

ZOOPHYTOLOGY.

For the interesting additions to the Zoophytological Fauna of Madeira, contained in the following list, we have been indebted to Mr. J. Yates Johnson, so well known as an assiduous cultivator of the natural history of that island, and more especially of its marine productions. It is needless to insist upon the importance of contributions from such a locality towards a more complete knowledge than we as yet possess of the geographical disposition of species; but the consideration simply of such a short list as the present suffices to indicate that, so far as its Zoophytology is concerned, Madeira forms a connecting link between the Mediterranean, on the one hand, and with the Western and Eastern shores of Africa and of South America respectively, on the other; connected with the latter, perhaps, through the intervention of the Gulf-weed.

The number of species comprised in the collection is about twenty-four, of which twenty belong to the Polyzoa, and four to the class of Sertularian Hydrozoa.

The Polyzoa are arranged in the following families, with the characters given in the 'B. M. Cat.:'

1. Scrupariadæ.
2. Salicornariadæ.
3. Bicellariadæ.
4. Membraniporidæ.
5. Celleporidæ.
6. Selenariadæ.
7. Idmoneadæ.
8. Crisiadæ.

Class. POLYZOA.

1. Sub-order. CHELOSTOMATA.

1. Fam. SCRUPARIADÆ, Gray.

1. Gen. *Eucratea*, Lanx.

Unicellaria, Blainville.

1. *E. Lefontii*, Andouin, 'Expl.,' p. 242; Savigny, 'Egypt,' pl. xiii, fig. 2.

This beautiful and very remarkable species belongs to the Mediterranean Fauna, occurring on the coast of Syria. It

probably deserves to be raised to the rank of a distinct generic type, in which case the name of Eucratea (Aud.) might be retained for it and the *E. Cordieri* of the same author.

2. Fam. SALICORNARIADÆ, Busk ('B. M. C.,' p. 15).

2. Gen. *Nellia*, Busk ('B. M. C.,' p. 18).

1. *N. Johnsoni*, n. sp. Pl. XIX, fig. 2.

Front of cell pyriform, pointed at bottom; margin raised, thick, smooth.
Mouth semi-orbicular, lower lip straight. Ovicell (?).

Hab. Madeira, Johnson.

Two small fragments only occur of this apparently distinct form. The natural size is shown in the plate.

3. Fam. BICELLARIADÆ, Busk ('B. M. C.,' p. 41).

3. Gen. *Bugula*, Oken.

1. *B. gracilis*, n. sp. Pl. XIX, fig. 1.

Cells biserial, elongated, of nearly uniform width throughout; a short spine on each angle of the aperture. Aperture not extending below the middle of the cell. Avicularia capitate, blunt (?), of uniform size.

Hab. Madeira, Johnson.

Although, in the character of the cell, this species approaches in some respects near to *B. plumosa*, and in the number of spines to *B. turbinata* (Alder), the comparative shortness of the aperture and, above all, the extremely different habit, so far as that can be judged of from the small specimen seen by us, appear to afford sufficient grounds for its being regarded as distinct from either.

3. *B. flabellata*? Thompson.

a. var. *biseriata* s. *Ditrupæ*.

Although we have named the form as above, it will probably have to be regarded as a distinct species. Its habitat is very peculiar, and as in the very numerous specimens shown to us by Mr. Johnson, the most remarkable uniformity was exhibited, both in this respect, and in general size and habit, and no indication whatever existed of a nearer approach to the usual form of *B. flabellata*, this supposition is rendered the more probable. The *Bugula* always grows in a small tuft, about half an inch in height, and consisting of three to four narrow branches, close to the mouth of a species of *Ditrupa* (*D. acuminata*). It might on this account, perhaps, be denominated *B. Ditrupæ*. A figure and fuller description of it will be given in a future number of the 'Journal.'

4. Fam. MEMBRANIPORIDÆ, Busk ('B. M. C.,' p. 55).

4. Gen. *Membranipora*, Blainville.

1. *M. tuberculata*, Bosc. Pl. XVIII, fig. 4.

Cells oval; margin granular; aperture partially filled in all round by an irregular jagged calcareous expansion; two to four blunt spines or tubercles above the cell, often united into a single bifid knob.

Hab. Madeira, Johnson; Rio de Janeiro, McGillivray; Gulf-weed *ubique*; on fuci.

Flustra tuberculata, Bosc, 'Vers.,' 2d ed., t. iii, p. 143 (*ex. syn.*)

Flustra membranacea, Esper, 'Flustra,' pl. v.

This very abundant and extensively spread species we had formerly confounded with *M. membranacea* ('B. M. Cat.,' p. 56, pl. lxviii, fig. 2), with which, on superficial inspection, we regarded it as identical, until our attention was directed to it by Mr. Alder, who was inclined to consider it as distinct from that well-known form. We are inclined to regard this opinion as correct. The way in which it covers the air-vesicles of *Fucus natans* with its beautiful calcareous network, and spreads over the surface of other Fuci, closely resembling the habit of *M. membranacea*, taken with the circumstance of each cell being crowned with two short tubercular spines, on a cursory glance naturally induced the supposition that the two forms were identical. They differ, however, in several important particulars. *M. tuberculata* appears to be far more calcareous than *M. membranacea*. The front of the cell is not oblong and angular, as is usually the case in the other species. The margin in *M. membranacea* is thin and smooth, and the area is not encroached upon by a calcareous expansion. The spines, also, as Mr. Alder points out, in *M. membranacea* are usually, in part at least, flexible or corneous (though this is not always the case), whilst in *M. tuberculata* they appear to be invariably calcareous, short, thick, and blunt; and in the older cells usually united, so as to form a transversely elongated tubercle, thicker and more elevated at the sides. The form appears to be confined to the South Atlantic, and it is very generally met with on the Gulf-weed. With respect to the appellation, it seems quite clear that this is the form intended by Bosc under the name of *Flustra tuberculata*, and there is no reason, therefore, that his designation should not be retained. Esper's plate (we have not been able to refer to the text) is a very good representation of the species as it occurs on *Fucus natans*.

Our figure gives a bad idea of the *M. tuberculata*, and a better will be given in a subsequent number.

2. *M. trichophora*, n. sp. Pl. XVIII, fig. 2.

Front of cell oval, expanded below and contracted above; margin smooth

or very faintly granular; no calcareous expansion; one or two very long, slender, hair-like marginal spines on either side of the upper part of the cell. Ovicell small, immersed?

Hab. Madeira, Johnson (on shell).

The only form with which this can be confounded is *M. Flemingii*, Busk ('B. M. Cat.', p. 58, pl. lxi, fig. 2, and pl. lxxxiv, figs. 4—6), but from which it is clearly distinguished by the characters above given, and especially by the absence of any calcareous expansion, and the extraordinary length and slenderness of the hair-like spines.

3. *M.* , n. sp.

A figure and description of this species will be given hereafter.

5. Gen. *Lepralia*, Johnson.

1. *L. distoma*, n. sp. Pl. XVIII, fig. 1.

Cells pyriform, attenuated below. Mouth semi-orbicular, with a straight lower lip, separated only by a narrow bar from an avicularium, the opening of which is nearly as large as the mouth, the two openings being encircled by a raised border common to both. A depressed space on the front of the cell, the bottom of which is perforated with six or seven pores. A row of distant pores around the border of the cell.

Hab. Madeira (on fucus?), Johnson.

From the form of the small fragments in our possession they would seem to be growing all round the slender branches of a fucus, but the species may turn out to belong to the ligulate *Escharæ*.

2. *L. vulgaris*, Moll. Pl. XVIII, fig. 3.

Cells oval, convex; surface subgranular. Mouth semi-orbicular, lower lip straight, with a median notch. Three or four superior marginal spines. Ovicell small rounded. A slender vibraculum on each side of the cell about the middle.

Hab. Madeira, Johnson; Mediterranean, Moll.

Eschara vulgaris, Moll., 'Eschara,' p. 55, pl. iii, fig. 10.

Escharina vulgaris, Lamarek, 'H. n. d. s. V.,' 2d ed., t. ii, p. 231 (*ex syn. E. Dutertrei*).

Cellepora vulgaris, Lamx., 'Hist.,' p. 94.

From Moll's account, and the name he has given to this species, it would seem to be very common in the Mediterranean.

3. *L.* ? n. sp.

This species will be afterwards described and figured.

4. *L.* , n. sp. ? resembling *L. ventricosa*.

This species will be afterwards described and figured.

5. *L. sceletos*, n. sp.

This species will be afterwards described and figured.

6. *L. radiata*, Moll.

Cells sub-oval, marked in front with radiating lines of pores, in a circumscribed, nearly circular, raised space, usually not occupying the entire front of the cell. Mouth semi-orbicular. Four to six marginal spines. Numerous long intercellular blunt avicularia scattered over the polyzoary.

Hab. Madeira (on shell?), Johnson; Mediterranean, Moll; *Eschara radiata*, Moll, 'Eschara,' p. 63, pl. iv, fig. 17.

It does not seem quite clear whether this species should be referred to *Lepralia* or *Eschara*, inasmuch as in one of the small specimens brought under our notice, it seemed as if the growth sometimes rose up in an independent frond from the surface upon which the rest of the polyzoary was spread. We have followed Moll, however, in regarding it, at any rate provisionally, as a *Lepralia*. He states that this very elegant species covers other zoophytes and shells with a single layer of cells. The cells, as he observes, are much crowded, and consequently not unfrequently deformed and irregular in their disposition. He describes the radiating line of puncta as constituted of granules, but they are clearly rows of minute pores. His description of the avicularia is very good.

5. Fam. CELLEPORIDÆ, Busk ('B. M. C.,' p. 85).

6. Gen. *Cellepora*, O. Fabricius.1. *C. Hassallii* (?), Johnst.

This name is only given provisionally, though it will probably prove to be correctly applied. A figure and description of the form will be given hereafter.

2. *C. ramulosa*, Linn.

6. Fam. SELENARIADÆ, Busk ('B. M. C.,' p. 97).

7. Gen. *Cupularia*, Lamx.1. *C. Loweii*, Busk ('B. M. C.,' p. 99, pl. cxvi).2. *C.* , n. sp. ?3. *C.* , n. sp. ?

Figures and descriptions of these two apparently new species of *Cupularia* will be given hereafter.

2. Sub-order. CYCLOSTOMATA.

1. Fam. IDMONEADÆ, Busk.

1. Gen. *Idmonea*, Lamx.1. *I. Atlantica*, E. Forbes. Pl. XVIII, fig. 5.

Except, perhaps, in its comparatively greater size and more robust habit, this form does not appear to differ in any material respect from that which occurs in the Northern

seas. (*Vid.* 'Annals Nat. Hist.,' 2d ser., vol. xviii., p. 34, pl. i., fig. 6.)

2. Fam. CRISIADÆ.

Two species of Crisia, one of which appears to correspond with *C. dentata* in a dwarf state, and the other to be as yet undescribed, will be figured and described in a subsequent number.

HYDROZOA.

Fam. SERTULARIADÆ.

1. Gen. *Sertularia*, Linn.1. *S. disticha*, Bosc.

Hab. Madeira (on fucus), Johnson.

S. disticha, Bosc., 'Vers,' 2d ed., t. iii., p. 121, pl. xxii, fig. 2; Lamarck, 'Hist. d. An. s. V.,' p. 154.

Dynamena disticha, Audouin, 'Expl.,' I, p. 244; Savigny, 'Egypt,' pl. xiv, fig. 2; Lamouroux, 'Hist. d. Cor. flex.,' p. 181; Blainville, 'Act.,' p. 484.

Dynamena distans, Bosc, op. cit., p. 121; Audouin, 'Expl.,' p. 243; Savigny, 'Egypt,' pl. xiv, fig. 1.

There appears to be no sufficient reason, from anything which appears in the excellent figures of Savigny, why *D. disticha* and *distans* should be separated. They both occur on the Gulf-weed.

2. *S. polyzonias*, Linn. (in part). (Ellis, 'Corallines,' pl. ii, fig. 3.; *S. Ellisii*, M. Edw. in Lamarck's 'Hist. d. An. s. V.,' 2d ed., t. iii, p. 142.)

We are indebted to Mr. Alder for the distinction from *S. polyzonias* (Linn. et Auct.) of a species having only three denticles or angles on the mouth of the cell, in place of four which may almost always be distinguished in *S. polyzonias*. This species, under the name of *S. tricuspidata*, is described and figured in his Catalogue of Zooph. of Northumb. and Durham' (p. 21, pl. ii, figs. 1, 2). An additional character, however, might perhaps be appended to those there given as distinguishing *S. tricuspidata* from *S. polyzonias*, the absence, viz., of four denticles from the mouth of the ovicell, both male and female, which always exist in *S. polyzonias*.

Besides this, however, there seems reason to believe, notwithstanding Dr. Johnston's weighty authority on the other side, that M. Edwards was right in suggesting that *S. polyzonias* should be divided into two species, also distinguished by the presence and absence of the denticles at the mouth of the ovicell. In the form for which he proposes the name *S. Ellisii*, the ovicell is clearly represented by Ellis

(fig. B,) as it is in nature, with four denticles, whilst in that marked A in the same plate, the ovicell is represented very like that of *S. tricuspidata*. In the ventricose form of the cells, however, Ellis's fig. A differs so widely from Mr. Alder's *S. tricuspidata*, that it cannot be referred to that species; so that it is not improbable a third species, for which M. Edwards would retain the term *S. polyzonias*, may be included in the Linnæan species.

The differences in the mouth of the ovicell do not depend upon sex, for although a considerable difference may be perceived between the small white male cell and the larger yellow female capsule, in *S. polyzonias*, the mouth has the same conformation in both.

2. Gen. *Cryptolaria*, Busk (Micros. Journ., Vol. V, p. 173).

1. *C. exserta*, n. sp. Pl. XIX, fig. 3.

Mouth of cells exserted. Polypidom pinnate or bipinnate; branches straight, rigid. Ovicell ?

Hab. Madeira, Johnson.

This appears to constitute a second species of the genus *Cryptolaria*, the other belonging to New Zealand, and in which the mouth of the cell is completely immersed.

3. *Plumularia*.

A new species, belonging to the *P. pinnata*-group, will be described subsequently.