

The species in which these branchiæ exist in the perfect state are *Pteronarcys regalis*, *P. biloba*, *P. proteus*, and also in an undescribed species brought by Mr. Doubleday from New York, and now in the same collection.

V.—*A List of Lichens gathered in different parts of Wales, principally in the neighbourhood of Barmouth, with a few casual observations upon some of the species.* By the Rev. T. SALWEY.

THE species common everywhere are omitted, unless marked by some peculiarity of growth. All the habitats, except where it is otherwise specified, are in the neighbourhood of Barmouth.

Baomyces roseus. Hill above the half-way-house between Barmouth and Dolgelley.

——— *rufus*. Walls and rocks. I have gathered this so finely developed upon decayed turf as to look like a different plant.

——— *placophyllus*. Rocks above Corwen: this habitat was first pointed out to me by Mr. Borrer; top of Snowdon, and in fruit at the top of Cader Idris, Mr. Ralfs.

——— *anomalus*. On rocks at Crafnant near Llanbedr, and above Gwastad-annos; on a rock below the Tannery, Mr. Ralfs.

Calicium. I have only met hitherto with a few of the common species of this genus in Wales.

Opegrapha saxatilis. Not uncommon on mortar and hard sandstone: on an old building at Llanaber by the side of the turnpike-road.

——— *dendritica*. On old trees at Cors-y-gedol. Two or three curious varieties of this occur upon trees at Holyland near Pembroke.

Verrucaria leucocephala. On old oaks at Wyunstay.

——— *levata*. In the stream at Cors-y-gedol and below Cwm Bychan.

——— *maura*. Upon stones on the shore at Barmouth, principally on the south side of the ferry, and on rocks upon the Mowddach.

——— *crysiboda*. Arddog.

——— *viridula*. On a rock below the Tannery, Mr. Ralfs.

——— *muralis*. On old mortar. Pont Ysgethin, Pont Fadog, &c.

Endocarpon miniatum, with its varieties: common.

——— *leptophyllum*. Llyn Bodlyn, Llyn Howel, &c.

——— *pulchellum*. Common: Ty Gwyn, &c.

——— *laete-virens*. Common on the tops of the hills.

——— *smaragdulum*. Common on walls; on the wall near the third milestone on Dolgelley-road, and above Aber-Artro.

——— *sinopicum*. Abundant in several places on the rocks by the side of the turnpike-road between Barmouth and Dolgelley; Bod Owen, Borthwnog, &c.

Pertusaria ceuthocarpa. Rocks and walls: above the Harlech turnpike at Barmouth.

Pertusaria crassa. Upon an old tree at Ty Gwyn; on an old ivy-tree in Cheriton churchyard, Pembrokeshire.

Thelotrema lepadinum. In great perfection upon old trees at Cors-y-gedol. It grows also upon rocks at Llyn Bodlyn, the only instance I know of its growing upon stone.

———— *melaleucum*. Upon trees at Holyland near Pembroke.

Lepraria Iolithus *. Very finely upon stones about Cors-y-gedol.

Variolaria lactea. In great perfection about Barmouth.

———— *terricola*. Cwm Bychan, Pont Fadog, &c.

Urceolaria Acharii. This usually grows upon stones occasionally submerged, as in rivulets and at the edge of lakes; but I once found a very beautiful specimen upon a wall in a very high and dry situation, so finely developed in all its parts, that I could for some time scarcely persuade myself it was not a new lichen.

Lecidea atrata. Craig Drwg: very scarce.

———— *atro-alba*. Rocks at Llyn Bodlyn.

———— *fusco-atra*. Rocks about Barmouth.

———— *cechumena*, β *athrocarpa*. Rocks behind the Union-house at Corwen.

———— *petræa*.
———— *confluens*. } Common.

———— *lapidica*. Rocks above Gwastad-annos and Llyn Bodlyn.

———— *prominula*. Rocks about Barmouth.

———— *parasema* (not *elæochroma*, with which it has been confounded). Upon beech-trees near the House at Crafnant, Cors-y-gedol, &c.

———— *sanguinaria*. Upon rocks and old gate-posts: not uncommon.

———— *viridi-atra*. Walls and rocks: an obscure and puzzling lichen.

———— *geographica*.
———— *silacea*.
———— *Æderi*.
———— *flavo-virescens*. } Common.

I once found *Æderi* in a remarkably high state of development upon a mass of stone, which, upon breaking it, was found to be principally copper ore, to which circumstance undoubtedly the alteration of the plant was owing.

———— *scabrosa*. Not uncommon, but seldom found in a good state: Aberhamfrac, &c.

———— *uliginosa*. On the road-mud thrown on the top of the wall

* I have inserted a species of the genus *Lepraria* because British authors have hitherto, as far as I am aware, agreed in retaining this genus. I should be glad however to see not only this genus, but also *Variolaria*, which is almost equally unsatisfactory, rejected altogether from an Enumeratio Lichenum. Whether Fries is right in considering them as the decaying remains of more perfect Lichens, or other authors as the commencement of Lichens which require only more favourable circumstances to become more fully developed, I will not venture to decide, though my own opinion leans to the latter view of the question. The genus *Isidium* is perhaps equally unsatisfactory and ought also to be rejected.

between Aberhamfrac and the cut through the rock by the first milestone.

Lecidea simplex. Not uncommon: Pont Fadog, &c.

—— *rivulosa*. Very common.

—— *albo-atra*. A very variable lichen.

—— *Lightfootii*. On birch-trees at Rhaidr-Dû.

—— *pulverea*. Cwm Bychan, Hendreforion, Ty Gwyn, Cae Pellaf, &c. This is decidedly different from *incana*. The apothecia are invariably black and of a bright horny substance, which swells remarkably in wet weather.

—— *incana*. In fruit at Crafnant and elsewhere.

—— *sulphurea*. Common.

—— *expallens*. In fruit upon a rock at Gelli Rhûd.

—— *coronata*. Common.

—— *pezizoides*. Woods at Crafnant.

—— *cornea*. Upon oaks at Wyunstay.

—— *ferruginea*. Common upon stones and trees: a very variable plant.

—— *icmadophila*. Very finely and in great abundance on the western slope of the Rhinog Vawr.

—— *microphylla*. In fruit at Crafnant, Hendreforion, Cae Pellaf, &c.

—— *marmorea*. Common.

—— *polytropæa*. } Not uncommon upon walls in very high situa-
—— *intricata*. } tions. I am not quite satisfied that these are
not different states of the same plant.

—— *canescens*. Common in fruit about Llanaber, Llandewi, &c.; very finely so in the lane leading down from Llandewi church to the sands.

—— *lucida*. Common, but rare in fruit.

—— *macula*. Common about Barmouth.

—— *fuliginosa*. Not uncommon: very fine above Gelli Rhûd.

—— *geomæa*. Llyn Howel: very scarce.

—— *coniops*. Aber-Ty-Gwyn.

—— *stellulata*. On stones on the shore at Barmouth, and upon a wall inside the sand-banks.

—— *Salweii*. Common on the hills about Barmouth, but rare in fruit: in fruit at Gelli Rhûd, Drws-y-nant, and on the Breiddin hills, Montgomeryshire.

Lecanora exigua. Aber-Ty-Gwyn.

—— *coarctata*. A lichen, which my friend Mr. Borrer has referred to this, grows upon a rock below the Harlech turnpike at Barmouth, and upon the wall between Borthwen and Aberhamfrac. The shields, which are about the size of those of *atra* or *glaucoma*, are, both in a wet and dry state, of a pale diluted red without any border. In wet weather they attract the eye at some distance. I should be inclined to consider this plant at least, if not the normal state of *coarctata*, as a *Lecidea*. It is so remarkably unlike any other state of *coarctata*, that, familiar as I am with the Protæan character of many of the Lichens, I confess that I can scarcely

persuade myself that the plant in question is the *Lecanora coarctata* of 'Eng. Bot.'

Lecanora squamulosa. Walls about Barmouth : not common.

—— *glaucoma*. Common : an extremely variable lichen.

—— *thelostoma*. Llyn Bodlyn.

—— *ventosa*. Common.

—— *Hæmatomma*. Common. A singular variety of this lichen grows upon the rocks above Barmouth ; the shields are raised upon podetia-like elevations of the crust, giving the plant the appearance of a minute *Scyphophorus*.

—— *Turneri*. On trees at Hendreforion, &c. Perhaps not distinct from *tartarea*.

—— *atro-rufa*. On the top of Rhinog Fâch.

—— *muscorum*. Dolwraiggiog, Rhinog Fâch, &c.

—— *elegans*. Aber-Ty-Gwyn, &c.

—— *fulgens*. On rocks at Lydstep and Stackpole Court, in Pembrokeshire.

—— *albo-flavida*. Common, but barren, on rocks about Barmouth.

—— *gelida*. Common, but not with apothecia.

Parmelia globulifera. In great perfection in the woods, particularly about Cors-y-gedol.

—— *caperata*. Ditto, but not common in fruit.

—— *conspersa*. Common.

—— *scortea*. Scarce about Barmouth ; Cader Idris, Mr. Ralfs ; upon trees in the grounds at Holyland near Pembroke.

—— *Borreri*. Not common : in fruit near Cors-y-gedol ; frequent in Pembrokeshire, but barren.

—— *saxatilis*.
—— *omphalodes*. } Very common.

—— *proboscidea*. Common upon old walls about Barmouth, but rarely met with in fruit. I have gathered however very fine specimens in that state at Gelli Rhûd, Drwys-y-nant, and upon the walls of the turnpike-road between Dolgelley and Friog.

—— *perlata*. Common, but rare in fruit. Beautiful specimens in that state are however occasionally met with.

—— *lævigata*. Rare in fruit.

—— *sulcata*. Not uncommon.

—— *reticulata*. On trees at Nannau, first discovered there by Mr. Ralfs.

—— *herbacea*. Grows very finely in the avenue at Cors-y-gedol.

—— *erosa*. On walls and old buildings about Barmouth ; in fruit on an old building at Llanaber : first pointed out to me there as distinct from *stellaris* by my friend the Rev. John Gisborne of Derbyshire.

—— *lanuginosa*. Common, but always barren.

—— *Clementi*. On an old stone building at Llanaber, discovered there by Mr. Borrer.

—— *casia*.
—— *affinis*. } Common.

—— *conoplea*. Not uncommon. From long acquaintance with

- this plant, I am inclined to think with Acharius that it is distinct from *affinis*, though not allowed to be so by British authors.
- Parmelia speciosa*. On stones at Llyn Bodlyn : first discovered in the neighbourhood of Barmouth by my friend Mr. Ralfs, who found one or two specimens on the rocks above the town.
- *incurva*. Not very common : lane between Glan Mowddach and Bodowen, Moelfre, &c.
- *Fahlunensis*. Rocks above Llyn Cae on Cader Idris, pointed out to me by Mr. Ralfs.
- *aquila*. Common on the rocks near the sea.
- *plumbea*. Common on trees and rocks. A singular variety of this plant (the γ *plumbea* of Taylor) grows upon the North Rocks at Tenby, where it hangs in large loose thin masses, slightly attached only here and there at the edges.
- *aleurites*. A variety of this plant, having the same relation to its normal state that the var. γ *plumbea* has to the normal state of that species, is found upon an isolated mass of rock in the meadow above Dolwraiggiog leading up to Cwm Bychan.
- *ambigua*. In fruit in the woods at Crafnant, also in that state upon pales in the park at Powis Castle in Montgomeryshire.
- *sinuosa*. Upon stones in the higher hills about Barmouth, but not in fruit ; on birch-trees at Rhaidr-Dû.
- *physodes*. In fruit in Cwm Bychan.
- *diatrypa*. Common, but barren. A single specimen in fruit was found by Mr. Ralfs in 1839 upon the rocks above the Tannery.
- *isidioïdes*. Upon trees at Crafnant, 1835 ; on a single tree near Tyn-y-Groes, Mr. Ralfs.
- *cartilaginea*, Swartz. On a single mass of rock in Llyn Bodlyn.
- Sticta pulmonaria*. Common. I have found this plant with all the shields quite black, both old and young. It is not uncommon in this and other species for the shields to turn black with age, but in the case alluded to the young shields were perfectly black as well as the old ones.
- *scrobiculata*. Common, but not usually in fruit.
- *limbata*. Common, but always barren.
- *fuliginosa*. Common. It is occasionally met with in fruit, as by myself upon walls and rocks in damp situations in the woods at Garth, and in similar situations at Capel-curig and Bettws-y-Coed, and by Mr. Ralfs in the lane leading up from the Towyn turnpike-road to the top of Cader Idris.
- *sylvatica*. Common, but always barren. There is a *Sticta* (allied to *sylvatica* ?) in a wood between Arddog and Ynysfaig covered with blue mealy soridiæ. It is perhaps a distinct species intermediate between *sylvatica* and *scrobiculata*.
- Collema nigrum*. Not common, being principally confined to limestone rocks.
- *cristatum*. On the wall opposite the stables at the Cors-y-gedol Arms.

Collema Burgessii. Woods about Barmouth and Dolgelley, Garth, Crafnant, &c.

——— *nigrescens*. Common, but usually barren; very finely in fruit upon trees at Stackpole Court in Pembrokeshire.

There is a large spreading foliaceous *Collema*, of a looser habit and of a dull tawny green colour, found not uncommonly in the woods in Wales, and has been gathered also by Mr. Borrer in Sussex. Dr. Taylor refers it to *nigrescens*, but it is very different from the usual state of that plant.

——— *flaccidum*. Common upon wet rocks and trees, but barren.

——— *crispum*. Common.

——— *dermatinum*. On limestone rocks at Stackpole Court, Pembrokeshire.

——— *tremelloides*. On wet rocks above the Tannery, and above the Harlech turnpike-gate at Barmouth, but not in fruit.

——— *lacerum*. In fruit at Garth Issa.

——— *myriococcum*. I have a single specimen of this plant gathered on the limestone rocks at Lydstep in Pembrokeshire.

——— *velutinum*, Ach. Occasionally met with on trees. Dr. Taylor refers this to *nigrum*.

——— *ceranoides*. Rocks at Tenby and Lydstep, Pembrokeshire.

——— *muscicola*. Common, but not in fruit.

Solorina saccata. Clogwyn-y-Garnedd, Snowdon.

Peltidea venosa. By the side of a brook on the Glyder Vawr, Mr. Ralfs.

I consider this as distinct from *spuria*.

——— *scutata*. In fruit at Cors-y-gedol, &c.

——— *horizontalis*. Not uncommon.

——— *aphthosa*. Very finely amongst the stones by the borders of lakes, as Llyn Bodlyn, &c.

——— *spuria*. Ynysfaig.

It is stated by Hooker in the 'Eng. Fl.' that *rufescens* scarcely differs except in hue from *spuria*, whilst he says of this (*spuria*) that it appears as distinct as any. Acharius, who in his 'Lich. Un.' had made *spuria* a variety of *canina*, has in his 'Syn.' united these two. Dr. Taylor, a high authority on such points, has done the same; and I am inclined to agree with them that *spuria* is only a starved and diminutive state of *canina*; but I cannot persuade myself that *rufescens* and *canina* are the same. Dillenius (103. xxvii. p. 203, Edinb. ed. 1811) makes *rufescens* to differ from *canina*, principally in the following particulars:—

1st. In the thallus being somewhat thicker, more rigid and smaller; in being divided into narrower and deeper segments; and in the margins being inflexed, sinuated and crisp.

2ndly. In the colour, which in *rufescens* is darker, and when dry is reddish.

3rdly. In the under part of the thallus being more villous, and with blacker, shorter and more curled roots. Dillenius speaks of *rufescens* also as being more common than *canina*, which corresponds also with my own experience.

Gyrophora polyphylla. Common.

Gyrophora erosa. Hills above Barmouth; hill to the left of Bwlch-y-llan above Cell-fawr.

———— *cylindrica*. Not uncommon on the higher hills.

———— *murina*. I have a single specimen of this plant gathered (I believe upon the Glyder) in 1824, but neither I nor my friends Messrs. Borrer and Ralfs, who have since looked for it there, have been able again to find it. My plant is identical with a French specimen of Persoon's given me by Mr. Borrer, except that the French plant is not quite so coarsely granulated on the upper surface.

———— *pellita*. Hills above Barmouth; hill to the left of Bwlch-y-llan above Cell-fawr; Craig Drwg.

———— *pustulata*. Not uncommon: usually grows on flat sloping rocks which are occasionally wet.

Cetraria sepincola. Not uncommon.

———— *glauca*. Common.

Borrella ciliaris.

———— *tenella*. Grows very beautiful in many places.

———— *furfuracea*. On trees at Nannau.

———— *flavicans*. Common on the rocks above Barmouth: grows in the greatest luxuriance, clothing the stems of the trees in large patches at Llawrenny in Pembrokeshire.

Evernia prunastri. In fruit at Cae Pellaf.

Ramalina fraxinea, *fastigiata*, *scopulorum* and *farinacea*. } Common.

Usnea florida.

———— *plicata*. Grows occasionally a foot or more long in some of the woods.

———— *barbata*. Woods at Bettws-y-Coed, Carnarvonshire.

Alcetoria jubata. Common.

Cornicularia tristis. Rhinog Vawr, Rhinog Fâch, &c.

———— *aculeata*. Amongst stones on the high hills, Bwlch-y-Rhiwgur, &c.

———— *lanata*. Cader Idris.

Isidium lutescens. } On old oaks.

———— *coccodes*. }

———— *Westringii*. On walls: Gor-llwyn, Gwastad-annos, &c.

———— *microsticticum*. On walls and rocks.

———— *paradoxum*. In great beauty about Barmouth.

———— *corallinum*. Common.

Sphærophoron coralloides. } Common.

———— *compressum*. }

Stereocaulon paschale. Common.

———— *botryosum*. Llyn Howel, Llyn Bodlyn, &c.

———— *cereolus*. Cader Idris; on the wall leading up from Hendreforion to Moel Diffws; Llyn Gwernon, Mr. Ralfs.

Cenomyce vermicularis. Cader Idris.

———— *uncialis*.

———— *rangeferina*.

———— *pungens*.

———— *furcata*.

- Cenomyce cæspititia*. Not common.
 ——— *sparassa*. Common.
 ——— *alcicornis*. } I join these two together, as I confess my-
 ——— *endiviaefolia*. } self unable to distinguish them; the tufts
 of hair at the edges of the frond (the main difference depended on)
 appear to me not sufficient to keep them distinct. In a specimen
 of *alcicornis*, which I have from the *Unio Itineraria* of Strasbourg,
 and which, according to the character of the plant, *ought* to have
 marginal tufts of hairs, I can distinguish none. If the true *al-*
cicornis always has tufts of hairs, I have never gathered it. The
 plant without them, and which I suppose therefore would be called
endiviaefolia, is not common about Barmouth, though occasionally
 met with. It grows in great beauty upon the rocks at Lydstep in
 Pembroke-shire, but rare in fruit.
 ——— *cervicornis*. I never met with this in so beautiful a state
 as at Llyn Howel.
 ——— *pyxidata*. Common.
 ——— *verticillata*. Scarce: rocks to the south of Gwastad-
 annos.
 ——— *fimbriata*. Not common.
 ——— *radiata*. Rhinog Fâch.
 ——— *cornuta*.
 ——— *gracilis*.
 ——— *filiformis*.
 ——— *deformis*. Not common.
 ——— *coccifera*.
 ——— *bellidiflora*. Moel Diffws.
Pycnothelia papillaria. Scarce: Gelli Rhûd.

VI.—*Notes on Mr. Blyth's List of Birds from the vicinity of Calcutta.* By H. E. STRICKLAND, M.A.

THE 'Annals of Natural History' have seldom contained ornithological papers of greater value than that by Mr. E. Blyth in the Nos. for August and September of the present year. While observations on the habits of the commonest British birds have been published and republished till the subject is quite exhausted, we are wholly ignorant of the food, habits, nidification and anatomy of the majority of foreign species. The zoological treasures of India have been till within the last ten years most unaccountably neglected, and in many cases our knowledge on the subject was worse than none, it was incomplete and inaccurate. A better day has now dawned; British officers in India have discovered that by studying the wonders of tropical nature they may get through the day more pleasantly than by indulging in indolence, and consequently the natural history of that country will ere long be as thoroughly investigated as that of the British Isles.

The appointment of a well-qualified zoologist like Mr. Blyth,



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