

Observations on the Marine Flora of Somerset.

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IN examining the chief characteristics of the Marine Flora of Somerset, I shall at first enumerate those kinds which are indigenous on the coast, commencing with the Melanosperms or olive-green division of the Algæ. We find four species of Fuci growing luxuriantly throughout the district, viz. :—*Fucus vesiculosus*, *F. serratus*, *F. nodosus*, and *F. canaliculatus*. Not so many examples of the Laminariaceæ, nor of the Sporochnus, Dictyota and Chordaria tribes. In the Ectocarpaceæ, we have *Cladostephus spongiosus*, growing occasionally on stones near low-water mark below Minehead Pier,—and the beaded or moniliform fruited variety of *Ectocarpus littoralis*, I find on wood-work near high-water mark at Minehead. This is the kind described in the first and second editions of "Harvey's Manual of the British Algæ," but is not that figured in the "Phycologia," t. 198. This last has oblong striated fruit, and appears to vegetate at a greater depth than the former. Professor Walker Arnott observes, that

in my Minehead plants the ordinary cells are slightly constricted at the dissepiments, a peculiarity which he had not before remarked, and proving to him that *Cladophora Gattayæ*, figured at t. 355, b. of the "Phycologia," is an *Ectocarpus*, and he believes this very plant in a young state. *Ectocarpus tomentosus* has the same habitat as *E. littoralis*, and often grows intermixed with it. By the naked eye *E. tomentosus* may be distinguished from the latter by its much finer filaments, resembling in size those of *E. siliculosus*,* but usually more intertwined and twisted together than in this plant. The fruit when viewed through the microscope is seen to be very different from that on *E. littoralis*. It consists of *obtuse* and linear oblong silicules, supported on little pedicels. In *E. siliculosus* the silicules are drawn out and very *acute* at the tips.

Proceeding to the Red Series in the first tribe (*Rhodomelaceæ*), two species of *Polysiphonia* claim our notice; the one, *P. nigrescens*, grows commonly in tide pools along the coast; and the other, *P. fastigiata*, abounds on its usual habitat, the old fronds of *Fucus nodosus*. In the next tribe (*Laurenciaceæ*), we have only *Laurencia pinnatifida*, rarely found at Minehead, but common in the pools on Bossington beach. *Corallina officinalis*, belonging to that curious tribe of algæ whose tissues are firmly encased in a coating of carbonate of lime, is extremely abundant in all pools along the shore. In the *Rhodymeniaceæ* we cannot reckon with certainty, more than *Gracilaria confervoides*,

* In salt-water ditches, near Shirehampton, Gloucestershire, Mr. Thwaites discovered a species (*Ectocarpus amphibius*, Harv.) with fruit intermediate in character between that of *E. littoralis* and *E. siliculosus*. It does not appear to have been observed in Somerset. In the salt-water ditches on the Norfolk coast it is noted as "not unfrequent." I have looked in vain for it in the tide ditches at Minehead. *E. siliculosus* I sometimes see growing with *E. littoralis*. It appears, however, in such a poor condition and so rarely that it seems hardly to deserve notice.

which is frequent in sandy pools, to the west of Minehead Pier. Several species of the Cryptonemiaceæ occur on the coast, the rarest of which is *Grateloupia filicina*, growing in pools on the Warren beach at Minehead, and I believe, with the exception of Aberystwith, this is the northernmost station that has yet been recorded for the plant. *Gelidium corneum* μ , *clavatum*, covers the rocks at Clevedon in dense patches, barely half an inch in height, and at Minehead it grows on wood work near high-water mark. *Catenella opuntia* occurs in the same habitats as this species, both at Clevedon and Minehead. I have also seen it vegetating in crevices of the large boulders, under Greenaleigh-hill, at Minehead. *Gigartina mamillosa* is found in pools on the Warren beach, at Minehead, and is frequent at Bossington. *Chondrus crispus* abounds in all the pools along the coasts, but nearly ceases to vegetate at Clevedon, where I only observed one small plant of it. *Polyides rotundus* is common, growing in pools near low-water mark, on the Warren beach, at Minehead; and *Dumontia filiformis* is likewise found there in pools nearer high-water mark, and on Bossington beach. Among the tribe of the Ceramiales, three species of the genus *Ceramium* are frequent; the common *C. rubrum* is abundant on stones and on other algæ in tide pools. I remark at Minehead a pretty slender corymbose variety of this plant, never more than four or five inches in height. When immersed in fresh water it decomposes much more rapidly than the larger and coarser forms of the species. The ramuli are much incurved, and though it cannot be considered as a distinct species from *C. rubrum*, it is so distinct and well marked in its general aspect from the many varieties of *C. rubrum* usually met with, that I have deemed it right not to pass it over unnoticed in the present paper. Its habitat, I have observed,

is almost exclusively on the fronds of *Chondus crispus*. *Ceramium flabelligerum*, I find growing in pools at Blue Anchor, and on wood-work at Minehead. Though marked as "rare" in the works of Dr. Harvey, I believe, from the number of specimens which I have received from correspondents in different localities, that it is a species generally distributed on the shores of the British Isles, but probably, from its near resemblance to *C. rubrum*, often overlooked by the collector. It may not be amiss for the guidance of such, to observe, that the colour is very like that of *Poly-siphonia fastigiata*, nor is the ramification very unlike, but the filaments are finer than in the latter; microscopically it may be known by the *unilateral* spines, which arm the outer edge of the branches. These, however, are frequently absent on Somerset specimens, only appearing near the tips of the ramuli. In such cases the *proportionate* larger size of the cellules and cylindrical articulations afford the best characters by which it may be discriminated from *C. rubrum*. The *opaque* articulations are at once sufficient to distinguish it from *C. acanthonotum*, a British species armed with a row of microscopic spines in the same manner. *Ceramium Deslongchampsii* is found in the pools at Blue Anchor, Minehead, and Bossington beach; when well grown it forms handsome tufts of a very dark purple colour, the articulations are transparent, very short in the ramuli, and not easily seen excepting in the main stems. Of the beautiful genus, *Callithamnion*, we have two examples, *C. Borreri* and *C. Rothii*, diminutive, though well fruited specimens of the former grow with the latter on the rocks at Clevedon. When mounted in Canada Balsam they form very pretty and interesting objects for the microscope. On the mud-covered rocks at Blue Anchor, *C. Borreri* grows in tufts of three or more inches in height,

Lately, however, specimens of it have been received from New Zealand. The primary fruit is contained in a raised nerve-like line, which traverses the centre of each division of the frond; and when this is present, the plant may easily be recognised. The secondary fruit, tetraspores, occur in round sori on the frond. These I first discovered on Minehead specimens; and plants with this description of fruit have not been found at Plymouth, nor does it appear an abundant species there.

On Minehead beach the young plants are to be met with in June; in the following November and December they attain their full growth. One single plant with tetraspores was obtained by the dredge in Cork Harbour, by Mr. Carroll, in 1851; and in June of last year (1853), a young plant with incipient fruit (linear) was picked up by a relative of mine, on the beach at Lynmouth, North Devon. I have no doubt that were the dredge employed, it would be found to grow in deep water off that coast, and the adjoining part of Somerset. In all, I have noted about forty species drifted ashore at different times on Minehead beach. It is not, I believe, important to give their names here, for in this notice my aim is rather to show what field the Algologist has to work on in this district, and to point out those species that may always be met with in their proper seasons, than to detail a list of kinds only occasionally met with, and not ascertained natives of the coast. My own opportunities of visiting localities between Clevedon and Minehead have been very few; but I conclude that in favorable situations, the several species growing at the former place may likewise be met with at intermediate spots.

The portion of the Bristol Channel which comes within our notice, ranges from about Portishead, on the

east, to a little below Porlock on the west. The upper and greater half of the Channel can scarcely be characterised otherwise than an æstuary, whose waters contain a great admixture of fresh water from numerous rivers, and a quantity of mud and detrital matter, brought into it by the same means; doubtless to the growth of the majority of submerged sea-plants, these conditions are peculiarly inimical, but there are some, as the beautiful *Callithamnii*, which delight in muddy situations, so also does the *Stenogramme*, which seems confined to harbours and æstuaries. *Grateloupia filicina*, *Enteromorpha compressa*, are observed to flourish better in spots where fresh water streams run over the beach, than elsewhere. After Blue Anchor, the water is much clearer, and the algæ become better colored. Bossington beach affords remarkably fine specimens of these which I have noted in this paper as growing there. Unfortunately the beach below that is of such a nature as to preclude the growth of inter-tidal vegetation, but probably if it be possible to use the dredge off that part of the coast, it may prove to be the best spot in the district for the growth of deep water algæ.
