytes, but are variously disposed. This observation applies to all Hydroid zoophytes. Whether the polypes are separate or united at their bases, I am unable to say. See Plate X. fig. 5., which is a magnified representation of this genus and species. This species does, I believe, possess a stomach, which in one of the polypi in the figure is seen to be everted. Fig. 5, b.

Dublin Bay and Portmarnock: common.

A marked correspondence exists between the natural history of the coast of Antrim and the opposed shore of Scot-

land; and the relation is particularly obvious in the distribution of zoophytes, three species of which, common in the North of England and on the Scottish shore, being also present on it, and not, I believe, found upon any other part of the coast of Ireland. Thus *Thoa muricata* (never before recorded as Irish), *Sertularia flicula* and *Flustra truncata*, all more or less extensively distributed upon the English and Scotch coasts, are occasionally met with on the Antrim coast, in the neighbourhood of that wonder of the world, the Giant's Causeway. Ireland, therefore, it may fairly be inferred, is indebted to Scotland for the presence of at least three species of zoophytes, and probably for some others. I think I may venture to predict that *Thuiaria thuja* will eventually be found on the coast of Antrim. I now find that only one species of *Plumularia* is wanting in the Bay of Dublin, and that is *P. pennatula*.

To the title of my Catalogue an objection has been raised by Mr. Thompson of Belfast, on the ground that it does not embrace the whole coast of Ireland, but is confined to a particular portion of it. The justice of this observation, as originally applied to that portion of the Catalogue which has already been published, I willingly admit. It should rather have been entitled a 'Catalogue of the Zoophytes of Dublin and its vicinity;' this title, however, would not be equally applicable to the continuation of the Catalogue, as to some species I have given a second locality.

I wish it to be distinctly understood, that the Catalogue which has been already published, as well as this Supplement, contain only the results of my own personal observation and research. I have, therefore, not deemed it necessary to advert to the writings of other Irish naturalists on this branch of natural history, not having had occasion to refer to them. I may, however, mention, that a catalogue of Irish zoophytes was published by Mr. Templeton, of Belfast, some years ago; that many of Ellis's specimens were obtained on the Irish coast; and that a list of unrecorded species was published by Mr. Thompson in the 'Annals of Natural History' for June 1840, at which time my Catalogue was with Mr. Taylor, the editor, for publication. I must not omit to notice also, that many rare species of zoophytes were procured by Mr. R. Ball and Miss Ball of Dublin, at Youghal, county of Cork.

I have now brought the enumeration and description of the species to a conclusion. During the compilation of this Supplement I have had occasion to make various references to Dr. Johnston, who has always promptly and kindly favoured

me with his opinion, and to whom, therefore, my most sincere thanks are due.

For the beautiful drawings which accompany this communication, some of which I have had the pleasure of exhibiting to the Society, I am indebted to the skill and perseverance of a lady, whose name I would most willingly mention were I authorized to do so.

Having brought this paper to a termination, it now only remains for me, in the first place, to thank the Society for the attention with which it has listened to me, and to hope that any errors of detail which may have been noticed will be excused, when the time occupied, less than two months, not merely in the preparation of the manuscript and drawings, but also in obtaining the materials for it, is taken into consideration; and secondly, to beg its acceptance of a collection of Irish zoophytes, a portion only of which is now upon the table.

In taking my leave for the present, I cannot refrain from the expression of my most cordial wishes that the affairs of this Society may "go on and prosper," conferring, as it must necessarily do, moral and intellectual benefit, not merely on the members composing it, but, through them, upon the country at large. I shall at all times feel great pleasure in contributing my mite towards the promotion of its objects. With this paper terminate, I regret to say, my labours in this interesting, and as yet not fully explored, field of natural history. In a few days I shall be called upon to quit the beautiful ocean,—beautiful in its strength, its purity, its freshness, its majesty, and in its infinity; beautiful in calm and storm; and its still more beautiful and ever-varying productions, in the study and contemplation of which I so much delight.

EXPLANATION OF THE PLATES.

- PLATE VI. Fig. 1. A magnified representation of *Corynè squamata*. Fig. 2. *Hermia glandulosa*, a single polype, magnified, exhibiting the reproductive gemmules. Fig. 3. *Sertularia Margarita*, nat. size. Fig. 4. Do., magnified. Fig. 5. *Sertularia pumila*, magnified.
- PLATE VII. Fig. 1, 2. *Thuaria articulata*.
- PLATE VIII. Fig. 1. *Plumularia frutescens*, natural size. Fig. 2. *Valkeria imbricata*, natural size. Fig. 3. *Langenella repens?* magnified. Fig. 4. New species of *Valkeria*. Fig. 5, 6. *Hippothoa lanceolata*.
- PLATE IX. Fig. 1. *Cellepora bimucronata*. Fig. 2. *Lepralia ciliata*. Fig. 3. *L. appensa*. Fig. 4. *L. pedilostoma*. Fig. 5. *L. insignis*. Fig. 6. *L. cylindrica*. Fig. 7. *L. punctata*. Fig. 8. *L. linearis*: all magnified.
- PLATE X. Fig. 1. *Tubulipora lobulata*, natural size. Fig. 2. The same magnified. Fig. 3. *Alcyonidium hirsutum*, in its young state. Fig. 4. The same magnified. Fig. 5. *Echinochorium clavigerum*: a, one of the polypes with its feelers retracted; b, one with the stomach everted.