

Sketches of Irish Natural History

Fourth Visit to Ireland

[1856.]

LEAVING London on December 3rd, he proceeded at once to Ireland to spend the winter at Castle Taylor. Hard work was laid aside for rest and sport ; and most refreshing was the change, after a foggy November beside the Thames, to the free and bracing atmosphere of the Atlantic. Tired of ink and paper he entered scarcely anything in the accustomed note-book not even recording the Wheatear (mentioned three years later in the “ Zoologist”) which surprised him on the Royal Canal, as he travelled from Dublin to Galway, on December 4th. His few notes tell little more than that he stayed at Castle Taylor the winter through, and saw the flight of the early Brimstone Butterfly (a rarity in Ireland) over the familiar ground of Kilmacduagh, on the 1st of March, 1856.

In January, however, he wrote from Castle Taylor a long letter to Mr. E. Newton :

CASTLE TAYLOR, ARDRAHAN.

January 10th, 1856.

MY DEAR NEWTON, A meek reply on all I can venture on, when you have treated me so much better than I deserved. Certainly I am angry, too, but my ire is kindled against that Dr. ——who not only embezzled your letter, whereby I am sure I lost a lot of interesting news, but who ventured to keep it so long when he well knew 'twas not for him

I feel somewhat ashamed, too, that I did not write to you before this, especially as I found so much scientific amusement in London ; but I trust you will make some allowance for a press of occupation while in town, and a constant devotion to the gun since I have been in this house. By this I don't mean that the sport is very first rate this year, for I am very much disappointed to find the Snipes much scarcer this winter than they used to be during the three *summers* which I have spent in Ireland. In places where ten brace were to be bagged without difficulty in winter you may now see only two or three birds ; and the most curious part of the affair is that the Jack Snipes are more numerous of the two. In these parts the scarcity is generally attributed to the great frost of last winter, which is said to have all but exterminated them, and harrowing stories are told of sundry Snipes being found in porches of houses, in sheds, and even in one case actually probing for food in a stable bucket. I presume you will agree that this starvation is likely enough to have taken place and thinned them down ; but is it not very curious the Jacks should have suffered so much less, and does it show the Jack to be a native of a higher north latitude where he may get more hardened to cold ?

Woodcocks are not very plentiful, nothing to last winter, which was a remarkable season. Do these, again, bear cold better than the Snipe, I wonder? I have had one or two tolerable days of Partridge-shooting ; that is, they lie pretty well in this country when you do find them, but usually there are only about two coveys known to frequent your beat, and the queer nature of the ground makes it perfectly uncertain where you may find them.

The Woodcock battues are great fun. I have attended three of them. About six guns are employed, and eight or ten beaters who give tongue most gallantly, and then the glorious uncertainty at the cry of “ Mark,” whether your side or your neighbour's is to be favoured ; and then the splendid misses that often occur, so that I have seen a bird escape six barrels. It generally results this year in eight or ten or twelve brace, but this is considered much below the average.

What an interesting bird the cock is ! I never saw one till this winter ; and I cannot help thinking that for all the easy, airy gliding of his flight he must go very fast indeed when once the steam is fairly up. It is a pity the copses here contain no Pheasants, except in a few favoured spots. What a delightful mixture the shooting would then be.

I have been doing my best to ascertain something about the Irish hare, and I do not know whether it is generally known, but the creature in hard weather turns completely white, [1] even on quite low mountains (hills rather). This surely ought to settle the question of its being identical with the Scotch Alpine hare, a fact which I found Professor Bell by no means inclined to admit as quite ascertained yet.

As regards my stay in London, I am sure you will feel very great contempt for me when I tell you that I never once went to the Zoological Gardens, and only twice to the British Museum. There were, in fact, so many different people to visit, for you know my tastes are somewhat loose and general, so that what with a botanist one day and a birdman the next, and various necessary calls and business, I found my three weeks very soon used up.

I had great luck in getting an introduction to Bell and Yarrell, and I cannot speak too highly of either of them. They are such capital genial old fellows that it is impossible not to fall in love with them at once. Yarrell was especially kind to me, and I used to go very often and pay him a morning visit. The first volume of his third edition is already printed, and he showed me the proofs and figures of the new birds. . . . Do you know Bell has persuaded me into the Linnæan Society ? So you see I have got promotion from the Ray. I hope you will soon do the same thing. To be sure the expense is rather a consideration, but you get your three letters much cheaper than the B. A. after all.

The other day here I saw six great Wild Swans fly past quite close, not sixty yards off. It was the first time I ever saw any, and I cannot tell you what a beautiful sight it was, to watch them coming on, on, on, never turning right or left, nor seeming to take notice of man or beast, as if impelled by some mysterious destiny. I must say that as they swept past me, gloriously white under a brilliant sun, the old fable of their being inhabited by the souls of the blest came vividly across me. I never saw anything in birds so majestic. Two were slightly touched with brown, the rest adults.

No doubt, a rifle-ball might have been used with effect, but I felt as if an attempt on their lives would quite have marred the interest of the rencontre.

By-the-by, do you know that H. Evans has been enacting a second Gordon Gunning in Connemara ? I believe that he is now generally known as the seal-slayer, and the success he met with was something unknown before to the oldest inhabitant. At last he got quite tired of killing the small seals of 5 or 6 feet, and would only care for the great monsters of 8 or 10 feet, [2] and 3 or 4 cwt., with jaws like a tiger's. You may imagine the pleasurable adventure he once had by hauling a wounded monster of this kind into his boat, which was no sooner done than the passenger revived, and began to leap and roar and snap at everything before him, so that the crew had the greatest difficulty in saving their lives and limbs. I have read before of such an occurrence, but in this instance I should think the superior size of the seal must have considerably heightened the interest of the parties concerned.

I am very glad to hear you are elected into the Ray. One evening while I was in London I met Babington at the Linnæan, and he told me that the Society was flourishing extremely, and quite a superior style of men being elected as Associates ; so that I hope you are duly aware of the far higher honour of being elected a member than it used to be in my time. ... I am glad to hear you have a fellow-ornithologist at Cambridge. I forget whether you ever went to see Salvin at Trinity

Hall. He seemed to possess some good eggs, but you know I am no connoisseur of that department. I am very glad to hear you are getting on so well in the sterna. We are now just off to skate, after three nights of very hard frost. I hope you may get a chance on the Cam when you go up. It was very good of you to take the trouble of writing after me a second time. Pray let me hear again.

[1] The account given him of the completeness of this animal's colour-change seems to have been a little overdrawn.

[2] One of Mr. Evans' letters (dated November 17th, 1855) supplies the needed clue to the above large estimate. After Mr. Evans had left Connemara, a seal of his shooting was washed ashore, of which he writes : " The length of the brute, I am *assured by my land-lord, who saw a man who took the measure*, was 9 feet 8 inches." It will be safe to deduct 12 inches from this.

— from *Life and letters of Alexander Goodman More*, F.R.S.E., F.L.S., M.R.I.A., with selections from his zoological and botanical writings ; (1898)

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Written for " Guy's Pictorial Guide To The South Of Ireland. "

Alexander Goodman

I. Mammals.

IN consequence of Ireland having been separated from Great Britain before England was itself cut off from the Continent, both mammals and reptiles are much fewer than might have been expected. This is not owing to the humidity of the climate only. The pipistrelle and the long-eared bat are common. The lesser horse-shoe bat has been found in numbers in the counties of Kerry, Clare, and Galway. The reddish-grey bat has been captured in Cork, and the whiskered bat at Feakle in Clare, the only Irish locality. The hedge-hog, lesser shrew, badger, otter, stoat, and fox are all common. The pine-marten, though occasionally found, has become very rare. Two species of seal (*Phoca vitulina* and *Halichoerus gryphus*) frequent our coasts. The squirrel, first introduced in Wicklow, is spreading from Leinster into the north of Munster. The " Irish hare," so-called, is now well known to be identical with the mountain or " blue" hare of Scotland. The Irish hare changes, more or less, to white in severe winters. So does the stoat in Ireland, but very rarely, and is hardly ever found pure white. On the other hand, the Irish hare changes in colour much more rapidly, and, on high mountain ground, becomes pretty generally white or whitish in severe winters, when the ground is covered with snow. The red colour of the bogs has, in Ireland, no doubt given a protective tint to the fur, while in Scotland the " blue" or greyish colour is, in the same way, connected with the greyer tint of the granite mountains. Both hare and stoat may have immigrated from Scotland rather than England, or from England while it had an Arctic climate. The long-tailed field-mouse frequents our fields and gardens, and the common mouse and brown rat are ubiquitous. The Irish black rat (*Mus hibernicus*) is now generally admitted to be, as was long ago pointed out by Blasius, Murray, and Lord Clermont, only a variety of the brown rat. The rabbit is not native, but is now found everywhere, even among the sea-cliffs. The only remaining refuge of the red deer is among the wooded mountains round the Lakes of Killarney. It was hunted on the mountains of Tipperary and Waterford in the last century, and the abundance of its remains in the refuse-heaps of raths shows how common it once was in Munster. The remains of the Irish elk have been dug up numerously from beneath peat-bogs in the south as well as in other parts of Ireland, and it is said that upwards of seventy heads of this gigantic deer were discovered near Lough Gur, county Limerick. Its broken marrow-bones, as well as portions of its antlers, were discovered, in 1879, in a cave near Cappagh, county Waterford,

associated with charcoal, hammer-stones, and human bones. In this same cave, but in a deeper deposit, were found remains of the grizzly bear and reindeer. Both these species, as well as the mammoth, or woolly elephant, also of the horse, were represented among the fossil remains found in Shandon Cave, near Dungarvan. The last authentic account of the death of a wild wolf in Ireland was in 1782, and fifty years later the breed of the famous Irish wolf-hound became extinct. The wild boar abounded in Ireland, and found ample food in the extensive oak forests which existed here. The word *torc* or *turk*, the ancient Irish name of the boar, is of frequent occurrence in the names of places.

II. Freshwater Fishes.

As in Mammals and Reptiles, Ireland is very poor in freshwater fishes. The whole Irish list includes only twenty-three undisputed species. Of these eighteen inhabit South-west Ireland. Several trout, both sea-trout and brown trout, have been separated from each other, and from the “parent” species, if we may so call them. But the distinctions are, in most cases, so delicate and difficult to seize, that only a trained specialist, and that a man of life-long experience, could be trusted to correctly identify and name the many very ambiguous forms, to which Dr. Günther and other refined ichthyologists have given Latin names, and have treated as separate species. This is no question of Darwinism ; for if the existing forms were derived from a smaller number of ancestors, still we must, for the sake of making our identifications certain, treat as species, or as sub-species, or as distinct varieties, all the different sorts of trout that our eye can distinguish, so long as their distinctions from each other remain sufficiently clear and permanent.

Here lies the immense difficulty of studying, to any satisfactory end, the innumerable varieties and forms, which are well known indeed to the *local fishermen*, who, also themselves, if removed to a new and different locality, would find their former knowledge all at sea. Even with Dr. Günther’s excellent *Catalogue* in hand, we have found it almost impossible to arrange with any certainty, under their several names the many forms of trout which we have taken, so variable are they even in the same lake, even in the same river and its tributaries. No doubt the nature of their food, the colour and nature of the bottom, the amount of light, the depth of water, should all be taken into consideration. But when we find, in the case of the *British Charrs*, that Dr. Günther has often founded a new species, rather as it seems *on the locality* where taken than upon any permanent and invariable specific characters, what are we to do, who, while wishing to know our native fishes, find ourselves quite unable to determine the various forms ? These come so near to one another, that it is often nearly impossible to separate them, and, after some hours of careful study, we find ourselves still full of doubt and perplexity while trying to follow our recognised best authority ; yet, unable to feel certain that we have identified our species correctly. What are we to do when we find one excellent authority, Sir W. Jardine, describing as distinct a large trout from deep-water, which another equally skilled authority tells us is only a large, overgrown monster, which, like Orestes, has taken to devouring his own, and his neighbour’s progeny ? A third excellent authority considers a thickly-coated stomach a sufficient character to establish a new species —“ the Gillaroo.”

Another good anatomist, when he captured the brown trout in brackish water, where the fresh meets the salt water, called it *S. estuarius*.

Fortunately, it is chiefly among the *salmonidæ*, or trout family, that these nice and subtle distinctions have been tried. Practical fishermen complain that they cannot follow them or understand them ; and, when it is once appreciated, how infinitely variable are trout in appearance and character, we may almost say that every lake, or pool, or river, has its own distinct form. The real difficulty is not in seeing and recognising differences, so much as in knowing how to make a philosophical combination of many forms under one name.

Among botanists, the recent over-refinement of distinctive characters has led to many mistakes in identification, and to making many a promising botanist give up his studies, in view of the enormous difficulties which have been raised in distinguishing the very slightest variation of brambles, hawkweeds, roses, water-crowfoots, &c. Indeed, many naturalists are content to omit altogether the study of these perplexing forms.

In Ireland we have at present two forms of charr. One, *S. colei*, occurs in Lake Coomhasarn, &c., in Kerry; the other in Lough Melvin.

No doubt many other forms exist in unexplored lakes, and will remain to perplex the future ichthyologist. A migratory trout has been described as *Salmo gallivensis*; but how extremely improbable is it that this is not a form of one or other of our well-known sea-trout. Another sea-trout at present imprisoned in Lough Leven (Scotland), and apparently cut off from all access to the sea, has received a specific name as *Salmo levenensis*. That is, a sea-trout has become altogether changed by a long residence in fresh water, somewhat as the estuary trout (of Knox) has received its name from having been captured in *brackish water*. Similarly, there is a small race of the Twaite Shad (*Clupea finta*), which is taken in the Killarney lakes, and has apparently given up its usual migration from salt to fresh water in the spawning season. A similar habit has been noticed in the shad of some of the Italian lakes. But, surely, no one would think of giving such forms a new Latin specific name and rank.

Even the lesser river lamprey (Planer's lamprey), which grows only to five or six inches in length, is suspected to be an immature state, or stage, of the larger river lamprey.

The history of the eel is not well understood. Those which descend to the sea are said to do so with the intention of spawning in brackish water. But whether both sexes ascend the rivers, or whether the male eel resides always in brackish water, is not quite certain. One thing is interesting, the salmon and sea-trout *ascend* the rivers to deposit their spawn. The eels descend so as to spawn in brackish water, where the innumerable fry are reared, which ascend our larger rivers in such multitudes in spring.

We now give

A List of Freshwater Fishes

found in Cork, Kerry, Clare, and other parts of South-west Ireland :

1. Perch (*Perca fluviatilis*). Frequent.
2. Three-spined stickleback (*Gasterosteus aculeatus*). Common ; and sometimes swarms in brackish ditches near the sea. Several varieties occur. The rough-tailed (*G. trachurus*), the armoured (*G. semiloricatus*), the half-armed (*G. semiarmatus*), the four-spined (*r. spinulosus*), are found in brackish and salt-water. The other two, viz., the smooth -tailed (*G. gymnurus*), and the short-spined (*G. brachycentrus*), inhabit fresh water.
3. Ten-spined Stickleback (*Gasterosteus pungitius*) is frequent. Is enumerated by Harvey in the " Fauna of Cork."
4. Gudgeon (*Gobio fluviatilis*) occurs at Killaloe, &c.
5. Rudd (called " Roach" in Ireland) (*Leuciscus erythrophthalmus*). Frequent.
6. Tench (*Tinea vulgaris*). Introduced in a few localities ; not native.

7. Loach, or “ Colliah” (*Nemachidus barbatulus*). Killaloe, Portumna, and South-west Cork.

8. Twaite Shad (*Clupea finta*). At the mouth of river Blackwater, near Cappoquin, where they are called “ Bony Horses” ; also in the Lakes of Killarney.

9. Pike (*Esox lucius*). Attains to 49 lbs. and 51 lbs. at Killaloe, and 78 lbs. in Clare (Thompson).

10. Salmon (*Salmo salar*). Ascends all the larger rivers, to spawn in fresh water.

11. Sea- trout (*Salmo trutta* and *S. cambricus*). Both forms ascend the rivers from the sea, to spawn in fresh water.

12. Brown trout, or common trout (*S. fario*). Common, and this includes the varieties : (a) Estuarius, which I have myself taken at Ardgroom. (b) Gillaroo, *S. stomachicus*. (c) Great Lake trout (*ferox*), a cannibal, coarse form ; gives great play when hooked, and often weighs 15 or 20 lbs.

13. Charr. In several of the mountain lakes ; at Inchigeela and in Coomahasarn Lakes, &c.

Cole’s charr (*Salmo colei*) is the more common form.

Gray’s charr (*Salmo grayi*). Killarney lakes.

14. Pollan (*Coregonus pollan*). In Lough Derg and in the river Shannon, near Killaloe.

15. Sturgeon (*Acipenser sturio*).

16. Common Eel (*Anguilla vulgaris*).

17. Sea Lamprey (*Petromyzon marinus*). At Killaloe from 10th to end of June [Thompson].

18. River Lamprey (*Petromyzon fluviatilis*). Youghal ; to 10 inches in length.

19. Planer’s Lamprey (*Petromyzon branchialis*). 4½ to 5 inches in length. River Shannon, at Killaloe ; and at Lough Caragh, Kerry, in spring or summer.

We have, thus, in our district nineteen of the twenty-two Irish fresh -water fishes. The absence of the common bream and minnow is remarkable.

III. CHARACTERISTIC AND RARE PLANTS.

The *Flora* of Ireland, as distinguished from that of the rest of the Continent of Europe, is remarkable from the presence of a few striking species which do not occur in Great Britain nor in northern Europe.

Nearly all of these plants may be classed as Western and South-western in Ireland. Several of them are very abundant in their Irish stations. For instance, the “ Bell Heath” (*Dabeocia polifolia*), a striking and handsome species, occurs plentifully throughout Connemara and the barony of Murrisk, in Western Mayo ; in fact, through the whole district lying between Galway bay and Clew bay. This and the Mediterranean Heath (*Erica Mediterranea*) are two of the most characteristic plants of the Irish flora ; and, with another Heath (*Erica Mackayi*), constitute a very striking group of species, whose head-quarters are to be found in Portugal and Spain. It is to be remarked here, that, curiously enough, not one of these three heaths is

found in Clare, or Kerry, or Cork for the South-west of Ireland has also its own distinct group of plants, most of which do not occur further north. In fact, the peculiarly “Irish” species arrange themselves under four groups.

(I.) AMERICAN SPECIES.

Plants which are much more plentiful in North America, and for the most part do not occur on the European Continent. These may be considered as the remains of a former land connection with America, and were probably driven southwards during the Glacial Epoch from the shores of Greenland ; at any rate, from the land which, at that time, joined America to Europe ; and these may be held to be more or less Arctic species, as well as Americo-European.

The best known of these North-Americans is the rare Orchid *Spiranthes Romanzoviana*, which in Europe occurs only in the few scattered localities in the county of Cork near Berehaven, and also in the valley of the Bandon river.

Another North- American plant is the so-called “Blue-eyed Grass” of Canada (*Sisyrinchium angustifolium*), which grows in great abundance between Woodford and Lough Derg, in Galway, and has recently been found near Milltown and Killorglin, and sparingly in a few other scattered localities in Kerry. A third notable plant of the American group is *Juncus tenuis*, which Mr. R. W. Scully found in several places along the estuary of the Kenmare river ; a very scarce and local species anywhere in Europe, and in Britain occurring only in Perthshire, in North Wales, and in a single station in Herefordshire.

The *Sisyrinchium* has given much trouble to botanists, for it is difficult to decide whether it should be considered a native *i.e.*, as having reached Ireland before the advent of man or whether it may have spread originally from gardens, as it is a plant which has shown elsewhere extraordinary powers of spreading where it has once been introduced. Still, whatever may be said of this last species, there is no doubt that the “Irish Ladies’ Tresses” (*Spiranthes Romanzoviana*) is truly native ; and the unexpected discovery of a new Irish locality in Armagh lends some support to the theory of its Arctic origin. We may assume that it arrived before or during the Glacial period on two separate points of Ireland Cork and Armagh both situated not far from the sea-coast.

One more American species, quite lately observed in Kerry, is *Polygonum sagittifolium*, which was discovered only two years ago near Cahirdaniel, county Kerry, by Mr. Scully, who has so successfully devoted himself to the study of the Kerry Flora, but he does not consider it a native plant.

With these may also be classed *Naias flexilis*, found in Galway and Perthshire, as well as in Carah and Killarney Lakes, and *Eriocaulon septangulare*, which occurs on the west coast of Ireland from Donegal to Cork.

So much for the American-Irish plants.

We have next to enumerate the WESTERN and SOUTH-WESTERN species, which, in the British Isles, find their headquarters in Cork and Kerry, and extend also to the European continent. These are the two or three Saxifrages of the “London Pride” group, *S. umbrosa*, *S. geum*, and, if it can be reckoned as a third species, *S. hirsuta*. The first reaches to the north of Donegal, and eastward to the Cumberagh and Knockmeildown mountains of Waterford ; and thus is the most widely distributed of the whole West-Irish group. *S. geum* and *S. hirsuta* (the latter probably only a variety) are found in Cork and Kerry only, and keep at a lower

level than *S. umbrosa*, which in Ireland, as well as in Spain, appears quite at home among the Alpine species.

The West-Irish species may be conveniently arranged under the three following groups :

(II.) PLANTS GENERALLY DISTRIBUTED ALONG THE WEST COAST
FROM DONEGAL TO KERRY.

Saxifraga umbrosa, *Carum verticillatum*, *Euphorbia hyberna*, *Asplenium acutum* (the last also in North-east Ireland), *Helianthemum guttatum*, found on Inishbofin and Inish Turk (ranges from these islands to Three-Castle Head, Cork).

(III.) PLANTS IN IRELAND PECULIAR TO CORK AND KERRY.

Arbutus unedo (West Europe and Mediterranean), *Pinguicula grandiflora* (Alps and Pyrenees). The next four all occur in England : *Carex punctata*, *Asplenium lanceolatum*, *Juncus tenuis* (Kerry only), *Simethis bicolor* (Kerry only), *Saxifraga geum*, and *S. hirsuta*. *Pinguicula grandiflora* is another prominent member of our flora, which is nowhere so abundant as in Kerry and Cork ; and my friend, Mr. Colgan, has seen it growing, usually at an elevation of from 5000 to 6000 feet in the Pyrenees, where, however, it does not attain so luxuriant a growth as in Kerry. *Arbutus Unedo*, so abundant at Killarney, occurs also, but more sparingly, in county Cork, about Glengariff, etc.

(IV.) RESTRICTED TO CLARE, GALWAY, AND MAYO.

Neotinea intacta (the locality on Lough Corrib just reaches Mayo). *Dabeocia polifolia*, *Erica mediterranea*, *E. Mackayi*. All these occur in the Spanish Peninsula, as well as near Nice, etc.

With the West-Irish we place *Euphorbia hyberna*, which, like *Saxifraga umbrosa*, reaches to the north of Donegal, and grows, with it, on the Pyrenees. In Ireland, finding its eastern limit along the river Suir and in Colligan Glen, co. Waterford. This rare spurge is known to the Kerry peasantry by the name of "Bonnikean," not "Makinboy," as mentioned by some old writers, and it is still used for poisoning fish ; its acrid milky juice, mingling freely with the water, stupefies all the unfortunate trout which come within the range of its influence. Its use, like that of quicklime by poachers, cannot be too strictly forbidden.

To these may be added the few of Watson's "Atlantic" species, peculiar to Cornwall or the West of England, which reach Ireland.

Their number is fewer than might have been expected from the similarity in position and climate of these two districts. These species are :— *Trichomanes radicans*, *Sibthorpia europæa*, *Carum verticillatum*, *Carex punctata*, *Rhynchospora fusca*, *Helianthemum guttatum*, *Asplenium lanceolatum*, *Hymenophyllum tunbridgense*, *H. Wilsoni*, *Bartsia viscosa*, *Viola Curtisii*, *Simethis bicolor*.

The most interesting species occurring on the borders of our district is the rare little Orchid *Neotinea intacta*, which was discovered by myself and my sister, Miss F. M. More, nearly thirty years ago, at Castle Taylor, in the county of Galway, and has since been ascertained to grow, in some plenty, throughout the Burren district of Northern Clare, on the same upper carboniferous limestone. It has also been found on the shores of Lough Corrib, near Cong, associated there, as in Burren, with *Potentilla fruticosa* and *Gentiana verna*. The last locality extends the range to Mayo.

It is very remarkable that at Castle Taylor, as in Burren, we find this Mediterranean Orchid, a species as eminently southern as is the Arbutus, growing alongside of such Alpine species as *Dryas octopetala*, *Gentiana verna*, *Hieracium iricum*, *Selaginella selaginoides*, *Sesleria cærulea*, and *Arctostaphylos Uva-ursi*. *Neotinea intacta*, and, with it, *Rubia peregrina*, *Ophrys muscifera*, and *O. apifera* grow together, a little above sea-level, and associate with the corn crops of Watson's "Agricultural Zone." So that it becomes difficult to say whether we are dealing with alpinists descending into the agricultural zone, or with plants of the lowest agricultural zone in a very abnormal association. At any rate, we have here a commixture of zones, nowhere else to be found in the British Isles, and which, we think, may be fairly attributed to the exceptional humidity of the Irish climate, as well as to past geological changes and migrations.

All the West-Irish plants may be considered as species which are common to the West of France, the Pyrenees, and the Spanish Peninsula, and four of them occur also on the shores of the Mediterranean. This is sufficient to show the presence of a well-defined group of West-European species on the western shores of Ireland. And in the same way, the general British and Irish flora is almost altogether related to the European, in such a manner that we may suppose it has immigrated from the adjoining Continent, and is, in character, such as we might expect if the British Islands were not separated by the German Ocean, the British Channel, and the Irish Sea. It would appear that Alphonse De Candolle was right in accepting the theory that the immigration of our flora (and fauna) was effected through the former continuity of land, and that our islands were not colonized by water and air transport, across the narrow straits which now separate them from their former home. It is different with the spores of *Cryptogamic plants*, which are easily carried by the wind, and whose unexpected presence in our Islands may, in this way, be accounted for; the dust-like seeds having been wafted, perchance, for many hundred miles across the Atlantic Ocean.

All three groups of European-Irish species must be assumed to have immigrated from the adjacent Continent after the Glacial period had passed away, and when plants and animals were advancing northwards, under an ameliorated climate. This disposes of the question as to whether some of them may not have originated in Ireland. The presence of *Dabeocia* in the Azores is harder to explain, but being, as Mr. Watson considers it, a distinct variety, it is likely to have reached these Islands at a time when the species was young, and thus we have still remaining in the Azores a form more closely allied to the original race of the species.

The ALPINE FLORA of Cork and Kerry is comparatively poor, and nearly all the rare species occur in Kerry only—*Saxifraga hirta* and *S. affinis*, *Saussurea alpina*, *Aira alpina*, *Saxifraga aizoides*, *Draba incana*, *Subularia aquatica*, *Polystichum Lonchitis*—and *Thalictrum alpinum*, *Poa alpina*, *Polygonum viviparum*, *Alchemilla alpina* the four last on Brandon only. A remarkably dwarf form of the Adder's -tongue occurs on Brandon Head. It was found by H. C. Hart several years ago.

The following LOWLAND SPECIES deserve particular mention : —

Simethis bicolor, one of the rarest British plants, occurs plentifully near Derrynane Abbey, and in other places along the Kenmare estuary.

Bartsia viscosa is frequent in Kerry and South Cork, especially near the sea-coast.

Lepidium latifolium (Dittander), perhaps a relic of ancient cultivation, grows in Cork, at Corkbeg, and near Youghal harbour, and is recorded also from near the head of Kenmare river, and near Kinsale.

Subularia aquatica, and with it *Isoetes echinospora*, is found in Killarney Lakes.

Helianthemum guttatum is plentiful near the old ruins on Three-Castle Head, Cork.
Lathyrus maritimus grows, or grew, on the sandy shores of Castlemaine harbour.

Galium boreale is plentiful on the shores and islands of Killarney Lakes.

Pyrola media is found near Ballyvaughan, and other places in Burren.

Wahlenbergia hederacea occurs along the Flesk near Killarney, and near Lispole Station towards Connor Hill ; also along the rivers Lee and Bandon.

Cicendia filiformis is found on the shores of Lough Guitane, and at Lough Currane ; at Waterville and Glenmore Lake, in Kerry ; at Berehaven, Glengarriff, Dursey Island, etc., in Cork.

Orobanche Hederæ—Muckcross, on the Abbey walls, and on islands in the Lakes of Killarney, and at Derrynane, Kerry ; frequent in Cork.

Lathræa squamaria—Killarney.

Monotropa Hypopitys—In Muckcross demesne, Killarney ; also in Galway, Mayo, and Donegal.

Cuscuta Epithimum—On the sandhills near Ardfert. (*R. W. Scully*).

Linaria repens is frequent about Bandon, with its hybrid progeny, *Linaria sepium* of Allman.

Sibthorpia europæa is plentiful on the northern slope of Connor Hill, at 1700 feet, and thence descends to sea level at Formoyle. It occurs also at Annascaul.

Calamintha Clinopodium—Killarney ; very rare. Near Muckcross.

Pinguicula grandiflora and *Euphorbia hyberna* are widely distributed in the West of Cork and Kerry.

Utricularia neglecta—Killarney and Tralee.—(*R. W. Scully*).

Euphorbia amygdaloides finds its only Irish localities in the valley of the Bandon river at Castle Bernard Park, and in Dunderrow wood.

Epipactis ovalis grows in the Burren districts of North Clare. A variety only.

Cephalanthera ensifolia grows near Killarney and Carah Lakes ; also in a wood at Glengarriff and at Adrigoole. Wood at head of Lough Carah. Wood by the Kenmare Road, near Derrycunihy Cascade. Near Brickeen Bridge and at Muckcross, Killarney.

Allium Scorodoprasum—At Kenmare and in the woods at Muckcross ; Foaty Island, and profusely in the woods near Bantry, where it was recently discovered by Mr. R. A. Phillips.

Simethis bicolor, as before stated, at Derrynane, and along the Kenmare estuary.

Juncus acutus—Plentiful on the warren at Rosscarbery.

Eriocaulon septangulare—In L. Carah ; in the Cloonee lakes, south side of the Kenmare river ; and in a mountain lake near Adrigoole.

Rhynchospora fusca is abundant in South Kerry, extending to Glengarriff, Ardgroom, and Berehaven in Cork.

Scirpus parvulus—Along a stream near the sea at Ballybunion, Kerry.—(R. W. Scully). It has become very scarce, if not extinct, at Arklow, the original Irish station.

Carex Bönninghauseniana—Near Killarney.—(R. W. Scully). A rare hybrid.

Carex aquatilis—Near South end of Carah Lake in several places, and abundant along a small stream near the Upper Lake of Killarney.—(R. W. Scully).

Carex punctata is abundant along the shores of Kenmare river, and occurs also near Ventry, Berehaven, Ardgroom, Waterville, Kerry Head, etc.

Pilularia globulifera—By the Upper Lake of Killarney.

The CLARE PLANTS, which, indeed, scarcely belong to our district, include, as already stated, one of our greatest Irish rarities, *Neotinea intacta*, and many sub-Alpine species, of which the most noteworthy are *Ajuga pyramidalis*, *Helianthemum canum*, *Potentilla fruticosa*, to which may be added *Astragalus Hyfioglottis*, peculiar, in Ireland, to the South Isles of Aran.

The true Maidenhair Fern (*Adiantum Capillus-Veneris*) occurs very sparingly, if not now extinct, along the south shore of the Shannon, near Foynes ; and grows plentifully in the Isles of Aran ; and in many localities in the North of Clare. There is a record of its having been found, many years ago, on Cahirconree Mountain, near Tralee, but no botanist, has, of late, been able to rediscover it, and it is feared some mistake was made.

In concluding the above short summary of the characteristic plants of the South-west of Ireland, I gladly acknowledge the valuable and most friendly assistance which I have received from my friend, Mr. Nathaniel Colgan, whose investigations into the history of the Shamrock are well known to Irish botanists ; and my friend, Mr. Reginald W. Scully, who is now engaged in the preparation of a FLORA OF KERRY, has most liberally given me leave to make use of the results of his recent investigations.

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