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THE PHYSICAL GEOLOGY OF THE NEIGHBOURHOOD OF DUBLIN.

BY

REV. MAXWELL H. CLOSE, F.G.S.,

With a Map.

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THE following account of the Physical Geology of the country around Dublin has been drawn up, principally from the Maps and accompanying explanations (Nos. 102, 112, and 121) published by the Irish Geological Survey, from papers in the Journal of the Royal Geological Society of Ireland, in the Transactions and Proceedings of the Royal Irish Academy, and from the Journal of the Geological Society of London. For further information on the subject the reader may have recourse to the memoirs above named, to the late Professor Jukes' "Manual of Geology," to Professor Hull's "Physical Geology and Geography of Ireland," and to Mr. G. H. Kinahan's "Manual of the Geology of Ireland."

The immediate vicinity of Dublin is low-lying ground and was formerly called *Sean Magh Ealta Edair, i.e.*, The ancient plain of the flocks of Edar. It is part of the Carboniferous Limestone plain which so largely occupies the central region of Ireland, and which only reaches the coast in a few places, as near Dublin. On the south side of Dublin the older rocks emerge from beneath the Limestone and rise to form the hill country of S. Dublin, Wicklow, and Wexford counties. Northward of Dublin Bay there are isolated exposures of the older rocks in the Hill of Howth, the islands of Ireland's Eye and Lambay, on the adjoining coast at Portrane, and in the country around Balbriggan.

The following are the formations which present themselves within the district now to be described, viz., Cambrian, Lower Silurian, Old Red Sandstone (?), Carboniferous Limestone, Upper Carboniferous Shales (Yoredale), Granite and other igneous rocks, and Pleistocene Drifts.

The accompanying map, drawn by Mr. R. G. Symes, F.G.S., of the Irish Geological Survey shows the boundaries of the surface exposures of the various formations; it is therefore unnecessary to describe them here. We shall adhere, as far as possible, to the chronological arrangement of our subject.

CAMBRIAN (correlative with the Longmynd rocks; "Lower Cambrian" of Sedgwick). Rocks of this formation constitute the whole of the Hill of Howth whose highest point is 563 feet (the low-lying north-western part of the peninsula is covered with Carboniferous Limestone). They occupy also the northern and western parts of Ireland's Eye, the island on the north side of the Howth Peninsula. In the southern part of our district there is a small exposure of them forming the upper part of Carrickgollogan Hill, or Shankill, 912 feet, between the Scalp and the sea. They then emerge on the near side of the town of Bray and extend thence along the coast for about 14 miles. They then leave the coast but still extend southward as far as the latitude of the town of Wicklow, that is for a length of sixteen miles altogether, with a mean width of about five miles, and they appear again in the S.E. part of county Wexford. In addition to Shankill, already mentioned, the principal eminences into which they rise near the southern part of our district are Bray Head, 793 feet, the Little Sugar Loaf, 1,120 feet, the Great Sugar Loaf, 1,659 feet, and the Downs Hill, 1,232 feet. This broken ridge, or line of hills, was called by Sir Roderick Murchison, the backbone of Ireland. As neither the bottom nor the top of the formation is visible, its thickness in this district cannot be ascertained.

Hill of Howth.—The Cambrian Rocks which form the hill part of the peninsula of Howth are generally greenish-grey, sometimes green and red, grits and slates, with numerous bands of quartz-rock, often of considerable thickness. A fine section of the rocks is displayed in the sea cliffs along the eastward and southern sides of the peninsula, for a length of at least three-and-a-half miles. The beds are much contorted and faulted; but it would appear that they have, in the mass, an E. and W. strike, with a general steep dip to the S.

Many of the quartzose rocks on the S. side, as also those of the N.E. angle of the peninsula, have a peculiar nodular structure. A great number of trap dykes are to be seen in the cliff

Geological Map of the district around DUBLIN reduced from the maps of the Geological Survey of IRELAND.

sections all the way from Casana Rock, on the E., to a little beyond Drumleck Point on the S.; most of these are only to be reached in a boat. Some of them, as for instance that at the Bailey lighthouse, are composed of basalt. Notwithstanding certain lithological peculiarities in some of the rocks of Howth Hill, there can be no doubt but that they belong to the same formation as those of Bray Head, &c., viz., the Cambrian, since *Oldhamia antiqua* (not very well preserved) was found in them by Dr. J. Kinahan, at Puck's Rocks, near the N.E. point of the peninsula.

PLAN.—Quartz-rock and Slate near Howth, immediately east of the Needle Rocks.

Drawn to scale (8 yards to an inch) by the late Mr. John Kelly.

Bray Head.—The precipitous sea-side of Bray Head presents for a length of nearly two miles, a fine continuous section of the Cambrian Rocks, which here are greenish, reddish, and purplish, grits and slates, with bands of quartz-rock. The beds have a general dip to N.N.W., or N., at from 40° to 70°. Allowing for contortions and faults there must be a thickness of nearly one mile of the formation exposed here. Several thick bands of

quartz-rock strike across the Head. They give rise to the ridges and knobs on the top of the hill. Some of them are cut off by a fault which runs parallel to the shore line, and thus do not appear in the sea-cliff section. One, which is seen on the shore between Periwinkle Rocks and Brandy Hole, and is 50 yards thick, passes across the summit 653 feet and then, by a curious accident, is met at the fault by another very similar one which extends for three quarters of a mile farther to near Kilruddery House. Another prominent band of quartz-rock appears on the shore at half-a-mile N. of the point of Bray Head. It is pierced by one of the railway tunnels. It (that is its visible part) is clear of the fault just mentioned and runs across the summit, 793 feet, the highest point of Bray Head, and thence extends, as it would seem, continuously by Windgate to near Belmont House, altogether a distance of two miles. These bands of quartz-rock are generally conformable with the stratification of the other rocks; but it is interesting and important to observe that they sometimes assert their independence of the stratification in a way that is not easy to explain. Mr. G. H. Kinahan, in his "Manual of the Geology of Ireland," contends that this is only to be explained by such quartz-rock (which he distinguishes from quartzite) being intrusive.

A faulted dyke of greenstone is seen in the coast section, just on the S. side of the railway tunnel above mentioned. This is an interesting object, as, with the exception of the dyke on the shore at Greystones, 2½ miles farther S., no other igneous dykes have been found in the Cambrian rocks of that neighbourhood, although they are so numerous at the Hill of Howth.

The *Little* and the *Great Sugarloaf* are composed of rocks which are lithologically similar to those of Bray Head, but with a greater proportion of quartz-rock, of which their summits are formed. They appear to be contained in a synclinal basin, through the middle of which the intervening valley of Kilmacanogue has been denuded. No fossils have been detected thereabouts except at the E. side of the Little Sugarloaf, and the W. side of the other.

Greystones, which is situated on the coast, a little beyond the southern margin of our map, has a good exposure of the Cambrian rocks on the shore. These dip, for the most part, steeply northward, and contain two massive beds of quartz-rock and the in-

trusive dyke, already mentioned, of coarse crystalline diorite, a rare feature in that neighbourhood.

Disturbance and Denudation.—Owing to the confused condition of the strata the relation between the Cambrians and the immediately superincumbent rocks is very obscure; so much so that in this neighbourhood it could not be determined; but in the country south of the Devil's Glen, Co. Wicklow, in the hills near Ashford, it is seen that the Cambrians had suffered considerable disturbance and denudation before the overlying strata were laid down unconformably upon them. The actual junction of the two formations can be seen in Pollshone Harbour, north of Cahore Point, and in Bannow Bay, both on the coast of Wexford. The overlying rocks are Lower Silurian, of Llandeilo and of Caradoc age. It seems most probable that the disturbance and denudation were contemporaneous with the similar actions which produced the unconformability which is now known to exist between the Tremadoc and the Arenig rocks.

Lower Silurian (below of Llandeilo, above of Bala or Caradoc, age, "Upper Cambrian" of Sedgwick).—The rocks of this formation here consist of thin-bedded, black, and grey, sometimes greenish, rarely purple, clay slates and fine greenish, and dark grey, grits, with, very rarely, beds of limestone (while purple slates, rare in this formation, are common in the Cambrian, black slates, common in this formation, have not been found in the other). The thickness of the strata in this district is unknown, but it must be many thousand feet; in S. Wexford it must be 10,000 or 12,000 feet.

Around *Balbriggan*, beyond the northern boundary of the map, there is an exposure of this formation, about 40 square miles in area, the southern extremity of which just comes within the limits of the map. Shenick's Island, the largest of the Skerries, is composed of beds of this formation dipping S.S.E., at 40° to 50°, on which lies, at one place, a small thin flake of nearly horizontal beds of conglomerate and sandstone, belonging, if not to the Old Red Sandstone, yet to the base of the Carboniferous formation. The Lower Silurian grits and slates are interstratified with beds of contemporaneous trap, often porphyritic, with layers of trappean ash. Some of the trappean rocks are several hundred feet in thickness. This interesting spot should be visited at low tide.

At *Portrane* there is, on the shore, a small, but very noticeable, exposure of this formation. The beds are sometimes much contorted, but their general dip on the shore is towards S. of E. The rocks consist of slates and shales containing graptolites and trilobites, with some grits and, more especially, highly fossiliferous beds of limestone; all the fossils being of Bala or Caradoc age. There are also several interstratified beds of trappean ash, evidently connected with the contemporaneous felstone porphyry close by on the W. and S. There is, in some places, a well defined cleavage whose planes dip about S. 30° E. at 40°.

Lambay Island is 2½ miles off Portrane. It is principally composed of felstone porphyry with various small masses of Lower Silurian stratified rock, some probably caught up in the felstone. The slates of some of these yield graptolites. At Kiln Point, on the shore near the S.E. angle of the Island, there is a mass of thin beds of limestone which contain Bala fossils; they have thin earthy shales between them. The felstone has sent veins and strings into the lowest bed of the limestone; but it has not had much altering effect thereon. The geological interest of this island is increased by the occurrence, near its N.W. point, of a remnant sheet of Old Red Sandstone (?) not more than 50 feet thick. This consists of sandstones above, and a conglomerate below. It extends along the S. side of Broad Bay for a length of nearly one furlong; the beds dipping N. at from 60° to 30°. The base of the conglomerate is well seen; it lies unconformably on the Lower Silurian ash and slates, which, at this place dip S. at about 50°, and must be now inverted. The N. part of this remnant sheet is cut off by an E. and W. fault.

The black slates which occupy the low south-eastern part of *Ireland's Eye*, and which apparently rest unconformably on the Cambrian rocks, most probably belong to this formation.

At a few miles southward of Dublin, the Lower Silurian sets in as the surface formation; it extends thence to Waterford Harbour, except that it is interrupted by the Cambrian and granitic exposures.

The rocks of this Lower Silurian area within the district with which we are now concerned, are unfossiliferous; but in Wicklow, at Slieveroe, near Rathdrum, and in the Co. Wexford, they have yielded various fossils of Bala or Caradoc type. The small exposure of this formation at the Chair of Kildare, twenty-four miles

W. by S. from Dublin, has afforded fossils of the same type. The great probability is that much of the unfossiliferous portion of the formation is of the same age as the fossiliferous, though the lower part of it may be, as some of it certainly is, of Llandeilo age. The general strike of the beds, throughout the area now in question, is N.N.E. and S.S.W.; this obtains on both sides of the granite exposure, the longest axis of which has nearly the same direction. All along the sides of the granite, the rocks are changed into mica slate.

Besides the contemporaneous felstone of Portrane and that of Lambay, already mentioned, there are some sheets of felstone porphyry near Bohernabreena, which are most probably contemporaneous; being interbedded with the Lower Silurian strata. There are also masses of basalt and dolerite at Ballynascorney, which are probably intrusive; though rudely conforming to the strike of the slates, &c. These two places are at the mouth of the interesting valley of Glennasmole, three or four miles S. of Tallaght. We may here mention that, in Wicklow and Wexford, of the long ranges of igneous rocks, whose trend corresponds generally with the strike of the Lower Silurian strata, the felstones are usually contemporaneous, the others principally intrusive.

Granite.—As we are following chronological order, we must now turn our attention to the granite, before proceeding to the next sedimentary formation. The granitic exposure of this neighbourhood, which is the largest continuous one in the British Islands, extends from Kingstown, on the north, to near New Ross, in Wexford, on the south, a distance of nearly seventy miles. It has a width of from seven to seventeen miles. It must extend northward from Kingstown, beneath the sea, into Dublin Bay, and probably farther still, as we find the small island Rockabill, five miles off Skerries, and just outside the northern boundary of the map, to be composed of granite of the same type. But of course the Rockabill granite, though evidently belonging to the same mass, may not belong to the same surface exposure thereof; as is the case with the Carnsore granite at the S.E. point of the Co. Wexford. There are some small isolated granite protrusions in the Co. Wicklow, which differ importantly, as to composition, from that with which we are now concerned; these, however, are outside of our present subject.

The age of the granite of the main mass is determinable

within, what may be called, comparatively narrow limits. The facts that the granite has been intruded into the Lower Silurian rocks, and that the slates of that formation have been metamorphosed all along the border of the granite into mica schist, evidently by the action of the granite, show that the intrusion of the granite was later than the formation of those rocks. On the other hand, the facts that, in the Co. Kilkenny, the Old Red Sandstone reposes undisturbedly on the granite and has not been altered thereby, and that its beds sometimes contain a quantity of granitic pebbles and detritus, show that the protrusion of the granite took place before the deposition of those rocks.

The main granite exposure includes the principal mass, with the highest summits, of the S. Dublin, Wicklow, and Wexford hills; while the Silurian rocks form lower ground on each side, with some subordinate hills. This, in connexion with the fact that the general strike of the Lower Silurian rocks is very nearly parallel with the length of the granite exposure, on each side, might, at first sight, give rise to the idea that the granite, while being forced into the Silurian strata, had broken through them, upheaving them and throwing them off on either side, so as to make them dip away in both directions. But what evidence there is on the point bears against this supposition. The granite has nowhere brought up the underlying Cambrian rocks on its flanks; nor has it thus brought up the lower of the Silurian rocks. It is true that the metamorphosed Silurian slates, close along the sides of the granite, usually dip away therefrom, on each side; but notwithstanding this, the Silurian strata on the western side of the granite, though evidently much folded and contorted, seem nevertheless to dip, as a whole, towards the granite; so that the higher beds come against it; and it would appear that in the Co. Wexford, also, on the eastern side, they are the upper beds which border the granite (although it is not so, northward of that, in the Co. Wicklow.) Again there are patches of altered Silurian slates lying on some of the highest parts of the granite hills, including the very summit of Lugnaculliagh itself, 3,039 feet, the highest point of all. It is just at the highest part of the granite, where it has escaped denudation, that we find the schist still lying upon it; while on the other hand, it is just where the valley of the Slaney cuts across the range of the granite hills, and the denudation has been greatest,

that we find the width of the granite exposure to be greatest. All these facts point to the conclusion that the granite protrusion may not have broken through the thick mass of Silurian strata, and that it was brought to the surface by the subsequent denudation, which has wrought parts of it into low ground as about Kingstown, Carlow, St. Mullins, &c.

The granite, as already observed, has metamorphosed the Lower Silurian slates, all along the line of its contact with them, into regular mica schist; the alteration extends from the surface of the granite through a thickness of several hundred feet and dies away gradually. The grit bands in the slates are, as might have been expected, but little changed. The width of the metamorphosed rock, as measured on the surface of the ground, is greater on the east, than on the west side of the granite; which seems to indicate that the bounding surface of the granite descends less steeply beneath the slates on its east, than on its west, side. There seems to be some connection between this fact and that already alluded to, viz., that the small outbursts of granite are on the east and that there are none in the Silurian on the west side of the main granite exposure.

The contact of the granite with the Silurian rocks is strikingly exhibited on the shore of Killiney Bay, at the base of Killiney Hill. It is there seen that the granite has irregularly penetrated the Silurian slates and sent off veins into them; it has also caught up what are clearly separated masses of the slate rock, converting all into mica schist and developing therein stellate crystals of chiastolite. Not far off, on the south side of Rochestown Hill, N. and N.W. of Killiney Park, the granite has forced several narrow tongues into the slates, nearly along the direction of the bedding (see the plan of this in the Geological Survey "Explanations," 112, p. 35).

The Rathmichael relief tank of the Dublin waterworks, on the northern hip of Shankill, was excavated directly on the boundary line of the two formations. The boundary was distinct; but not so much so as at Killiney; and there was a peculiar lumpy, lenticular-nodular structure common to the rocks on each side of the boundary; the greatest extension of the flake lumps being parallel to the surface of separation. At the southward end of the Scalp—a remarkable physical feature to be men-

tioned again—the mica slate can be seen in close proximity to the granite; crystals of chiastolite are to be found in it there also. The contact is seen in some places on the west side also of the granite, but only imperfectly, and not under specially interesting circumstances.

It has been suggested that some of the granite of the main mass may have been produced by extreme metamorphism from the rocks in which it is contained; but the similarity of its composition in different places, as far as is known, seems to throw a very great difficulty in the way of this hypothesis. No doubt, as the granite has acted upon the Silurian rocks with which it has come in contact, these rocks must, in some way or other, have reacted upon the still tractable materials of the unsolidified granite. Probably it is to such reaction that the interesting phenomenon to be seen on the S. slope of Rochestown Hill (a locality already mentioned) is due. In a quarry there, just N. of the garden wall of Killiney Park, it may be observed that the crystals of black mica in the granite are arranged in layers parallel to the bounding surface between the granite and the slates. This is visible for a distance of ten or twelve feet from the boundary, which is very abrupt and definite.

The chemical and mineral composition of this granite has been elaborately investigated by the Rev. Dr. Haughton, F.R.S. For the full results of his analyses and the discussion thereon, the reader is referred to Dr. Haughton's Paper in the *Quart. Journ. Geol. Soc.*, London, vol. xii., 1856; and to the joint Paper, by Professor Jukes and himself, in the *Trans. Royal Irish Academy*, vol. xxiii., 1858.

The analyses show comparatively slight differences in the proportions of the constituents of the rock in different localities The following table gives the mean chemical composition of specimens obtained from eleven generally widely separated places:—

Silica,	72·07
Alumina,	14·81
Peroxide of Iron,	2·22
Lime,	1·63
Magnesia,	0.33
Potash,	5·11
Soda,	2·79
Loss by ignition,	1·09
	100·05

The mineral constituents are (1) Quartz, (2) Orthoclase felspar in distinct crystals, (3) Albite felspar (in paste), (4) White mica (Margarodite), (5) Black mica (Lepidomelane). The quartz, orthoclase, and white mica, are always present in distinct grains; the black mica is not always, but frequently, present along with the white, and in smaller proportion. The orthoclase crystals are sometimes large, making the rock porphyritic. The felspar paste contains much more soda than the orthoclase crystals. This suggested the idea to Sir Robert Kane, Dr. Haughton, and others, that the paste might be partly composed of some other felspar besides orthoclase. None such, however, had been seen in this granite, until Dr. W. H. Stacpoole Westropp detected what seemed to him to be some small crystals of albite in some granite from the neighbourhood of Kingstown. These proved to be really albite on being analysed by Dr. Haughton. Since then, Professor Hull has, by means of the microscope, observed in the paste of this granite, besides orthoclase, a triclinic felspar, which is doubtless albite. (In the Mourne granite the albite, as well as the orthoclase, can be distinguished in every hand specimen.) The white mica of the Leinster granite sometimes becomes *plumose*. At different places about Killiney and at Foxrock, near Carrickmines, it has been found collected into nests, with a beautiful flowing, feathery arrangement. It is believed that this is a speciality of this neighbourhood.

For the accidental minerals occurring in this granite and developed in the Silurian rocks metamorphosed thereby, see the Article on the mineralogy of this district.

The jointing of the granite can be well studied in many places, as about the Killiney Hills, especially in the large, now disused, quarries on Dalkey Hill. Several joint systems of different degrees of importance can sometimes be seen intersecting at the same place. The joint surfaces are almost always very even and smooth, entirely different, as to character, from surfaces of fracture; so that however the joints may be connected with the contraction of the granite in cooling, they are something more than mere planes of splitting. The main joints have generally a marked parallelism, sometimes for considerable distances.

It is principally the primary joints, and rarely the others, that have the slickenside coatings so often to be seen on those surfaces.

It is, of course, quite possible that there may be friction slickensides on planes of dislocation in the granite. There must have been such planes produced during the disturbances after the Carboniferous age, when the granite had been thoroughly solidified, and great friction must have taken place along them; but the slickensides so frequently to be seen in the granite joints of this neighbourhood are, at least as a general rule, most clearly structural and not the result of friction. The slickenside striations of the quartz coating of a joint surface are often accompanied by capillary schorl, the needles or fibres of which are accurately parallel to the slickenside striation and unquestionably form part of the phenomenon. The great majority of the slickenside-bearing joints of a neighbourhood have a very observable nearness of direction with each other; the mean dip of these surfaces is at about 30°, so that the variation in the direction of the planes is only one half that of the strikes of the planes. Moreover, the striations are not only strictly parallel on the same surface, but they very seldom deviate much from the mean direction in their vicinity; showing that their directions have been influenced by some common cause. This can be well seen in many places; of which one of the most easily indicated and accessible is the shore at Sandycove (between Kingstown and Dalkey), from the bottom of Burdett Avenue for some distance eastwards.

The granite is often penetrated by dykes and veins of eurite (which may be called a fine close-grained granite with very little or no mica) and by veins of quartz. These, when they intersect can often be seen to be of different ages; and they are sometimes faulted. The eurite veins may be intrusions of later date than the solidification of the surrounding mass, or they may be only infiltrations into contraction fissures; the quartz veins have been doubtless formed by infiltration.

Occasionally, though apparently very rarely, the granite in this neighbourhood exhibits an obscure concretionary structure. Sometimes a freshly exposed joint surface will show indistinct concentric rings of colour two or three feet in diameter, usually iron staining, which might, at first sight, lead to the supposition that the joint had cut across a concretionary spheroid; but it will usually be manifest on closer inspection that the phenomenon is confined to the joint itself. In some places, as near Mur-

phystown, the outer part of a roundish projection of granite seems to be a slightly separated coat or shell of uniform thickness, which might be removed by wedges. This, also, might be supposed at first sight to be an instance of concentric structure; but it appears to be really in some way the effect of the atmosphere, although the granite is quite sound and undecomposed. (This is well seen on a much larger scale on one of the Mourne granite mountains.)

In some places, owing to the decomposition of the felspar, the granite has, for a depth of several feet, become so rotten that it can be chopped out with a spade; it is then used as "freestone" for sanding kitchen floors. This phenomenon may be sometimes observed at some height on a steep hillside, *e.g.*, above Ticknock, on the west side of the Three-Rock Mountain, as well as on low ground. It seems to be the effect of atmospheric action; a neces sary condition being some local peculiarity in the felspar; but what this may be does not seem to have been ascertained.

Disturbance and Denudation.—There is a wide unconforma bility between the next succeeding formation and the Lower Silurian on which it rests; showing that there was great disturbance and denudation between the completion of the Lower Silurian strata and the commencement of the deposition of the others; this being the second of which we have evidence in this district. Mr. Jukes thought it probable that the Lower Silurians were already disturbed, to some extent, when the granite came up into them; the intrusion of the granite, if it did not directly cause, was, at least, accompanied by further disturbance of those rocks. At any rate, the great disturbance that actually took place would afford opportunity to the denuding agencies of working very unequally on different parts of the great stratified mass. Whilst in some areas of this district several thousand feet in thickness of the Lower Silurians still remain, in others the ground was bared of all such rocks before the Old Red Sandstone was laid down. This was, almost doubtless, the case where the Limestone lies directly on the Cambrian, as at Howth, and it was inevitably so where the Limestone stretches over the Silurian on to the granite, as it does a few miles S.E. of Dublin. But as the Cambrian floor of the Silurian sea was doubtless irregular in this district, and as the granite

came up irregularly into the Lower Silurian strata, we cannot form any idea what thickness of the latter may have covered those places when the denudation began; though it was probably something considerable. But there is good reason for believing that, near the town of Wexford, the whole thickness of the Lower Silurian formation of this region was stripped off the Cambrian rocks before the deposition of the Old Red Sandstone in that vicinity. The Silurian strata seem to have been there laid down evenly on the surface of the already contorted and denuded Cambrian mass; and it is just in that neighbourhood, alongside of the Cambrian boundary, that we have the clearest evidence of the great thickness of the Silurian rocks, viz., perhaps ten or twelve thousand feet. Some such thickness of Lower Silurian beds must have stretched over the now exposed Cambrians, near at hand, and by far the greater part must have been removed by the denudation of which we are now speaking, as is shown by the remains of the Old Red Sandstone which lie on the Cambrian rocks at a distance of only $1\frac{1}{4}$ mile from the nearest and lowest Silurian stratum. The re-exposing of the Cambrian rocks nearer Dublin must have been, likewise, chiefly performed by this denudation, though doubtless partly by that to be considered farther on.

The fact that the Old Red Sandstone conglomerates near the granite in Co. Kilkenny and in Co. Waterford contain pebbles of that rock is another proof of the great denudation that had taken place before the deposition of these conglomerates; since, as far as we know, true crystalline granite is formed only under the conditions of very slow cooling and great pressure, that is to say at a considerable depth beneath the surface.

OLD RED SANDSTONE (?)—This may be but the basal or shore beds of the Carboniferous formation. Although there are four, and possibly five, presentations of these rocks in this district, they are all very small. This is on account of the (conformable) overlapping which hereabouts runs through the whole series of Carboniferous strata. The post-Carboniferous larger-scale disturbances were, in this region, comparatively small (though not so in the S. of Ireland); and it was only here and there that the later denudation was able to bring these underlying beds to the surface. No fossils have been found in them.

The largest exposure of these rocks is at Portrane and Donabate, where an upheaval has enabled the subsequent denudation to lay them bare between the Silurian and the Carboniferous Limestone. The whole thickness of these beds in this place does not exceed 350 feet.

There is another outcrop of these strata near Lyons, 14 miles W.S.W. of Dublin, where they have been exposed by the removal of the Limestone, for a very small length and width. The remnant patches of these beds to be seen lying on the upturned edges of the Lower Silurian rocks on Shenick's Island (Skerries) and on Lambay Island have been already mentioned.

Along the base of the cliffs at Balscaddan Bay, on the E. side of Howth Harbour, there is a coarse, brecciated conglomerate of quartz-rock materials, red and yellow stained, which, from its proximity to the Lower Carboniferous Limestone, doubtless belongs to these underlying beds.

Just outside the railway at Blackrock Station there is the still exposed part of a rock, the rest of which has been covered by the railway embankment. It consists of a remarkable firmly compacted pure granite breccia. The granite from which it was formed and the remains of the limestone which must have covered it are both visible close by in the People's Park. But as the latter is Upper Limestone, this breccia cannot belong to, nor lie beneath, the base of the Carboniferous formation which could be overlapped only by Lower Limestone.

Carboniferous Limestone.—This formation is one of the salient features of the geology of Ireland. It extends continuously from the E. to the W. coast of our island, occupying the greater part of the central plain and its ramifications. Its greatest thickness is from 2,500 to 3,000 feet. From want of suitable continuous sections its thickness near Dublin cannot be determined, although the bottom of the formation occurs at Donabate, and the top of it only three miles northward of that, a little beyond Rush.

Lower Limestone Shale.—This consists of dark shales and thin flaggy limestones. It surrounds the exposure of Old Red Sandstone or of basal Carboniferous conglomerate at Donabate and runs thence towards the S.W., along the crest of an anticlinal fold, the whole length of the narrow exposure being seven miles. It contains a small characteristic assemblage of fossils. Its whole thickness does not exceed 200 feet.

Carboniferous Limestone Proper.—This has been separated into three divisions, Lower, Middle, and Upper. The distinction between these, however, is principally lithological and local in character; it cannot be generally carried out. The Middle division seems to be the least constant, and about Dublin the Middle and Upper are not distinguishable. In this district the Lower Limestone is generally a pale grey crystalline limestone, sometimes regularly bedded, sometimes in amorphous masses. The neighbourhood of Dublin, for a radius of several miles, is on the Middle and Upper Limestone which here consist generally of dark, earthy limestone, called calp, interstratified with dark grey shales, and with frequent layers or irregular nodules of chert. This is quarried for building stone and road metal. Occasionally beds of good pale limestone, fit for burning occur therein; these sometimes abound in fossils.

The lower division of the Limestone lies directly on the Cambrian rocks at Howth, and its upper division, which has overlapped its own inferior parts, extends on to the Silurian rocks near Skerries, and on to the Silurian rocks and granite at four miles southward of Dublin.

In the last mentioned vicinity the following remarkable circumstance is to be observed. Over all the district between the Liffey and the foot of the Dublin hills the prevailing dip of the Limestone strata (neglecting slight contortions) seems to be everywhere southwards, or towards the emerging Silurians and the granite. This may be partly explained either by undulations of the beds whose opposite dips happen to be concealed, or by a series of faults running nearly E. and W., which repeat the beds; otherwise it would be necessary to attribute to the black, earthy limestone a thickness greater than the known thickness of the group anywhere else. A similar peculiarity of dip may be observed near the northern extremity of the map. The Upper Limestone beds on the shore S. of Skerries and also two miles inland dip northwards towards the Lower Silurian rocks on which they rest.

The actual contact of the Limestone and Cambrian is visible on the W. shore of the Howth peninsula about 200 yards N. of Bottle Quay. The contact of the Limestone and granite is nowhere exposed; the two are visible about a stone's-throw from each other on the shore at Blackrock in the People's Park. In a Limestone

quarry-pit near Carlow, whence stone was being taken to build a new church, some years ago, the workmen, to their great inconvenience, came down upon the granite.

Sometimes masses of the Limestone rock have been more or less highly dolomitized, so that the bedding sometimes becomes obliterated. Examples occur in Howth harbour, and one mile W. thereof close by the railway, and one mile S. of this latter place, also near Milltown bridge and on the shore S.E. of Malahide, and near Loughshinny. Anthracite, probably of animal origin, or perhaps derived from marine algæ, has been found in the Limestone at Castleknock; and sometimes bed faces are covered with a thin film of black carbonaceous matter.

The Limestone, occasionally, contains large and small fragments of granite, both rounded and angular, sometimes associated with granite sand, as also slabs of mica schist, as near Crumlin and at Milltown. These extraneous masses are sometimes quite isolated in the limestone matrix; as though they had been carried out from the land into comparatively deep water in the Carboniferous sea by some unusual means of transport, as, for instance, by being floated by plants to whose roots they may have been attached. Fragments of (unmetamorphosed) Silurian material are found in some of the Limestone beds at Kilsallaghan and Lispopple, eight miles W. by S. of Portrane. In the ravine of the Delvin river, near the Naul, and on the shore, both near Rush, and near Baldungan, two and a half miles northward thereof, there are beds of conglomerate of which the blocks, pebbles, and fragments, both rounded and angular, and layers of sand are of Silurian origin; these were evidently shore beds.

It seems most probable that the Calp, or dark earthy limestone so prevalent around Dublin, was largely formed of fine mud derived from the black Lower Silurian slates. The small proportion of lime in the Calp may account for the fact that there are, apparently, no underground streams in this vicinity. The percolating water, not being able to dissolve the Calp, could not make subterranean passages, as it has done to such an extent in the Limestone of the W. and S. of Ireland. There is a strong spring of fresh water rising through the sea water in Howth Harbour. This comes doubtless from a subterraneous passage in the Lower Limestone of that locality, which is pure, excepting the very local dolomitization near the spot.

It is very remarkable that the above-mentioned conglomerates near Rush and near Baldungan contain pebbles of Carboniferous limestone. In other places the limestone is thickly interspersed with small, angular fragments of older beds of the same formation; these are very visible when they are of a different shade of colour from the matrix. These facts seem to imply that there were minor, pretty even, upheavals and subsidences during the deposition of the Carboniferous Limestone. and that older beds were uplifted from the sea, and had acquired considerable hardness when later beds were being formed partly from their angular and rolled debris. The phenomenon of lenticular bedding, often to be observed in the Limestone, indicates that there were irregular changes of condition connected with the deposition of the strata.

Upper Shales.—A remnant strip of this formation extends from Baldungan towards the Naul, as indicated near the northern extremity of the map. Its length is nearly ten miles, its mean width about one and a half. The rocks consist of hard, splintery shales, interstratified, in some places, with thin grits and flagstones. They used to be called Coal Measures, that term being applied, in a wide sense, to include, not only the Coal Measures proper, but all the strata between them and the top of the Carboniferous Limestone. They are to be correlated with the Yoredale beds. Only the lower part of the group remains, the thickness being about 500 feet. The overlap above mentioned, still continues into this formation, as can be seen near the Bog of the Ring, where these Upper Shales evidently extend beyond the Limestone, so as to come directly upon the Lower Silurian. Though this formation is properly described as conformable with the Limestone, yet, occasionally, local unconformabilities have been noticed between the contiguous beds of the two series. This is what might have been expected, as the great general subsidence during the Carboniferous age must have been, not only interrupted, but temporarily reversed at the end of the Limestone period. As already mentioned, a similar temporary reversal seems to have taken place during the deposition of the Limestone itself; this being apparently necessary to explain the presence of fragments of earlier beds in the later beds of that formation.

The Upper Shales in this district contain a very characteristic assemblage of fossils. There is a very interesting coast section

across the end of this Upper Shale area, for which see Geological Survey Explanations 102, page 62.

The beds of this formation are in a synclinal basin, as is invariably the case in Ireland, and the low hills which they form are hills of circumdenudation. This brings us to the

Disturbance and Denudation which took place after the completion of the whole of the Carboniferous formation, this being the third of which we have evidence in this district. Although in the western and west-central parts of the Carboniferous Limestone plain of Ireland the beds of that formation extend evenly and almost horizontally over considerable areas, yet elsewhere they have undergone disturbance and contortion. Such has been the case in the district with which we are now more immediately concerned, although by no means to the same extent as in the South of Ireland. In many places the beds have steep local dips. They are interestingly contorted at Loughshinny, three miles S. of Skerries, evidently by horizontal compression, which has produced even reversed faults. They are also strongly contorted in a quarry beside the bridge at Lucan and elsewhere. This disturbance being greater in the S. and S.E. of Ireland, has there produced a general system of cleavage pervading all the rocks from the lowest to the highest. The strike of this cleavage is in the S. about W.S.W. and E.N.E.; in the S.E. it gradually turns to about S.S.W. and N.N.E., and it seems to die away a little outside the southern boundary of the map. This disturbance seems to have been (at least principally) effected at a time earlier than the Permian age; so that if, as seems most probable, no formations later than the Carboniferous were laid down in this district until the Drift period, the denuding agencies had nearly all the long period from that time to the present in which to work their will on the disturbed rocks. However this may be, they have very effectually availed themselves of the opportunities afforded them.

When we consider that the Upper Shales just mentioned, and the overlying beds as far as they remain to us, are seen over the greater part of Ireland, to lie in synclinal basins, and that they are always remnant patches, whose limits are due to denudation and not to the dying-out of the beds, we reasonably conclude that these supra-Limestone beds once extended over a great part of the area now called Ireland, and that they have since been removed by denudation. The country around Dublin

must have had over 2,000 feet of such strata removed in this way, besides some of the underlying Carboniferous Limestone, though generally not very much of this has been eroded, as in this vicinity we are on the Middle and Upper Limestone. Doubtless, at Portrane the denudation has removed the whole thickness of the Carboniferous formation, together with the few hundred feet of the thinning out Old Red Sandstone, if it be such, which once covered the Silurian at that place—probably a thickness of over 4,000 feet altogether.

It is on such considerations that Professor Hull has founded his explanation of the origin of the Scalp, a remarkable gap, three miles W. by N. from Bray, which cuts across a spur ridge from the mass of the Three Rock mountain. The water falls both ways from the Scalp. Professor Hull's suggestion is that that gap was cut by a river which began to flow when the Upper Carboniferous strata still covered the neighbourhood, including the site of the ridge, and which became unable to continue passing through that part of its valley when the general denudation had worn down the softer rocks of the upper part of its course more deeply than it was able to erode its bed through the hard granite and mica slate of the ridge, which was already existing, though doubtless not in its present condition.

Notwithstanding the deposition of Drift which has taken place over so much of this district, and the great accumulation of it in certain places, very little of the denudation of which we have been speaking can have been effected during the Drift period to supply the materials then spread about, since the traces of the general glaciation wrought immediately before the Drift period still remain visible in so many places.

GENERAL GLACIATION.—The signs of the action of the general ice-sheet which once covered Ireland are abundant in the vicinity of Dublin. They consist (1) of rock rounding, smoothing, and striation, and (2) of Boulder Clay, or Lower Boulder Clay, as we may call it, without committing ourselves to the hypothesis that is sometimes implied in that title.

The rock-grinding can be seen in many places on the quartz-rock of Howth, Ireland's Eye, Shankill, and Bray Head, on the Old Red Sandstone conglomerate near Donabate station, on the felstone there beside the railway, on that of Lambay Island, on the granite (generally recently stripped of its drift covering) near Dundrum,

about Foxrock, and Dalkey, on the Killiney Hills, &c. It is often strikingly displayed on limestone freshly bared for quarrying; though, of course, almost immediately removed. There was a very fine example of this in a quarry near Finglas Bridge (the one in which the beds are nearly horizontal). The abrading agent has frequently produced very observable crag-rounding, as distinct from mere surface-rounding, though generally accompanied thereby, as on Ireland's Eye, Shankill, and Bray Head. This phenomenon should be viewed from a sufficient distance—say from half a mile to a mile and a half—and in the afternoon, when the sun is favourably situated for showing the effect, owing to the direction of the glaciation. The highest point at which the striations can be certainly found is on the very summit of Shankill, near the Scalp, 912 feet. Unfortunately the granite hills would not preserve the striations except under special circumstances, otherwise those marks of ice-action would be traceable to much greater heights.

The Lower Boulder Clay is of the usual well-known character. It is generally a very stiff clay containing well rubbed, blunted, and scratched, though sometimes angular, and very rarely rolled, stones and blocks; these are often two feet in length, though they are usually much smaller. Except in the S.E. part of this district the great majority of the stones are limestone, even in places situated some miles from the edge of the limestone ground. As the great ice movement was from the extensive limestone plain, we should naturally expect a preponderance of limestone blocks in the boulder clay; but it is sometimes very surprising that the boulder clay, after having been swept along over two or three miles of granite ground, should have picked up so few granite blocks as it has done. In such cases the largest blocks in the clay belong to the local rock. The upper surfaces of such blocks are sometimes ground, smoothed, and scored in the same manner as the surface of the living rock, and in the same direction.

In the N. and N.W. neighbourhood of Dublin the boulder clay has been left in more or less well-defined ridges, which are quite distinct from the eskers to be mentioned presently, and which we shall call drumlins; these are not only parallel with each other but also with the rock-striation of their immediate

vicinity. It is perfectly certain that it must have been the rock-scoring agent which produced the boulder-clay ridges. Having ascertained this, we can often recognise the course of the flows of the universal ice-sheet by the mere inspection of an accurately shaded map. See the shaded Ordnance inch maps, Nos. 100, 101, 110, and 111. These drumlins are even more strikingly displayed in other parts of Ireland.

The rock-scorings and these ridges show that the great glacial flow from the north-westward was divided not far from Maynooth, evidently by the obstruction of the Dublin and Wicklow Hills; see the glacial map of Ireland in Prof. Hull's Physical Geology and Geography of Ireland, p. 210. Agassiz, when in Dublin in 1840, having seen but little of the glacial phenomena of the neighbourhood, naturally supposed that those hills must have been a centre of glacial dispersion. But it is very interesting and remarkable to find that they were not so, but that they were invaded *ab extra* by a great ice-flow which can be traced backward to the less important hills of Fermanagh. They had, however, afterwards, their own small local glaciers as we shall see presently.

STRATIFIED DRIFT.—Immediately over the Lower Boulder clay, which was clearly the *moraine du fond* of the great ice-flow from the north-westward, comes a deposit of stratified water-arranged and washed gravels and sands. These, which we shall call the Middle Sands and Gravels, extend from the present sea level up to a considerable elevation on the hills. They reach 1,100 feet on the S.E. side of the Three Rock Mountain, 1,300 feet on the W. side of that hill, on the summit of the *col* connecting it with Kilmashogue Mountain, 1,250 feet at $2\frac{1}{4}$ miles W. by S. of the last, and the same elevation at one mile W. of this last on the eastern side of Mount Pelier. The distance between the first and the last mentioned spots is five miles.

These elevated parts of the gravels and sands are as well washed and sorted as those on the low grounds; they moreover consist as largely of foreign materials; although resting at those heights on granite hills they are part of the "limestone gravel." Pieces of flinty chalk and other far-transported stones and fragments of marine shells can be found in them as in the low-lying gravels. The shells found in the gravels of this neighbour-

hood all belong to species now inhabiting the neighbouring seas; they are usually much broken, especially those found at the higher elevations. The highest places at which they have been found are at Ballyedmonduff, 1,000 feet, and at one furlong southward of Caldbeck Castle, on the above mentioned *col* between the Three Rock and Kilmashogue Mountains, 1,250 feet above the sea.

It is most probable that a large proportion of these deposits consists of water-rolled and rearranged materials derived from the Boulder Clay which seems to have suffered denudation and to have been removed in some of those places, at least, where the water-formed gravels lie directly on the rock. The gravels have been piled very irregularly; some valleys contain deep accumulations of it. Some places are bare of it, though situated at lower levels than others not far off which are deeply covered.

There are great collections of this formation in Killakee valley, in Glennasmole (shells), in many places in the valley of the Dargle river from Bray towards Powerscourt Deer Park, in Glencullen, about Enniskerry, &c. There are fine natural sections in many places, especially Killiney Bay (shells) and Balscaddan Bay on the E. side of Howth Harbour (shells), and many good artificial sections in large gravel pits about the neighbourhood.

It is just possible that these gravels may have formerly reached higher elevations than those mentioned and have been washed down again. On the Two Rock Mountain, which might be called the southern and higher part of the Three Rock ditto, stones of two to four inches in diameter, and blocks of extraneous material can be found near the summit at 1,750 feet. There are two blocks of granite on the N.W. side of the Great Sugar Loaf, at the height of 1,480 feet, and several others at 1,300 feet; these are three miles from the nearest granite rock; there are some also on the upper part of Bray Head, five miles from the nearest granite. These may have been transported by floating ice, which agent has, doubtless, dropped the large blocks of (local) granite which may be seen resting on the surface of the above-mentioned elevated gravels of extraneous materials resting on the granite hills. The numerous fragments of chalk-flint and the pieces of Mourne granite that are found in the gravels may have been carried hither by floating ice; they may, however, have been gradually drifted along the coast by the ordinary action of the waves.

Upper Boulder Clay.—Over the generally well-washed and stratified Middle sands and gravels may sometimes be seen a nearly, occasionally quite, unstratified deposit, which we may call the Upper Boulder Clay, without implying thereby that it has been formed in the same way as the Lower Boulder Clay. It is of a looser, more earthy material, and may contain far-travelled stones. But as the nature of this deposit, if it be really a separate one, is obscure, and there is considerable difference of opinion thereanent, and as entering into controversy is outside our present business, we shall pass on to the next.

Eskers.—These seem to be the latest of these drift accumulations. We shall not now go into the difficult and vexed question of their mode of formation. They must be as old as the time of floating ice, as they sometimes have very large transported blocks lying *upon* them, just as the level drift often has. It is sometimes evident that these have not been brought out by denudation, but that they have been dropped on the esker by some agency that did not interfere with the gravel and sand already there; and the only agency that can be suggested is floating ice. The eskers consist of thoroughly well washed and generally stratified materials. Shell fragments have been found in them, but only in one or two instances. As their name implies, they are generally in the form of *ridges*, though they are often but more or less well-defined irregular mounds. There is a good specimen of a ridge esker at Greenhills, a couple of miles W. of Rathfarnham. Its whole length is nearly three miles, and its height from thirty-five to sixty feet. A road runs along the crest of its southern portion, where it is narrower and well-defined, for a length of two and a quarter miles. There is also a ridge esker at a place thence called Esker, on the S. side of the Liffey, six miles W. of Dublin, and there are irregular esker mounds in Stillorgan Park and elsewhere.

Local Glaciation.—This is doubtless the proper place in which to mention the glacial moraines which are to be found among the hills in the neighbourhood of Dublin. It is most probable that those moraines were finally left by the ice, as we now see them, about the time of the formation of the eskers or shortly after that.

Each of the two Loughs Bray (12 miles S. by W. from Dublin) occupies its own division of a laterally double hollow on the N.E. side of Kippure Mountain (granite, 2,473 feet above the sea). The

larger or Lower Lough Bray (elevation 1,225 feet) is dammed in by a glacial moraine, the two arms of which meet at the bottom of the lake and then descend towards the bottom of Glencree valley, near the head of which the lakes are situated. Their lower parts below the lake are covered with numerous large granite blocks, some of which must weigh about 200 tons. That part of the grounds of Lough Bray Cottage which is on the N. side of the lake is on a bank leaning against the hill side; the upper side of this bank falls to the hill side. The lower eastern *end* of the bank is beneath the water of the lake. This is clearly a latero-terminal moraine formed by the glacier when it had shrunk so as to be unable to fill the original moraine bed it had made for itself. (The jointing of the highest part of the precipice is well seen from the ground between the two lakes. In the lower part of the precipice the primary jointing dips inwards, and is as regular as stratification; at the summit it is horizontal.) The small Upper Lough (elevation 1,453 feet) might be considered by some the more interesting, glacially, of the two. It is contained in its own recess which is much less deep than that of the Lower Lake. If we may so express it, the width of the Upper Lake is greater than its length. Its longest axis is parallel to the cliff under which it lies and to the moraine dam. This dam is a well defined bank running all along the lower edge of the lake; at its middle part it rises about 90 feet above the water. It is represented, but without the following small details, on the shaded Ordnance inch map, 121. All along its top runs a small, very distinct, ridge or crest, which looks almost like an artificial bank, and close outside of this, for the S.E. half of its length runs a second parallel but not so regular crest. Several huge blocks of granite are scattered about on this moraine dam; one lies right on the first mentioned crest. Some of these must be 200 tons in weight; the largest (on the outer side of the moraine) measures 28 feet in width at its base, 26 feet in height, with a mean thickness of about 9 feet; it must weigh at least 250 tons. These blocks have, no doubt, come from the cliff on the opposite side of the lake. It is interesting to have this evidence of so great power in so small a glacier. No rock-scoring is to be seen; the rocks being all concealed by the moraine masses, except in the precipices over the lakes.

The hollow enclosing the Powerscourt deer-park seems to have contained a glacier. A little before reaching the Waterfall a bank is passed which might well be the terminal moraine of such glacier. This hollow, however, is at a low level.

Mullaghcleevaun (*i.e.*, Cradle mountain,) so called from the *cradle*, or hollow, containing its small lake is seven miles S.E. of Blesington and eighteen miles W.S.W. from Dublin; it rises 2,783 feet above the sea; the elevation of the lake being 2,244 feet. The damming-in moraine is sufficiently striking to be indicated in the shaded Ordnance inch map, 120.

These corries, or small cirques, like the rest among the Wicklow hills (except the North and the South Prison on Lugnaculliagh) face north-eastward; a usual circumstance with such glacier sites; the reason of which is obvious on consideration.

Pleistocene Mammals.—As the limestone forms plain ground in the neighbourhood of Dublin, with hardly any crag escarpments except in a few stream ravines, there is but little opportunity for the occurrence of caves sufficient to make retreats for the cave animals and to become receptacles of the bones of themselves and their prey. None such, therefore, have been discovered. Bones of bear have, however, been found in Co. Kildare, beside the River Boyne, at about two and a half miles above the bridge of the Midland Railway, 31 miles W. by N. from Dublin. They were embedded in peat or sand four feet below the surface. The skull is now in the Museum of the Royal Irish Academy; the rest of the bones were not preserved, although they were but little decomposed. Dr. Leith Adams considers that the skull is that of a young female of *Ursus spelæus*. In the same place were found many bones of deer.

A remarkable collection of the remains of *Cervus megaceros* has been discovered at Ballybetagh bog, parish of Kiltiernan, eight miles S.S.E. from Dublin. In 1847, whilst a watercourse was being cut through the bog, the heads and antlers, with other bones, of about thirty individuals of this deer were found within a space of 100 by 4 yards in vegetable compost and sand under peat, as also one head of *Cervus tarandus* or reindeer with the horns large and perfect. In 1875 Mr. Richard J. Moss, on further exploration, discovered the remains of about fifty other individuals; and since then Mr. William Williams, naturalist, has

obtained those of twenty-five more, with the horn of a second reindeer. Thus about 105 individuals of *Cervus megaceros* besides those, doubtless many, whose remains have not been exhumed, were buried at this Irish Big Bone Lick. The animals were nearly all males. Remains of this deer were found also in the great accumulation of gravel a little N. of Enniskerry; these, as might have been anticipated, were much decomposed.

Besides the remains of the two reindeer obtained at Ballybetagh, a very fine and perfect skull of this animal, with antlers, was found on the verge of Curragh bog, a couple of miles N.N.W. of Ashbourne, and 13 miles N.W. from Dublin. It is now in the National Museum of Ireland.

Raised Beach.—This can be seen in various places along the neighbouring coast. It is perceptible near Malahide, and on the W. side of Ireland's Eye. It forms the low narrow neck which makes a peninsula of the Hill of Howth. The flat ground extending along the coast from the mouth of the river Tolka to Merrion, and extending inland for some distance along each side of the Liffey and to Donnybrook, belongs to this formation. The remains of it can be seen at one spot, just S. of the mouth of the Shanganagh River, in Killiney Bay. It runs inland up the valley of the Bray river. It forms the Murrough on the near side of the town of Wicklow.

There is difference of opinion respecting this formation, as occurring in this neighbourhood. Some authorities contending that the low raised beach of this neighbourhood corresponds with that which in S.W. Scotland is at the higher level of 25 feet. Others contending that, beside the lower beach of this neighbourhood, there are also traces of a 25-foot beach.

Submarine Peat.—Submarine peat occurs in many places around the east of Ireland. It often contains stumps of trees standing *in situ;* in some places turf is cut therefrom at low spring tides. It is said that peat has been brought up in Killiney Bay on the flukes of anchors. It occurs off the coast of Wicklow and Wexford, sometimes under four fathoms of water. If there be, as just now referred to, two raised beaches in this neighbourhood, this now-submerged peat grew subaerially of course, after the higher and probably before the lower beach was formed. This, if

correct, would indicate the following oscillations of level of the land. The land, having stood for some time while the upper beach was being formed, rose about sixty-five feet, when the now-submerged peat grew upon it; it then subsided a little more than sixty-five feet, and stood until the lower beach was formed; it then rose again, a few feet, to its present level.

RECENT PEAT.—Considerable portions of some of the hills are covered with what is doubtless to be called recent peat. On the summits of some of the hills, *e.g.*, Prince William's Seat, 1,825 feet, it is now being *removed* by atmospheric denudation, which seems to indicate that in such situations the conditions are not now as favourable as formerly for its growth and increase. At the head of Glencree, above the Reformatory, the turf lies on the granite to a depth of from six to twenty feet, and it is said that roots of lime and stems of fir, willow, &c., (the fir is unquestionable), are frequently met with in cutting it there; the elevation above the sea being 1,500 feet. This also seems to indicate some change in atmospheric conditions in such situations; as it is doubtful if trees could grow there now.

List of Places with Geological Phenomena of Special Interest.

Shenick's Island, Skerries. Lower Silurian, &c.

Lough Shinny and coast on each side. Limestone and Upper Shales, strong contortions, reversed fault, fossils.

Malahide shore. Lower Limestone Shale.

Portrane. Lower Silurian limestone, with fossils, &c.

Lambay Island. Lower Silurian limestone with fossils, felstone porphyry, remnant of Old Red Sandstone (?).

Howth Peninsula. Cambrian, numerous igneous dykes. Shell-bearing drift. Isthmus of Raised Beach.

Greenhills, beyond Crumlin. Esker.

Glennasmole. Felstone and basalt outside entrance. Deep shell-bearing Drift within.

Ballyedmonduff and Caldbeck Castle. Shell-bearing drift, 1,000 feet and 1,200 feet.

Blackrock. Nearest visible approach of Limestone to Granite, Granite breccia.

Dalkey. Extensive granite quarries on hill. Granite *roches moutonnées* near town.

Killiney Bay. Junction of Granite and Mica Schist. Shell-bearing drift.

Rochestown Hill. Junction of Granite and Mica Schist, laminated granite. Rock-scoring.

Kiltiernan. Cervus megaceros, C. tarandus.

Ballycorus. Disused mine, Smelting Works.

Scalp. Junction of Granite and Mica Schist. Physical feature.

Lough Bray. Physical feature, Granite jointing, glacial moraines.

Bray Head. Section in Cambrian, Oldhamia, &c. Glaciation.

Greystones. Section in Cambrian, Oldhamia, dyke, glaciation.

ON THE PALÆONTOLOGY OF COUNTY DUBLIN,

BY

WILLIAM HELLIER BAILY, F.G.S.

[Read February 18th, 1878.]

THE fossil-bearing rocks in the vicinity of Dublin, including the adjoining County of Wicklow, belong to the oldest series of formations, being of Cambrian, Silurian and Carboniferous age; with the exception of a few Pleistocene deposits, containing marine shells in gravels of the Glacial period.

The Cambrian fossils first claim our attention, as belonging to the oldest fossiliferous formation of the British Islands. From the Bray railway station, a walk along the shore of about a mile brings us to the commencement of the series of rocks forming Bray Head. Certain beds in the hard, sandy shales and slates may be seen to be covered with impressions and markings which were, evidently, organic; they have been described under the generic name of Oldhamia, after Dr. Oldham, who first made them known. Two species of these remarkable fossils were defined by Professor Forbes: viz., *O. antiqua* and *O. radiata*. He considered them to belong to the Hydrozoa, and to be allied to Sertularian Zoophytes. Others have considered them to be plants, if so, they are most probably Red Algæ, allied to the lime-secreting Corallines. They occur in both green and red or purple slates. On the shore, the best locality for *O. radiata*, is the "Periwinkle Rocks," at Bray Point, only to be reached at low water; the finely laminated green grits at this place being covered with their impressions, and about a mile and a-half further they are plentiful in certain purplish shaly beds, which are interstratified with thicker beds of grit, forming the cliffs rising from the sea at Bray Head, near the "Cable Rock." Good examples of *O. antiqua* may be obtained from red beds near the same place, but more inland, a little above the footpath, round the Head, and just within the boundary-wall of Kilruddery Demesne, also at other places close to the same footpath, in cuttings of the Dublin, Wicklow and Wexford railway, and in various places in the cliffs upon the shore.

Oldhamia antiqua has the appearance of a number of small fan-shaped tufts, arranged in an alternating manner, upon a zigzag axis. This species is also abundant and well preserved in the brown and purple slates of Carrick Mountain, County of Wicklow, accompanied there, as at Bray Head, by tracks and burrows of animals, which frequently occur in pairs, and resemble those from the Cambrian rocks of the Longmynd in Shropshire, named by Mr. Salter *Arenicolites didymus* and *A. sparsus*, species which are probably identical. The late Dr. Kinahan believed he had detected *Oldhamia antiqua*, accompanied by tracks, in brown laminated slates at "Puck's Rocks," near the "Nose of Howth." The specimen he collected, and presented to the Geological Survey Collection, is not, however, so distinct as those from Bray or Carrick Mountain.

Oldhamia radiata.—The most frequent form resembles a number of detached bunches of flattened sea-weed, without any connecting axis or stem, covering irregularly the thin laminæ of the rock, giving it a somewhat star-shaped appearance. This species is most abundant on the shore at Bray and Greystones Co. Wicklow.

Histioderma Hibernica is a fossil from the same rocks at Bray, described by Dr. Kinahan* as "the cast of a tentacled cephalobranchiate sea-worm, not very dissimilar from the common lugworm (*Arenicola*) of our present seas." This fossil is of considerable size; it may be seen occurring as mounds on the surface of a large calcareous bed on the shore, a little south of the Periwinkle Rocks. These mound-like protuberances are about one inch and a-half in diameter, with a central depression from which proceeds a tubular opening of about half-an-inch in diameter, passing vertically through the rock from two to four inches, or even more, sometimes in a tortuous or curved manner. These fossils are entirely confined to Irish strata, excepting the double markings, supposed to be the burrows of sea-worms (annelidan), named by Mr. Salter *Arenicolites didymus* and *A. sparsus*. The *Oldhamia* and *Histioderma* have not been detected in the Cambrian rocks of the Longmynds, or those of North Wales.

Haughtonia pœcila, described by Dr. Kinahan, from red gritty beds, Periwinkle rocks, Bray Point, as an aggregation of the

* Journal of the Geological Society of Dublin, vol. viii., p. 71.

tubes of a gregarious Annelid, allied to Sabella (Jour. Geol. Soc. of Dublin, vol. viii. (1859), p.p. 116-118., figs. 1 and 2), appears to us to be scarcely definite enough to warrant its retention amongst the fossils of this formation.

Figures and more detailed descriptions of these fossils are given in the Journal of the Geological Society of Dublin (*loc. cit.*), the Transactions of the Royal Irish Academy, vol. xxiii. (1858); in the Geological Magazine, 1865, p. 385, &c.; and in the Explanation to sheets 121 and 130 of the maps of the Geological Survey of Ireland; a good series, including some of the figured specimens, being contained in the Geological Survey Collection, Royal College of Science, Dublin.

List of Cambrian Fossils.

Plantæ or Hydrozoa.

Oldhamia antiqua (*Forbes*), Bray Head, Carrick Mountain, County Wicklow; Howth, Co. Dublin.
„ radiata (*Forbes*), Bray Head, Greystones, Co. Wicklow.
Histioderma Hibernica (*Kinahan*), Bray Head, Carrick Mountain, Dublin.
Arenicolites didymus (*Salter*) } Probably identical, Bray Head,
„ sparsus (*Salter*) } Carrick Mountain.

Lower Palæozoic Rocks, containing Caradoc-Bala species have been observed at several places near Rathdrum, in the County of Wicklow: more particularly at Rathdrum Hill, the Quarry near Rathdrum Bridge, and at Slieveroe. The following is a list of the fossils collected by the Geological Survey in this district:—*

[The prefixed asterisks are intended to represent the comparative abundance of the species.]

Actinozoa: *Corals.*

**Favosites fibrosus, branching and hemispherical varieties.

Mollusca: *Brachiopoda.*

Discina perrugata?
Leptæna Griffithiana, new species (*Davidson*).
„ sericea.
Orthis calligramma.
„ elegantula.
Lingula brevis?

* Explanation to sheets 121 and 130 of the maps of the Geological Survey of Ireland, p. 16.

Conchifera.

Modiolopsis and Orthonota, species undetermined.

Nucleobranchiata (*Heteropoda*).

Bellerophon perturbatus.

Annulosa : *Echinodermata.*

Crinoid joints and stems.
Cystidean ? plate.
Glyptocrinus ; portion of column.
Palæasterina ? starfish.

Annelida.

Tentaculites Anglicus.

Crustacea : *Phyllopoda.*

Beyrichia complicata.

Trilobita.

**Calymene brevicapitata.
Homalonotus bisulcatus ?
Lichas laxatus.
*Phacops Brongniarti.
Trinucleus concentricus.

North of Dublin, Lower Silurian fossiliferous rocks of Caradoc-Bala age again appear on the shore at Portrane, and at Lambay Island, County of Dublin; at both these places the lithological character of the rocks, black slates and dark grey limestone, with their contained fossils, are precisely identical. These black slates may be observed on the Portrane shore a little south of the first martello tower from the coastguard station, and on the east side of Lambay Island, north of Kiln Point. From them have been obtained one species of Graptolite, *Diplograpsus pristis,* having a central axis with a double series of cells arranged on either side.

The Silurian limestone is well exposed in prominent cliffs on the Portrane shore, at several places between the first and second martello towers, south of the coastguard station. These rough crags have all the appearance of an ancient coral reef; the chain coral, *Halysites catenularius, Heliolites, Favosites,* and *Cyathophyllum,* occur in profusion, being weathered out by sea and atmospheric action.

The following list of fossils from these places is derived from the memoirs of the Geological Survey of Ireland [Explanation to sheets 102 and 112., p. 11.]:—

LOWER SILURIAN: fossils; Portrane, and Lambay, County Dublin.

HYDROZOA: *Graptolites.*

Diplograpsus pristis.

ACTINOZOA: *Corals.*

Cyathophyllum; species not determined.
*Favosites cristatus.
,, asper.
* ,, fibrosus.
***Halysites catenularius.
**Heliolites interstinctus, and variety megastoma.
*Syringophyllum organum.

MOLLUSCA; *Polyzoa.*

*Ptilodictya dichotoma.
* ,, acuta.

Brachiopoda.

Atrypa marginalis.
Discina; species undetermined.
Leptæna quinquecostata.
,, sericea.
,, tenuicincta.
Lingula; species undetermined.
Orthis biforata.
** ,, calligramma.
** ,, elegantula.
** ,, insularis.
,, porcata.
** ,, testudinaria.
,, vespertilio.
***Strophomena alternata.
* ,, rhomboidalis.
* ,, expansa?

Conchifera.

Ctenodonta; species undetermined.
Modiolopsis; do. do.

Gasteropoda.

*Cyclonema crebristria?
,, rupestris?
Euomphalus, two species; one new, the other undetermined.
*Holopea concinna.
Murchisonia; two species undetermined
Raphistoma; new species.

Nucleobranchiata.

Bellerophon subdecussatus.
„ new species, allied to acutus.

Cephalopoda.

Orthoceras remotum (*Salter mss.*)
„ species undetermined.
„ tenuicinctum ?

Annelida.

Tentaculites Anglicus.

Crustacea: *Trilobita.*

Agnostus trinodus.
Æglina mirabilis.
**Calymene obtusa.
*Cheirurus clavifrons.
„ bimucronatus.
**Cybele verrucosa.
***Illænus Bowmanii.
Lichas Hibernicus.
„ laxatus.
Remopleurides longicostatus.
*Sphærexochus mirus.
Stygina latifrons.
*Trinucleus seticornis.

Lower Silurian rocks, with accompanying fossils, are again exposed still further north of Dublin, on the coast north and south of Balbriggan. To the south, from half a-mile to a mile of Balbriggan, the rocks on shore at several places, black or dark grey slates, contain fossils, mostly Graptolites. The single-celled form, *Graptolithus Hisingeri*, occurs in profusion, with *G. tenuis* sparingly, and the double-celled and characteristic form of *Diplograpsus pristis* plentifully. Small orbicular Brachiopods, allied to *Crania*, are occasionally associated with the Graptolites.

About one mile and a-half north of Balbriggan, the rocks on shore near Lowther Lodge and west of the Cardy Rocks, consisting of grey and brown shales, are very fossiliferous; the small coral *Favosites fibrosus*, and Brachiopod shells *Leptæna sericea*, *Orthis calligramma* and *O. porcata*, *Strophomena alternata* and *S. deltoidea* being abundant, with the Trilobites *Cybele verrucosa* *Calymene brevicapitata*, and a small Phyllopod Crustacean, an undetermined species of *Beyrichia*. This assemblage of fossils indicates strata of Caradoc-Bala age.

Two other fossil localities, also in Silurian strata, have been observed more inland, one of them being a little south of Stamullin, close to the river Delvin, where a Crinoid head, doubtfully referred to *Glyptocrinus*, and single-celled Graptolites—probably *G. Hisingeri*—were long since obtained by the Geological Survey Collectors, from grey shales and grits. The other is situated about a mile and a-half west of Balbriggan, at an old quarry on the road to Balscaddan, where similar grey shales yielded a few fossils, amongst them *Orthis calligramma* and *Theca triangularis.* *

LOWER SILURIAN fossils; near Balbriggan, Co. Dublin.

HYDROZOA: *Graptolites.*

**Diplograpsus pristis.
***Graptolithus Hisingeri.
„ tenuis.

ACTINOZOA: *Corals.*

**Favosites fibrosus.

MOLLUSCA: *Brachiopoda.*

Crania?
**Leptæna sericea.
Orthis Actoniæ.
* „ calligramma.
* „ porcata.
*Strophomena alternata.
* „ deltoidea.

Pteropoda.

Theca triangularis.

ECHINODERMATA.

Crinoid fragments.
Glyptocrinus?

CRUSTACEA: *Phyllopoda.*

Beyrichia, species undetermined.

Trilobita.

Calymene brevicapitata.
Cybele verrucosa.

CARBONIFEROUS LIMESTONE is the prevailing formation in the immediate neighbourhood of Dublin, and although for the most part covered by drift, is observable at the numerous quarries opened for economical purposes, at coast sections, and Railway cuttings.

Sections of this formation are to be seen on the south of

* Explanation of Sheets 91 and 92, Geological Survey of Ireland, p. 21.

Dublin, between Militown and Clonskea on the banks of the river Dodder, at several places near Rathgar and Rathfarnham, Kimmage, Crumlin, Goldenbridge, &c., Clondalkin and Lucan, all south of the river Liffey; and at Killester railway cutting and quarry, south of Finglas, quarries and cuttings at Blanchardstown, east and south of the village, on the north side of the river Liffey. All these are more or less fossiliferous localities, considered by the officers of the Geological Survey* to belong to the Upper Limestone ("Calp" of Sir Richard Griffiths), although the Palæontological evidence affords no grounds for such division. Quarries at Castleknock a little south of the village, and in the townland of Mitchelstown, three miles N.N.W. of Finglas, at Cloghran, Dunsink, north of Cappoge, the large quarries at Saint Doulagh's, rocks on shore near Howth Lodge, and quarry to the south, near the Deer Park, are all in compact Lower Limestone, usually containing a large assemblage of fossils. At Balscaddan Bay, north of Howth Harbour, are Lower Limestone shales. These lower beds, consisting of dark earthy limestone and shales, are highly fossiliferous. On the shore south-east of Malahide similar strata appear, the low cliffs containing an abundance of corals, crinoids, and Brachiopods. In some beds near the second Martello tower from Malahide, bunches of coral, *Lithodendron junceum*, may be seen attached to a large bivalve shell, *Pleurorhynchus fusiformis;* other beds are full of *Spirifera bisulcata, Athyris planosulcata*, &c.

The old quarries inland—at Seamount, south of Malahide, and Feltrim to the south-west—have furnished a large number of species. Still further north, near the northern boundary of Sheet 102 Geological Survey Map, a little south of Skerries, a large quarry in the Lower Limestone has also yielded many fossils, amongst them being the large and beautiful univalve shell, *Platyschisma* (Turbo) *tiara*, a fossil which has also lately been collected by Captain Bennett, at Howth quarry, and Clare, Co. Kildare.

The following is a list of the quarries and other places in the County of Dublin where LOWER CARBONIFEROUS LIMESTONE fossils have been observed.† These localities are numbered,

* Explanation of Sheets 102 and 112, Geological Survey of Ireland, 1861, p. 7.
† Ibid. p. 13, &c.

corresponding numbers being placed opposite each species, in order to show where such fossils were collected, without repeating the names of the places where they occurred.

No. of Locality.	Situation and Sheet of Inch Map.
1.	"The Hoare Rock;" one and three-quarter miles west of Garristown; Sheet 101.
2.	Townland of Holmpatrick; rocks on shore, a little north of townland, south of Skerries boundary; Sheet 102.
3.	Oldtown; in the village; Sheet 102.
4.	Townland of Wolganstown; one mile and a-half south-west of Oldtown; Sheet 102.
5.	On the shore, about a furlong W.N.W. of Corballis House; Sheet 102.
6.	Seamount old quarries, about one mile south-east of Malahide; Sheet 102.
7.	Rocks on shore, E.S.E. of Malahide; Sheet 102.
8.	Quarries in the townland of Mitchelstown, three miles N.N.W. of Finglas; Sheet 102.
9.	Quarries at the village of Cloghran; Sheet 102.
10.	Townland of Dunsink; near Blanchardstown, Midland G. W. Railway; several localities near the Observatory; Sheet 102.
11.	Near Cappoge House; Sheet 102.
12.	The large quarries near St. Doulagh's; Sheet 102.
13.	On the shore near Howth Lodge, and quarry near Deer Park, to the south of it; Sheet 112.
14.	Rocks on shore at Balscaddan Ray; Sheet 112.
15.	Townland of Woodlands; near Lucan, several localities; Sheet 111.
16.	Townland of Woodville; E. of Clonsilla; Sheet 111.
17.	Townland of Astagob; a little N.E. of Lucan; Sheet 111.
18.	Quarries, S. of the village of Castleknock; Sheet 112.

List of the species of LOWER CARBONIFEROUS LIMESTONE Fossils, from the above localities.

PLANTÆ.

	Locality No.
Plant stem	7

CŒLENTERATA.

ACTINOZOA.—*Corals.*

	Localities.
Amplexus coralloides,	6, 10, 12, 15, 16, 17, 18.
Aulopora gigas,	15.
Cyathophyllum Stutchburyi,	7, 14.
Gorgonia Lonsdaliana,	6,
Lithodendron affinis,	13.
,, junceum,	6, 7, 14.

Locality No

Lithostrotion striatum, . . 2.
Michelinea favosa, . . . 14.
Zaphrentis patula, . . 7, 14.
„ Phillipsi, . . . 7, 15, 16.

MOLLUSCA.—*Polyzoa.*

Ceriopora interporosa, . . 14.
„ rhombifera, . . 7.
Fenestella antiqua, . . . 6, 7, 9, 10, 11, 13, 15, 16, 17, 18.
„ membranacea, . . 3, 6, 12, 17.
„ multiporata, . . 15, 18.
„ undulata, . . . 6.
„ varicosa ? . . 15.
Glauconome bipinnata, . . 6, 12.
„ gracilis, . . . 7.
Ichthyorachis Newenhami, . 7.
Polypora fastuosa, . . . 5.
„ verrucosa, . . . 6, 17.
Ptylopora flustriformis, . . 6.
„ pluma, . . . 10.
Vincularia dichotoma, . . 6, 10, 12, 15, 16, 17, 18.
„ multangularis, . . 12, 17.

Brachiopoda.

Athyris ambigua, . . . 6, 7.
„ lamellosa, . . . 7.
„ planosulcata, . . . 10, 15, 18.
„ Royssii, . . . 10.
Chonetes Hardrensis, . . . 8, 10, 15.
„ papilionacea, . . 2.
„ tuberculata, . . 12.
Discina nitida, ... 6.
Lingula mytiloides, . . . 15.
Orthis resupinata, . . . 1, 2, 6, 7, 10, 12, 15, 17, 18.
Productus aculeatus, . . . 3, 5, 6, 8, 9, 10, 12, 15, 17, 18.
„ cora, ... 2. 12, 17, 18.
„ giganteus, . . . 2, 10, 18.
„ longispinus, . . 7.
„ margaritaceus, . . 2, 18.
„ mesolobus, . . 6, 10, 12, 15, 18.
„ plicatilis, . . . 15.
„ punctatus, . . 8.
„ scabriculus, . . 1, 2, 6, 7, 10, 12, 13, 16, 17, 18.

	Locality No.
Productus semireticulatus,	1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 17.
„ undata,	17, 18.
Retzia radialis ?	6.
Rhynchonella pleurodon,	1, 3, 5, 6, 7, 10, 13, 18.
„ pugnus,	6, 10, 12, 15, 16.
Spirifera cuspidata,	7.
„ duplicostata,	15.
„ glabra,	2, 6, 7, 10, 12, 13, 14, 15, 18.
„ laminosa,	7, 14.
„ lineata,	2, 3, 6, 7, 10, 12, 13, 16, 17, 18.
„ pinguis,	7, 9, 10, 12, 13, 15, 18.
„ rhomboidea ?	15.
„ striata,	3, 6, 7, 10, 12, 13, 15, 16, 17, 18.
„ trigonalis,	1, 2, 6, 15.
„ triradialis,	6, 13, 15, 17
Spiriferina cristata,	6.
Streptorhynchus crenistria,	6, 7, 10, 12, 13, 15, 17, 18.
Strophomena rhomboidalis,	6, 7.
Terebratula hastata,	1, 2, 3, 6, 8, 9, 10, 12, 13, 15, 17, 18.

Conchifera.

Arca semicostata,	15, 16.
Avicula lævigata,	17.
„ lunulata,	6, 12.
Aviculopecten clathratus,	6.
„ concentricostriatus,	6, 18.
„ dissimilis ?	13.
„ fallax ?	17.
„ flabellulus,	6, 12, 17.
„ flexuosus,	3.
„ Forbesii,	6, 10, 12, 15.
„ granosus,	6, 12, 15.
„ lævigatus,	6, 12, 18.
„ planicostatus,	15.
„ quinquelineatus,	8.
„ rigida,	6, 18.
„ (Amusium) Sowerbii,	9, 10, 12, 18.
„ tessellatus,	6, 12.
Cardiomorpha oblonga,	6, 12, 17, 18.
Cucullæa obtusa,	10.
Edmondia quadrata ?	8.
„ sulcata ?	17.

	Locality No.
Edmondia oblonga,	11.
Leda, new species?	15.
Leptodomus fragilis,	6.
Lima lævigata?	12.
Lithodomus dactyloides,	?6, 15, 18.
?Myacites Omaliana,	17.
Pleurorhynchus aliformis,	?6, 13.
„ armatus	18.
„ fusiformis,	7, 14.
„ Koninckii, n. s. (Baily)	14.
„ Hibernicus,	6, 18.
Sanguinolites plicatus,	6, 10.
Pullastra bistriata,	6, 12.
„ scalaris,	6.

Gasteropoda.

Acroculia neritoides,	17.
„ vetusta	6, 12, 15.
Dentalium ornatum?	6.
Euomphalus Dionysii,	6.
„ pentangulatus,	6, 7, 10, 12, 15, 18.
„ pileopsideus,	6.
„ serpula,	2.
„ tabulatus,	6, 15, 18.
Loxonema Lefebvrei,	13.
Macrocheilus ovalis,	10, 15.
„ (Littorina) pusillus,	7.
Natica elliptica,	6, 12.
„ plicistria,	6, 7.
Patella mucronata,	6.
Platyschisma (Turbo) tiara,	12, 27.
Trochella prisca,	6, 12.
Turritella spiralis,	3.

Nucleobranchiata.

Bellerophon tangentialis,	6

Cephalopoda.

Actinoceras giganteum,	?12, 13.
Goniatites cyclobus,	4.
„ furcatus,	8, 10, 15, 16.
„ sphæricus,	10, 15.
„ „ var. obtusus,	15.
„ „ var. truncatus,	10.
Nautilus biangulatus,	12, 18.
„ (Discites) discors,	13.
„ dorsalis,	10, 12, 13, 18.

	Locality No.
Orthoceras cinctum,	30.
„ Goldfussianum,	10, 12, 15, 16, 17, 18.
„ Steinhauerii,	15, 18.

ANNULOSA.—*Echinodermata.*

Actinocrinus, stems, &c.,	3.
„ polydactylus,	7.
Crinoidea, species undetermined,	7, 8, 10, 12, 13, 14, 15, 17, 18.
Palæchinus, „ „	13.
Platycrinus lævis,	7.
„ pileatus,	15.

Annelida.

Spirorbis globosus,	6.
„ intermedius,	6.

Crustacea.

Brachymetopus MacCoyi,	15, 18.
Cythere costata,	18.
„ inflata,	3.
Entomoconchus Scouleri,	10, 12, 18.
Griffithides globiceps,	2, 3, 6.
Phillipsia Brongniartii,	13.
„ Derbiensis,	2, 13, 15, 16.
„ pustulata,	6, 8, 12, 15, 16, 17 18.

VERTEBRATA.—*Pisces.*

Chomatodus, palatal tooth,	2.
Cochliodus?	7.
Psammodus, palatal teeth,	6, 7.

List of Fossil Localities, in UPPER CARBONIFEROUS LIMESTONE, County of Dublin.—(Continued from p. 170.)

19 Townland of Tobergreggan; three-quarters of a mile south of Garristown, junction beds of Upper Limestone and of coal measures; Sheet 101.

20. Townland of Westown; in bed of river Delvin, at Ford of Fine; Sheet 102.

21. Townland of Balrickard; quarry by roadside, half-a-mile S. of Bog of the Ring, junction of Upper Limestone and coal measures; Sheet 102.

22. Townland of Courtlough; quarry close to road, three-quarters of a mile N.W. of Man-of-War, junction of Upper Limestone and coal measures; Sheet 102.

23. Townland of Loughshinny; on the shore at the village; Sheet 102.

24. Townland of Lougshinny; on the shore, about a furlong S. of the village, junction of Upper Limestone and coal measures; Sheet 102.
25. Townland of Blanchardstown; quarries and cuttings, E. and S. of the village; Sheet 112.
26. One mile and a-half S.W. of Lucan, by roadside; Sheet 111.
27. Cursis-stream quarry, about two miles east of Lucan; Sheet 111.
28. In stream, a little north of Clondalkin village; Sheet 111.
29. Quarry, between road and Tolka river, a quarter of a mile W. of Finglas Wood bridge; Sheet 112.
30. Townland of Butcher's Arms; one mile W. of Golden Bridge; Sheet 112.
31. Townland of Golden Bridge; quarry near Blackhorse Bridge; Sheet 112.
32. Railway cutting and quarry at Killester; Sheet 112.
33. Quarries, S. of road at Greenoge; Sheet 111.
34. About one mile S.E. of Castle Bagot, two and a-half miles S.W. of Clondalkin; Sheet 111.
35. Road cutting and quarries, S. of Corkagh, about one and a-half miles S. of Clondalkin; Sheet 111.
36. Between Corkagh Mills and Belgard Castle; Sheet 111.
37. Newland's Demesne; about a quarter of a mile N.W. of Belgard Castle; Sheet 111.
38. Townland of Garranstown; about a furlong W. of Kilnamanagh House, and one mile S.E. of Clondalkin; Sheet 112.
39. One field, S.E. of Kilnamanagh House; Sheet 112.
40. Quarries, S. of Mount St. Joseph's Monastery, Clondalkin; Sheet 112.
41. Townland of Bushelloaf; a little E. of last locality; Sheet 112.
42. Quarries, near the Red Cow, one mile E. of Clondalkin; Sheet 112.
43. Boundary of Townlands, near the Red Cow; Sheet 112.
44. Near Ballymount Little, one and a-half miles S.E. of Clondalkin; Sheet 112.
45. Between preceding locality and Air Mount; Sheet 112.
46. Quarries, S.E. of Cromwell's Fort, near Crumlin; Sheet 112.
47. Quarries on both sides of the road, S. of Kimmage; Sheet 112.
48. Old quarries, between the townlands of Green Hills and Lime-kiln Farm, S.W. of Crumlin; Sheet 112.
49. In river Dodder, at Terenure; an old quarry at Rusina Ville; Sheet 112.
50. Quarries, S.E. of R. C. Chapel, Crumlin; Sheet 112.
51. Quarry, by Methodist Chapel, Donnybrook, E.; Sheet 112.
52. In river Dodder, near Milltown; Sheet 112.
53. Large quarry at West Hampton, N. of Roundtown; Sheet 112.
54. In river Dodder, S. side, near Donnybrook; Sheet 112.
55. Quarry on N. side of river Dodder, opposite cloth mill, Rathmines Great; Sheet 112.

List of FOSSILS from UPPER CARBONIFEROUS LIMESTONE, at the above places.

PLANTÆ.

	Locality No.
Plant stems,	*21, *24, 27, 31, 32.

ACTINOZOA.—*Corals.*

Amplexus coralloides,	26, 35, 50.
Cladochonus crassus,	24*.
Cyathophyllum, (undetermined species),	33, 35, 40, 41, 46, 51, 53.
Lithodendron junceum	47.
Lithostrotion striatum,	20.

MOLLUSCA.—*Polyzoa.*

Ceriopora rhombifera,	24*.
Fenestella antiqua,	11, 23, 24*, 26, 36, 52.
,, membranacea,	26.
Polypora fastuosa,	22.
Vincularia dichotoma,	22.

Brachiopoda.

Chonetes Hardrensis,	24*, 28, 31, 35, 40, 43, 48, 54.
,, papilionacea,	35, 36, 37, 40, 41, 43, 44, 45, 46, 52, 53, 54, 55.
Discina nitida,	22, 23, 46.
Lingula mytiloides,	33.
Orthis resupinata,	22, 23, 24*, 29, 30, 33, 35, 36, 40, 41, 43, 44, 45, 46, 47, 49, 50, 51, 52, 54, 55.
Productus aculeatus,	35, 40, 43, 45, 46, 50, 54, 55.
,, cora,	46.
,, gigantea,	35, 46, 47.
,, longispina,	46, 53.
,, margaritacea,	53.
,, punctatus,	43, 45, 48, 54.
,, scabriculus,	22, 23, 24*, 26, 33, 34, 35, 36, 40, 41, 42, 45, 46, 54.
,, semireticulatus,	20, 22, 23, 24*, 33, 35, 36, 38, 40, 41, 42, 43, 45, 47, 48, 52, 53, 54, 55.

* Junction beds of Upper Limestone and coal measures.

	Locality No.
Rhynchonella pleurodon,	22, 23, 24*, 32, 34, 35, 41, 51, 52, 53.
„ pugnus,	23.
Spirifera trigonalis,	22, 23, 35, 46, 53.
„ convoluta,	22.
„ glabra,	? 19*, 22, 23, 24*, 33, 38, 41, 43.
„ lineata,	22, 23, 24*, 33, 35, 36, 46, 48, 53, 54, 55.
„ pinguis,	26, 35.
„ striata,	24*.
„ triradialis,	45.
„ insculpta,	24*.
Streptorhynchus crenistria,	22, 23, 24*, 36, 39, 41, 44, 46, 47, 53, 55.
Strophomena rhomboidalis,	23, 24*.
Terebratula hastata,	22, 23, 35, 48, 50, 55.
„ „ var sacculus,	23.
„ vesicularis,	52.

Conchifera.

Aviculopecten Forbesii,	47.
? Donax primigenius,	29.
Lithodomus dactyloides,	39.
Posidonomya Becheri,	19*, 21*, 22*, 24*, 39.
„ „ var membranacea,	28.

Gasteropoda.

Euomphalus Dionysii,	45.
„ pentangulatus,	20, 26.
„ pileopsideus,	35, 36, 45, 46, 55.
Loxonema (species undetermined),	36, 42, 45, 55.
Macrocheilus do.,	42, 48.
Natica plicistria,	11.
Pleurotomaria (species undetermined),	46, 55.
Turritella spiralis,	45.
„ tenuistriata,	23.

Nucleobranchiata.

Bellerophon hiulcus,	45.

Cephalopoda.

Goniatites furcatus,	25.
„ sphæricus,	19*, 21*, 22, 24*, 31, 32, 35, 36, 48, 53.
Orthoceras Steinhauerii,	16*.
„ (species undetermined)	21*, 22, 28, 29, 41, 48.

ANNULOSA.—*Echinodermata.*

	Locality No.
Archæocidaris Urii (plates),	24*.
Crinoidal remains,	22, 24*, 26, 28, 29, 32, 34, 36, 40, 41, 42, 44, 45, 46, 48, 49, 51, 52, 53, 54, 55.

CRUSTACEA.

Cythere (species undetermined),	54.
Griffithides globiceps,	24*, 33, 34, 35, 55.
Phillipsia Brongniartii,	34.
„ Derbiensis,	23, 36, 43, 44, 45, 53.
„ pustulata,	20, 35, 40, 46.
„ (species undetermined),	54.

PISCES.

Cochliodus? palatal tooth,	46.
Fish scales,	35.

What were formerly considered to be lower coal measure shales are in the second edition of the Explanation to sheets 102 and 112 of the Geological Survey of Maps (1875), called "Upper Shales," but as they contain a distinct and characteristic assemblage of fossils corresponding with those of the basal shales of the coal measures of Kilkenny, Queen's County, Tipperary, Limerick and Clare, the original designation is retained. Three distinct patches of these basal shales occur in the north of Dublin, near Garristown, the Naul and Westown, extending east of the "Man-of-War;" a second at Featherbed-lane station, Baldongan; and the third on the sea-shore at Loughshinny, between Rush and Skerries. The shales of these places are, in many instances, full of fossils, mostly marine shells such as *Aviculopecten papyraceus Posidonomya Becheri* and *P. membranacea, Goniatites sphæricus* and *Orthoceras Steinhauerii.* With these are occasionally associated fish remains and a few fragmentary stems of fossil plants. At some of the localities junction-beds between these coal measure shales and the limestone may be observed. These junction-beds in the list of species are marked with an asterisk

LIST OF FOSSIL LOCALITIES IN LOWER COAL MEASURE SHALES.

56. A little north of the village of Garristown.
19. Townland of Tobergreggan ; junction-beds mentioned in previous list.
57. Do., one mile and a-half W.S.W. of Garristown.
58. Townland of Westown ; quarry a little S. of the wood.
59. ,, of Knockbrack ; small quarry in the glen.
60. ,, of Kitchenstown ; in a ditch S. of the road.
61. ,, of Belgee ; quarry a little S. of the cross-roads.
21. ,, of Balrickard ; junction-beds mentioned in previous list.
62. ,, of Courtlough ; quarry close to road about three quarters of a mile N.W. of "Man-of-War ;" upper part coal measures.
24. ,, of Loughshinny ; junction-beds mentioned in previous lists.

LIST OF FOSSILS FROM COAL MEASURE SHALES AT THE ABOVE PLACES.

PLANTÆ.

Calamites cannæformis, . . 58.
Plant stems (undetermined), . 58, 59.

MOLLUSCA : *Conchifera.*

Aviculopecten papyraceus, . . 56, 58, 59.
,, variabilis, . . 58, 62.
Lunulicardia (species undetermined), 58.
Posidonomya Becheri, . . 60, 61, 62.
,, membranacea . 56, 57, 58, 59, 62.

Cephalopoda.

Goniatites sphæricus, . . . 56, 57, 58, 59, 61.
Orthoceras Steinhauerii, . . 56, 57.
,, (species undetermined), 56, 57, 58, 62.

ECHINODERMATA.

Crinoidea (stems and joints), . 58, 59.

CRUSTACEA.

Dithyrocaris (species undetermined), 58.

The Secondary and Tertiary Rocks are entirely absent from this district, with the exception of the Pleistocene or Glacial Drift, which extends over the northern portion. Southwards of Malahide this more ancient deposit, called the "Lower Boulder Clay,"* "becomes covered by the sand and gravel deposit which on the higher

* Explanation to sheets 102 and 112, 2nd edition (1875), p. 67.

grounds formed of the granite and slate is alone present." Various observers have described this more recent deposit, which on the eastern summit of Mount Pelier is found at an altitude of 1,235 feet above the sea, and on the western side of the Three Rock Mountain at an elevation of 1,200 feet.

Marine shells of existing species have lately been found by the Rev. Maxwell H. Close, near Caldbeck Castle, on Kilmashogue Mountain, at an elevation of a little over 1,200 feet, from a gravel and sand pit (the "limestone gravel" of Ireland). The following were collected :—*

Fusus ? part of columella.
Cardium echinatum.
Cyprina Islandica.
Venus striatula.
„ casina ?
Mactra stultorum, with perforations made by a small shell-boring Annelid.

At Ballyedmonduff, on the S.E. side of the Three Rock Mountain, on the road leading from Stepaside to Glencullen, at an elevation of 1,000 feet, from a similar gravel pit, "chiefly composed of clean stratified gravel and sand," the same gentleman collected the following shells, &c. :—

Trophon muricatus.
Fusus ? part of columella.
Turritella communis.
Ostrea edulis.
Pecten (two species).
Cardium edule.
„ echinatum.
Astarte compressa.
„ elliptica.
„ sulcata.
Cyprina Islandica.
Artemis lincta.
Venus striatula.
„ casina.
Lutraria elliptica.
Mactra stultorum ?
Tellina ?
Mya truncata ?
Pholas crispata.
Balanus balanoides and perforations ascribed to a small shell-boring Annelid.

* Journal of the Royal Geological Society of Ireland, vol. iv., part 1., new series, p. 36, etc.

Fragments of shells were also observed at other places on the Dublin Mountains in similar deposits, the particulars of which are described by the Rev. M. H. Close in the article referred to.

Fragments of marine shells have also been collected from coarse sand a little to the east of Glennasmole, Townland of Corrageen, at about 600 feet above the sea level,* and form a conglomerate of drift pebbles, cemented together by Arragonite (Carbonate of Lime) a little south of Fort or Bohernabreena bridge.

At Howth marine shells have been collected and described by Dr. Scouler from the gravel deposits there,† and Dr. Oldham gives a list of others from similar deposits at Killiney, in the County of Dublin, and Bray, County of Wicklow.‡

The following species were identified by Dr. Scouler from Howth:—

Turritella (terebra) communis.
(Turbo littoreus) Littorina littorea (Periwinkle.)
(Nerita littoralis) Littorina littoralis.
Buccinum undatum.
Cardium edule.
Cyprina Islandica.
Pecten varius.

Those named by Dr. Oldham from Killiney, &c., being—

Ostrea edulis.
Tellina solidula.
Pecten opercularis.
Pullastra decussata.
Nucula oblonga.
Astarte (Gairensis) elliptica.
Corbula nucleus?
Saxicava rugosa.

The only remaining fossils to notice are those of Mammalia, found in Pleistocene deposits of freshwater shell marl immediately below the Peat Bogs.

The great Irish deer, *Megaceros Hibernicus*, so frequently found in these deposits in Ireland, evidently existed formerly in considerable numbers in the neighbourhood of Dublin. Professor Oldham, in a paper read before the Geological Society of Dublin, in 1847,§ records the discovery of the remains of at least thirty

* Journal Geol. Soc. of Dublin, vol. vi., p. 144. † *Ibid*, vol. i., p. 270.
‡ *Ibid*, vol. iii., p. 69. § Journal Geol. Soc. of Dublin, vol. iii. 280 (1848.)

individuals, accompanied by the head and antlers, with other bones of a Rein Deer, *Cervus Tarandus*, in the cutting for a drain at Ballybetagh Bog, Kiltiernan, County Dublin, near the boundary of the counties of Dublin and Wicklow (sheet 121, maps of the Geological Survey of Ireland).

Dr. A. Carte also gives in a paper read before the same Society *—an account of a skull and antlers of a Rein Deer found on the verge of the Curragha Bog, in the parish of Ballymadun, near Ashbourne, County Dublin (sheet 101 Geological Survey Maps). This fine example, now in the Royal Dublin Society's Museum, was found in a very similar deposit to that previously mentioned—namely, imbedded in marl and clay, under a thickness of four or five feet of peat.

From the peculiar shape of the brow antler, which forms a broad vertical plate, centrally situated in front of the head, these specimens are proved to belong to the Caribou, or barren ground variety, now inhabiting America, between the 63rd and 66th degrees of north latitude, in the winter, and migrating to the coasts of the Arctic Sea in summer. It becomes, therefore, very interesting to meet with evidence of the former existence of this variety of the Rein Deer in Ireland.

* Journal Geol. Soc. of Dublin, vol. x., p. 103 (1863-4.)

ON THE MINERALOGY OF THE COUNTIES OF DUBLIN AND WICKLOW.

BY

The Rev. SAMUEL HAUGHTON, M.D., Dublin; D.C.L., Oxon.;
Professor of Geology in the University of Dublin.

[Read March 18, 1878.]

The most convenient method of describing the minerals that occur in these counties, is to state in succession the minerals that are found in each of the several rock formations, referred to by the Rev. Maxwell Close, in his sketch of the Geology of the neighbourhood of Dublin.

1. THE MINERALS OF THE DUBLIN AND WICKLOW GRANITES.

These minerals are twofold.

(A) *The Constituent Minerals.*

(B) *The Accidental Minerals.*

(A) *The Constituent Minerals.* The granites of Dublin and Wicklow are quinary, consisting of the following minerals :—

1. Quartz.
2. Orthoclase Feldspar.
3. Albite Feldspar.
4. Margarodite Mica.
5. Lepidomelane Mica.

1. The Constituent *Quartz* is grey, watery, transparent, and has a mean specific gravity = 2·645.

2. The Constituent *Orthoclase Feldspar* is milk white, opaque; and has a mean specific gravity = 2·540.

Its mean chemical composition, taken from seven specimens, of which three were from Dublin localities, and four from Wicklow localities, is as follows :—

Orthoclase (mean of seven Specimens.)

Silica,	64·59	per cent.
Alumina,	18·31	,,
Lime,	0·25	,,
Magnesia,	0·58	,,
Potash,	12·23	,,
Soda,	2·75	,,
Loss by ignition,	0·58	,,
	99.29	

3. The Constituent *Albite Feldspar* has, hitherto, been found in separate crystals, in one locality only (Dalkey); but it enters largely into the composition of the granite rocks.

Its chemical composition is as follows:—

Albite (Dalkey Quarry.)

Silica,	64·70	per cent.
Alumina,	21·80	,,
Potash,	2·84	,,
Soda,	9·78	,,
Fluorspar*	0·80	,,
	99·92	

4. The Constituent *White Mica* (Margarodite) of the granites, often occurs in flat rhombic prisms, or in hexagonal plates, formed from the former by the replacement of the acute angles; the angles of the lozenges are 120° and 60°; and the crystals are Biaxial, the plane of the optic axes tracing the major diameter of the lozenge.

The following measurements of the angle between the optic axes have been recorded:—

1. Three Rock Mountain,	53° 8′
2. Glendalough,	70 4
3. Mount Leinster,	72 18
4. Lough Dan,	70 0
5. Glenmalure,	67 11
6. Poulmounty,	76 15

The average chemical composition of the white mica is as follows:—

Margarodite (Mean of four specimens.)

Silica,	44·58	per cent.
Alumina,	32·13	,,
Iron peroxide,	4·57	,,
Lime,	0·78	,,
Magnesia,	0·76	,,
Potash,	10·67	,,
Soda,	0·95	,,
Loss by ignition,	5·34	,,
	99·78	

The amount of water of crystallisation present in this mineral

* The Albite was found in small crystals, lining cavities in the granite, and encrusting crystals of Orthoclase; and it was associated with similar small crystals of accidental purple fluorspar, from which it was separated with difficulty.

separates it completely from *Muscovite*, of which it is considered by Dana to be an altered variety.

5. The Constituent *Black Mica* (Lepidomelane) of the granites occurs in hexagonal plates, and is Uniaxial. Near Ballyellin, (Co. Carlow) it is found associated with Margarodite in large plates; these plates are formed in about equal parts, of Lepidomelane and Margarodite, which fit into each other at angles of 120°—This fitting is purely mechanical and due to the fact that the angles of the Margarodite lozenges are 60° and 120.° Lepidomelane is essentially an iron-potash mica, and is distinct from Biotite, which is an iron magnesia mica. It is completely decomposed by hydrochloric acid. It has the following chemical composition:—

Black Mica (Lepidomelane.)

Silica,	35·55	per cent.
Alumina,	17.08	,,
Iron peroxide,	23·70	,,
Lime,	0·61	,,
Magnesia,	3·07	,,
Potash,	9·45	,,
Soda,	0·35	,,
Iron protoxide,	3·55	,,
Manganese protoxide,	1·95	,,
Loss by ignition,	4·30	,,
	99·61	

The granite axis of Leinster runs from Rockabill to Poulmounty, N.N.E. to S.S.W., a distance of 90 miles.

Eleven specimens taken at about equal intervals along this axis gave the following mean chemical composition:—

Average Leinster Granite.

Silica,	72·07	per cent.
Alumina,	14·81	,,
Iron peroxide,	2·25	,,
Lime,	1·63	,,
Magnesia,	0·33	,,
Potash,	5·11	,,
Soda,	2·79	,,
Loss by Ignition,	1·09	,,
	100·08	

From this table, combined with the preceding tables, we obtain

the following simultaneous equations, to determine the per-centages of the constituent minerals in the average granite :—

Let	Q	=	the per-centage of	Quartz.
	O	,,	,,	Orthoclase.
	A	,,	,,	Albite.
	W	,,	,,	White Mica.
	B	,,	,,	Black Mica.

(1) Silica,	7207	=	100 Q	+ 64·95 O	+ 64·70 A	+ 44·58 W	+ 35·55 B.
(2) Alumina,	1481	=	—	18·31 O	+ 21·80 A	+ 32·13 W	+ 17·08 B.
(3) Iron peroxide,	225	=	—	—	—	4·57 W	+ 23·7 B.
(4) Lime,	163	=	—	0·25 O	—	0·78 W	+ 0·61 B.
(5) Magnesia,	33	=	—	0·58 O	—	0·76 W	+ 3·07 B.
(6) Potash,	511	=	—	12·23 O	+ 2·84 A	+ 10·67 W	+ 9·45 B.
(7) Soda,	279	=	—	2·75 O	+ 9·87 A	+ 0·95 W	+ 0·35 B.
(8) Loss by ignition,	109	=	—	—	—	5·34 W	+ 4·30 B.

If we select the four equations containing the largest per-centages, viz—The alumina, potash, soda, and iron peroxide equations, we find after several reductions—

$$A = 18{\cdot}0 + 0{\cdot}156\ W + 0{\cdot}191\ B.$$
$$O = 37{\cdot}65 - 0{\cdot}909\ W - 0{\cdot}819\ B.$$

These equations show the manner in which the two feldspars are related to the two micas.

We find finally—

B =	5·81	per cent.
W =	19·16	,,
O =	15·44	,,
A =	22·10	,,

Inserting these values into the last seven equations, we obtain—

—	Observed.	Calculated.	Diff.
Alumina,	1481	1476·06	+4·94
Iron peroxide,	225	224·99	+0·01
Lime,	163	22·28	+140·72
Magnesia,	33	41·27	−8·27
Potash,	511	511·45	−0·45
Soda,	279	280·64	−1·64
Loss by ignition,	109	126·89	−17·89

The agreement between calculation and observation is as close as could be expected ; and the errors in the magnesia and loss by ignition, are, doubtless, errors of observation, due to the small magnitudes to be ascertained. The excess in the lime is real, and must be accounted for by the existence of a small quantity of paste, in the form of a silicate of lime.

The quantity of silica required to saturate 140·72 parts of lime is about 351·8 ; from which we infer that the paste amounts to 4.92 per-cent. of the rock.

The mean composition of the Leinster Granite is, therefore, as follows :—

Quartz,	32·57	per cent.
Orthoclase,	15·44	„
Albite,	22·10	„
Margarodite,	19·16	„
Lepidomelane	5·81	„
Paste (silicate of lime)	4·92	„
	100·00	

(B) *The accidental Minerals* found occasionally in the Dublin and Wicklow Granites are :—

Beryl, . . . Pale, greenish, opaque crystals.
Loc. Dalkey, Killiney, Glenmalure, Glenmacanas.

Spodumene, . . Long, bent, greenish grey prisms.
Loc. Killiney.

*Killinite** (altered *Spodumene*). Fibrolamellar, light green to brownish yellow, brittle ; sp. gr. 2·56.
Loc. Killiney.

Schorl, . . . Black.
Loc. Clarinda Park, Kingstown ; Dalkey, Three Rock Mountain, Stillorgan, Roundwood, Glenmalure, Poulmounty.

Garnet, . . Small red and brilliant crystals.
Loc. Dalkey, Killiney.
Cinnamon colour.
Loc. Glenmalure, Kilranelagh.

Fluorspar, . . Small cubes.
Loc. Golden Bridge.
Octohedra, lining cavities.
Loc. Dalkey Island, Dalkey Quarry.

Apatite, . . Light green, translucent, hexagonal prisms, with lateral edges replaced.
Loc. Three Rock Mountain, Killiney Hill.

Agalmatolite, . Loc. Dundrum, Luganure.

2. The Minerals of the Metamorphic Slates of Dublin and Wicklow.†

In addition to the Micas and Hornblende forming constituent

* The so-called *Killinite* is an altered *spodumene*, from which the lithia has been washed out by weathering.

† The absence of Garnet, Idocrase, and other lime minerals from the metamorphic slates of Leinster is remarkable and very different from what is observed in Donegal and elsewhere.

elements of the Metamorphic Slates, the following minerals are occasionally found :—

Andalusite,	Loc. Lugduff, Douce, Luganure, Glendalough, Glenmalure.
Chiastolite (variety of *Andalusite*),	Loc. Killiney, Aghavanagh, Baltinglass Hill.
Staurotide,	Loc. Killiney, Glenmalure.
Hornblende,	Radiated.
	Loc. Killiskey.
	Crystallized, dark green.
	Loc. Kilranelagh.
Jasper-agate,	Loc. Lambay Island.
Mocha Stone,	Loc. In pebbles found on the sea-beach, Co. Wicklow.
Zircon,	Loc. Croghan Kinshela.
Gold,	Loc. Croghan Kinshela.
Magnetite,	Loc. Croghan Kinshela.
Chlorite,	Loc. Glenmacanas ; Howth.
Spinel,	Small rolled grains.
	Loc. Croghan Kinshela.
Platinum,	Loc. Croghan Kinshela.
Wood-tin,	Loc. Croghan Kinshela.

3. THE MINERALS OF THE CARBONIFEROUS LIMESTONE OF THE CO. DUBLIN.

The Minerals found, occasionally, in the Calp limestone and Lower limestone of the Co. Dublin are few in number. Among them may be mentioned :—

Lydian Stone,	Calp limestone (*passim*).
Iron Pyrites,	Well formed crystals, occurring in sheets, lining joints in the Calp limestone.
Asphaltum,	Solid, opaque, resinous black lustre, conchoidal fracture.
	Loc. Castleknock.
Anthraconite,	Loc. Castleknock.

4. MINERALS FOUND IN THE MINES OF THE COUNTY WICKLOW AND COUNTY DUBLIN.

Iron Pyrites,	Loc. Sulphur mines, Vale of Avoca.
Fluorspar,	Large yellow and pale violet blue cubes.
	Loc. Glendalough mine.
Schieferspar,	Loc. Luganure mines.
Barytes,	Loc. Killiney Hill ; Luganure mine ; Glenmalure mine ; Clontarf.
Native Silver,	Loc. Ballycorus mine.
Horn Silver,	Loc. Ballycorus mine.

Brown Hæmatite, .	Loc. Glenasplinkeen.
Manganese Oxides,	Loc. Glenasplinkeen ; Howth.
Native Copper, .	Loc. Cronebawn ; Ballymurtagh.
Copper Pyrites, .	Loc. Cronebawn ; Ballymurtagh ; Avoca.
Tinstone, . .	Loc. Croghan Kinshela, in small rolled fragments and detached worn crystals.
Carbonate of Lead,	Loc. Luganure mines.
Sulphate of Lead, .	Loc. Luganure ; Ballycorus.
Phosphate of Lead,	Loc. Glenmalure.
Galena, . .	Loc. Ballycorus ; Luganure ; Glendalough.
Blende, . .	Loc. Clontarf ; Glenmalure.

CATALOGUE OF THE FLOWERING PLANTS AND FERNS OF DUBLIN AND WICKLOW.

BY

DAVID MOORE, PH.D., F.L.S., AND A. G. MORE, F.L.S.

[Read March 18th, 1878.]

(Arranged in the order of the "London Catalogue," 7th ed. The signs prefixed to the specific names are used to show that the plants are † possibly ‡ probably or * certainly, introduced. The brackets enclose such species as occur close to gardens or cultivation, or are not thoroughly established.)

1. Ranunculaceæ.

Clematis.	
[Vitalba. Linn.]	D. Sandhills at Portrane; a doubtful native. Hedges near Dublin (planted).
Thalictrum.	
minus Linn.	D. Sandhills at Malahide, Baldoyle, etc. W. Coast of Wicklow, in several places, but local.
flavum. Linn.	W. Marshy fields, Murrough of Wicklow.
Anemone.	
nemorosa. Linn.	D. and W. Common.
[apennina. Linn.]	D. Abundant at Delville, Glasnevin. Originally planted.
Adonis.	
[autumnalis. Linn.]	D. Howth. Dundrum. W. Near Enniskerry. Not found for many years in either county.
Ranunculus.	
circinatus. Sibth.	D. Pools and streams. Rare. In the Liffey at Chapelizod and Straffan.
peltatus. Fries.	
b. floribundus. Bab.	D. Near Dublin.
c. penicillatus. Hier.	D. Liffey, near Chapelizod.
trichophyllus. Chaix.	D. and W. Frequent.
Lenormandi. F. Schultz.	D. Near Raheny, etc. W. Frequent.
hederaceus. Linn.	D. and W. Common.
sceleratus. Linn.	D. and W. Not unfrequent.
Flammula. Linn.	D. and W. Very common.
Lingua. Linn.	D. Curragha Bog and Raheny (Irish Flora.) W. Marsh ditches on the Murrough of Wicklow.
auricomus. Linn.	D. and W. Frequent.
acris. Linn.	D. and W. Abundant. The ordinary plant in Ireland is R. tomophyllus of Jordan.
repens. Linn.	D. and W. Abundant.
bulbosus. Linn.	D. and W. Common.

Ranunculus.

parviflorus. Linn. D. Milltown. Howth. Greenhills. W. River side at Bray (Wade), where it still grows.

‡arvensis. Linn. D. Near the "Man-of-War," and Raheny. Corn-fields near Balbriggan. (Templeton MS.)

Ficaria. Linn. D. and W. Abundant.

Caltha.

palustris. Linn. D. and W. Common.

Aquilegia.

†vulgaris. Linn. D. At the Waterfall, Leixlip; Knockmaroon Hill. (Ir. Fl.) Hedges near Finglas and Glasnevin.

Delphinium.

[Ajacis. Reich.] Portmarnock. Introduced.

3. Nymphæaceæ.

Nymphæa.

alba. Linn. D. Royal Canal, etc. Rather rare. W. Not unfrequent in the lakes and streams. Lough Dan, etc.

Nuphar.

luteum. Sm. D. and W. Local.

4. Papaveraceæ.

Papaver.

[somniferum. Linn.] D. Baldoyle, etc. Near Dublin. Not indigenous.

‡Rhœas. Linn. D. and W. Frequent, and increasing.

‡dubium. Linn. D. and W. Not unfrequent.

b. Lecoqui. Lam. D. Baldoyle.

‡Argemone. Linn. D. Rush. Kilbarrack. Baldoyle. Cabinteely, etc. Rare.
W. Coast near Wicklow.

‡hybridum. Linn. D. Finglas Quarries. Baldoyle. Rush. Swords. W. Murrough of Wicklow.

Meconopsis.

cambrica. Vig. W. Dargle, Powerscourt, and Devil's Glen, Wicklow. Maulin Mountain. (W. Archer.)

Glaucium.

luteum. Scop. D. and W. Frequent on the coast.

Chelidonium.

*majus. Linn. D. and W. Rare.

4* Fumariaceæ.

Corydalis.

claviculata. D. C. W. Very local. Powerscourt. Enniskerry; Kilmartin; Bray Head.

Fumaria.
pallidiflora. Jord. W. Fassaroe, near Bray. (R. M. B.)
†confusa. Jord. D. and W. Frequent.
†officinalis. Linn. D. and W. Frequent.

5. Cruciferæ.

Cakile.
maritima. Scop. D. and W. Sandy sea-shore. Common.

Crambe.
maritima. Linn. D. Formerly near Malahide, Howth, and Kingstown, and Killiney. Not seen lately.
W. Murrough of Wicklow. Very rare.

Raphanus.
‡Raphanistrum. Linn. D. and W. Frequent.
maritimus. Sm. D. South side of Howth. W. At Greystones, once gathered near the Railway Station.

Sinapis.
†arvensis. Linn. D. and W. Common.
‡alba. Linn. D. Portmarnock, near Dublin. Rush, Skerries, and Swords. (Ir. Flor.) W. Near Bray, etc. Not unfrequent.
†nigra. Linn. D. and W. Rare.

Brassica.
[adpressa. Boiss.] D. Portmarnock. (H. C. Hart.)

Diplotaxis.
‡muralis. D. C. D. Portmarnock and Baldoyle.

Sisymbrium.
officinale. Scop. D. and W. Common.
†Sophia. Linn. D. and. W. Sandy fields near the coast. Frequent.
†Irio. Linn. D. Near Dublin only. Common about Dublin, Glasnevin, Clontarf, etc.
Alliaria. Scop. D. and W. Abundant about Dublin ; also near Powerscourt, St. Valerie, near Bray, etc.

Hesperis.
*matronalis. Linn. W. Woods near Poolaphouca. Well established in one spot on south side of the Dargle (R.M.B.)

Cheiranthus.
*Cheiri. Linn. D. and W. Old walls and ruins.

Cardamine.
pratensis. Linn. D. and W. Common.
hirsuta. Linn. D. and W. Common.
b. sylvatica. Link. D. and W. Not uncommon.

Arabis.
Thaliana. Linn. D. Plentiful on south side of Howth.
hirsuta. Brown. D. and W. Local and rare.
[Camelina sativa. Linn. Has occurred at Fassaroe occasionally as a weed of cultivation.

Barbarea.
vulgaris. Brown. D. and W. Frequent.
[præcox. Brown.] D. Well established on a wall at Lucan.
Nasturtium.
officinale. Brown. D. and W. Common.
palustre. De Cand. D. and W. Rather rare.
amphibium. Brown. W. Murrough of Wicklow.
Armoracia.
[rusticana. Bab.] D. and W. Waste Ground. Occasional.
Cochlearia.
officinalis. Linn. D. and W. Common.
danica. Linn. D. and W. Rare.
Draba.
verna. Linn. D. and W. Common.
Alyssum.
[calycinum. Linn.] D. Portmarnock.
Berteroa.
[incana. D. C.] D. Portmarnock.
Thlaspi.
‡ arvense. Linn. D. and W. Very rare; introduced with the crops.
Capsella.
Bursa-pastoris. Moench. D. and W. Very common.
Lepidium.
[ruderale. Linn.] D. North Wall, and near Kilbarrack Church. Not seen for many years.
‡ campestre. Brown. D. Dundrum and Blanchardstown.
Smithii. Hook. D. and W. Frequent.
Senebiera.
‡ didyma. Pers. D. Very local; occasionally about Dublin.
† Coronopus. Poiret. D. and W. Local.

6. Resedaceæ.

Reseda.
†lutea. Linn. D. Very rare. Chapelizod, Knockmaroon, Rush, Malahide, etc.
Luteola. Linn. D. and W. Frequent.
[suffruticulosa. Linn.] Well established at Portmarnock.

8. Violaceæ.

Viola.
palustris. Linn. D. and. W. Frequent in hilly and boggy districts.

Viola.
- *odorata. Linn. — D. and W. rare, and introduced.
- hirta. Linn. — D. Portrane; Portmarnock; Howth; Lambay; Knockmaroon; Phœnix Park.
- sylvatica. Fries.
  - *a.* Riviniana. Reich. — D. and W. Common.
  - *b.* Reichenbachiana. — D. and W. Frequent.
- canina. Fries. — D. Portmarnock and Portrane. W. Murrough of Wicklow.
- tricolor. Linn. — D. and W. Frequent.
  - *b.* arvensis. Murr. — D. and W. Cultivated land. Not unfrequent.
- Curtisii. Forster. — D. Baldoyle, Portmarnock, Portrane; Rush, etc. W. Sandy coast of Wicklow in many places.
- lutea. Huds. — D. Hill of Lyons. W. Near Kilbride, on the banks of the King's River.

9. Droseraceæ.

Drosera.
- rotundifolia. Linn. — D. and W. Frequent.

10. Polygalaceæ.

Polygala.
- vulgaris. Linn. — D. and W. Frequent.
  - *b.* depressa Wend. — D. and W. Heaths etc. Common.
  - *c.* oxyptera. Reich. — W. Sandhills near Arklow.

12. Caryophyllaceæ.

Saponaria.
- *officinalis. Linn. — D. Along the River Dodder. W. Well established between Bray and Enniskerry, and other places.

Silene.
- inflata. Sm. — D. and W. Frequent.
- maritima. With. — D. and W. Common.
- [conica. Linn.] — Portmarnock. Very rare, and introduced.
- *anglica. Linn. — D. Portmarnock. Introduced.

Lychnis.
- ‡vespertina. Sibth. — D. and W. Local and rare.
- diurna. Sibth. — D. and W. Frequent.
- Flos-cuculi. Linn. — D. and W. Common.
- ‡Githago. Linn. — D. and W. Frequent.

Cerastium.
- tetrandum. Curt. — D. and W. Sandy ground, near the sea. Frequent.
- semidecandrum. Linn. — D. and W. Sand hills on the coast.

Cerastium.
- glomeratum. Thuil. D. and W. Common.
- triviale. Link. D. and W. Common.
- arvense. Linn. D. Coast of Dublin. Not unfrequent. W. Walls and banks near Greystones.

Stellaria.
- media. Linn. D. and. W. Very common.
- *b.* Boreana. Jord. D. and W. Sand hills at Portrane and Portmarnock.
- Holostea Linn. D. and W. Frequent.
- glauca. With. D. Kelly's Glen. (D.M.). Curragha (Wade). W? Glencree? and Murrough of Wicklow? (D.M.)
- graminea. Linn. D. and W. Common.
- uliginosa. Murr. D. and W. Frequent.

Arenaria.
- trinervis. Linn. D. and W. Rather rare.
- serpyllifolia. Linn. D. and W. Frequent.
- *b.* leptoclados. Guss. D. and W. Frequent.

Honkeneya.
- peploides. Ehrh. D. and W. Frequent.

Sagina.
- maritima. Don. D. and W. Frequent.
- apetala. Linn. D. and W. Frequent.
- ciliata. Fries. D. and W. Frequent.
- procumbens. Linn. D. and W. Common.
- nodosa. Meyer. D. Damp hollows in the sandhills at Portrane and Portmarnock. W. Sandhills of Wicklow.

Spergula.
- ‡arvensis. Linn. D. and W. Common.

Spergularia.
- neglecta. Kindb. D. and W. Common on sea-shore.
- marginata. Wahl. D. and W. Common in wet salt marshes.
- rupicola. Lebel. D. and W. Frequent on rocks by the sea.

12. Illecebraceæ.

Scleranthus.
- annuus. Linn. Local and rare. D. Baldoyle and Howth. W. Murrough of Wicklow.

13. Portulacaceæ.

Montia.
- fontana. Linn. D. and W. Common.
- *b.* rivularis. Gm. Not unfrequent.

16. Hypericaceæ.

Hypericum.
- Androsæmum. Linn. D. and W. Frequent.

Hypericum.

[calycinum. Linn.]	Powerscourt, &c., naturalized.
perforatum. Linn.	D. and W. Common.
dubium. Leers.	W. Powerscourt ? (Mackay); not found lately. Ovoca near the station.
humifusum. Linn.	D. and W. Frequent.
pulchrum. Linn.	D. and W. Frequent.
hirsutum. Linn.	D. Leixlip. Woodlands. Santry. Near Canal, from Dublin to Robertstown.
Elodes. Linn.	D. and W. Not unfrequent.

17. Malvaceæ.

Althæa.

[officinalis. Linn.]	Near Cabragh, Dublin. (Wade, Rar.) Introduced.

Lavatera.

†arborea. Linn.	D. Ireland's Eye. Killiney Hill.

Malva.

moschata. Linn.	W. Murrough of Wicklow, and near Enniskerry. Wooden-Bridge. (Ir. Fl.)
sylvestris. Linn.	D. and W. Frequent.
rotundifolia. Linn.	D. and W. Rather rare.
[borealis. Wallm.]	Donnybrook. (M. Dowd.)

19. Linaceæ.

Radiola.

[millegrana. Sm.]	D ? Between Dolphin's barn and Crumlin. (Threlkeld.) Not seen by any botanist recently.

Linum.

catharticum. Linn.	D. and W. Common.
angustifolium. Hud.	D. and W. Very local, and chiefly near the Coast.

20. Geraniaceæ.

Geranium.

sanguineum. Linn.	D. Howth. Ireland's Eye. Lambay. Killiney. W. Killencarrig and Bray. (Ir. Flor.)
[pratense. Linn.]	Powerscourt Gate at Tinnehinch, and roadside near old Connaught, escaped (R.M.B.)
‡pyrenaicum. Linn.	D. and W. Not unfrequent in hedge banks, and by roadsides.
molle. Linn.	D. and W. Common.
? pusillum. Linn.	D. Near Kilmacanogue, Wicklow. (Flor. Hib.) Not found since.
rotundifolium. Linn.	D. Old walls at Glasnevin. Finglas. Ballymun, etc. (Ir. Flor.) Now become very scarce.

Geranium.

dissectum. Linn.	D. and W. Frequent.
columbinum. Linn.	D. Many places near Dublin. W. Murrough of Wicklow.
lucidum. Linn.	D. Feltrim Hill. W. Wood near Newtownmountkennedy and Devil's Glen.
[striatum. Linn.]	Well established along the road between old Connaught and Crinken. (R.M.B.)
Robertianum. Linn.	D. and W. Common.

Erodium.

cicutarium. L'Herit.	D. and W. Frequent.
†moschatum. L'Herit.	D. Howth, &c., Dublin. W. Bray, &c.
maritimum. Sm.	D. Killiney. Howth.

Oxalis.

Acetosella. Linn.	D. and W. Frequent.

21. Ilicaceæ.

Ilex.

Aquifolium. Linn.	D. and W. Frequent.

22. Celastraceæ.

Euonymus.

europæus. Linn.	D. and W. Not unfrequent.

23. Rhamnaceæ.

Rhamnus.

catharticus. Linn.	W. Luggelaw, Hedges on Murrough of Wicklow.
Frangula. Linn.	W. Hedges on Murrough of Wicklow.

24. Sapindaceæ.

Acer.

*Pseudoplatanus. Linn.	D. and W. Frequent, but not native.
‡campestre. Linn.	Hedges on north side of Dublin. Ballycullen, Glasnevin, and Ballymun.

25. Leguminosæ.

Ulex.

europæus. Linn.	D. and W. Common.
Gallii. Planch.	D. and W. Common.

Sarothamnus.

scoparius. Koch.	D. and W. Frequent.
b. prostratus.	Killiney Hill and Howth. Seems to have been mistaken for Genista tinctoria.

Ononis.

arvensis. Linn.	D. and W. Frequent.

Anthyllis.

Vulneraria. Linn.	D. and W. Chiefly on the coast.

Medicago.		
lupulina. Linn.	D.	and W. Abundant.
*sativa. Linn.		Portmarnock. (Flor. Hib.) Plentiful near Rush.
[falcata. Linn.]		Portmarnock. (Flor. Hib.); and still occurs.
[denticulata. Willd]	D.	Between Dolphin's barn and Crumlin, once only.
[maculata. Sibth.]		Between Dolphin's barn and Crumlin, with the former introduced.
Melilotus.		
‡officinalis. Willd.	D.	About Rush, Portmarnock, Kilbarrack, Baldoyle, &c., chiefly on the coast. W. At Fassaroe occasionally, R. M. B.
Trigonella.		
ornithopodioides. D. C.	D.	Howth, near the lighthouse. Killiney Hill. W. Near the river at Bray and Murrough, and Castle of Wicklow.
Trifolium.		
subterraneum. Linn.	W.	North bank of the river at Wicklow.
pratense. Linn.	D.	and W. Common.
medium. Linn.	D.	Slopes of Dublin mountains.
	W.	Near the shore at Rockfield.
arvense. Linn.	D.	and W. Rather rare on the coast.
striatum. Linn.	D.	Abundant on Feltrim Hill. Dundrum.
	W.	Murrough and river side at Wicklow.
scabrum. Linn.	D.	Kilbarrack, Howth, North Bull, &c.
	W.	Along the Murrough of Wicklow.
glomeratum. Linn.	W.	By the river side at Wicklow, with T. subterraneum.
repens. Linn.	D.	and W. Common.
fragiferum. Linn.	D.	and W. Very local, and chiefly on the coast, or along the tidal rivers.
procumbens. Linn.	D.	and W. Frequent.
minus. Relhan.	D.	and W. Common.
filiforme. Linn.	D.	and W. Rather rare.
Lotus.		
corniculatus. Linn.	D.	and W. Common.
b. tenuis. Kit.	D.	Cloghran, co. Dublin. (D. Orr.)
major. Scop.	D.	and W. Frequent.
Ornithopus.		
perpusillus. Linn.	D.	Near the lighthouse, and other places on the south side of Hill of Howth.
Vicia.		
hirsuta. Koch.	D.	Plentiful S.E. side of Howth. W. Not uncommon about Bray (R. M. B.)

Vicia.

‡tetrasperma. Moench. D. Very rare. Once found on Knockmaroon Hill.

Cracca. Linn. D. and W. Common.

sylvatica. Linn. D. Killiney and Ballinascorney. W. Rockfield and Devil's Glen. South side of Dargle (R. M. B.)

Sepium. Linn. D. and W. Common.

[sativa. Linn.] An escape.

angustifolia. Roth. D. and W. Frequent on the coast.

lathyroides. Linn. D. Clontarf, Baldoyle, Howth. W. Sandhills near the Wicklow lighthouse (D. M.)

Lathyrus.

pratensis. Linn. D. and W. Frequent.

palustris. Linn. W. Marshy fields at Killoughter, near the Murrough of Wicklow. Not found recently.

Orobus.

tuberosus. Linn. D. and W. Frequent.

26. Rosaceæ.

Prunus.

spinosa. Linn. D. and W. Common.

[insititia. Linn.] D. and W. Occasionally planted in hedges.

‡Avium. Linn. D. and W. Frequent in Wicklow and Dublin.

‡Cerasus. D. Occasionally in hedges.

Spiraea.

Ulmaria. Linn. D. and W. Common.

Agrimonia.

Eupatoria. Linn. D. and W. Local.

b. odorata. Mill. W. Near Enniskerry.

Poterium.

Sanguisorba. Linn. D. Local. Near Dublin. Knockmaroon Hill, Feltrim Hill, Raheny, &c. W. About Fassaroe and in Herbert Road, near Bray (R. M. B.)

Alchemilla.

arvensis. Scop. D. and W. Frequent.

vulgaris. Linn. D. and W. Rather rare, and local.

alpina. Linn. W. Cliffs above Lough Ouler. H. C. Hart.

Potentilla.

Fragariastrum. Ehrh. D. and W. Common.

Tormentilla. Sibth. D. and W. Common.

reptans. Linn. D. and W. Frequent.

anserina. Linn. D. and W. Common.

Comarum.
palustre. Linn. D. and W. Local.
Fragaria.
vesca. Linn. D. and W. Frequent.
Rubus.
idaeus. Linn. D. and W. Frequent.
plicatus. W. and N. W. Near Roundwood.
discolor. W. and N. D. and W. Frequent.
macrophyllus.
c. Schlechtendalii. Weihe. W. Wicklow (C.C. Babington.)
rudis. Weihe. W. Wicklow.
corylifolius. Sm. W. Wicklow.
saxatilis. Linn. D. Kelly's Glen. W. River side in the Dargle (Irish Flora.)
Geum.
urbanum. Linn. D. and W. Frequent.
rivale. Linn. D. and W. Local and uncommon. Banks of Liffey. Santry and Kilmere Woods (Ir. Fl.)
Rosa.
spinosissima. Linn. D. and W. Frequent near the sea.
tomentosa. Sm. D. and W. Not common.
b. britannica. Desegl. W. St. Valerie and Dargle (R.M.B.)
canina. Linn. D. and W. Common.
arvensis. Huds. D. and W. Frequent.
Crataegus.
Oxyacantha. Linn. D. and W. Common.
Pyrus.
Aria. Hooker. D. Howth (Wade. Rar.) W. Glencree.
Aucuparia. Gaert. D. and W. Frequent.
‡Malus. Linn. D. and W. Not common, and an escape, or planted.

27. Lythraceæ.

Lythrum.
Salicaria. Linn. D. and W. Common.
Peplis.
Portula. Linn. D. and W. Common.

28. Onagraceæ.

Epilobium.
angustifolium. Linn. W. Among rocks on east side of the Scalp about half way up.
hirsutum. Linn. D. and W. Frequent.
parviflorum. Schreb. D. and W. Common.
montanum. Linn. D. and W. Common.
tetragonum. Linn. D. Carrickmines. (Prof. A. Dickson.)
b. obscurum. Schreb. D. and W. Common.

Epilobium.
palustre. Linn. D. and W. Common.
[Œnothera.
biennis. Linn. D. Sparingly at Portmarnock (R.M.B.)]
Circæa.
lutetiana. Linn. D. and W. Frequent.

28. Haloragaeceæ.

Myriophyllum.
verticillatum. Linn. D. Near Finglas Bridge, and ditches along the canal. W. Ditches on Murrough of Wicklow.
spicatum. Linn. D. and W. Frequent in ponds.
alterniflorum. D. and W. Frequent in boggy places.
Hippuris.
vulgaris. Linn. D. and W. Frequent.
Callitriche.
verna. Linn. D. and W. Common.
stagnalis. Scop. D. and W. Common.
hamulata. Kütz. W. Lough Dan. (A.G.M.)

30. Grossulariaceæ.

[Ribes.
Grossularia. Linn. The three species occur occasionally as
rubrum. Linn. escapes from cultivation near cot-
nigrum. Linn. tages, etc.]

31. Crassulaceæ.

Sedum.
anglicum. Huds. D. and W. Frequent.
acre. Linn. D. and W. Abundant.
*reflexum. Linn. D. Walls near Finglas and Chapelizod, Dublin. (Flor. Hib.)
* rupestre. Huds. D. Walls between Dundrum and Rathfarnham, Dublin. W. Rocks near the new church, Bray.
Cotyledon.
Umbilicus. Linn. D. and W. Common.

32. Saxifragaceæ.

Saxifraga.
stellaris. Linn. D. and W. Dublin and Wicklow Mountains.
tridactylites. Linn. D. and W. Rare.
granulata. Linn. D. Kilbarrack, Baldoyle, and Portmarnock. W. Sandhills near Mizen Head.
Chrysosplenium.
oppositifolium. Linn. D. and W. Frequent.

Parnassia.
palustris. D. and W. On Sandhills and mountain bogs, not unfrequent.

33. Umbelliferæ.

Hydrocotyle.
vulgaris. Linn. D. and W. Common.
Sanicula.
europæa. Linn. D. and W. Frequent.
Eryngium.
maritimum. Linn. D. and W. Frequent.
Apium.
graveolens. Linn. D. and W. Common near the sea.
Helosciadium.
nodiflorum. Koch. D. and W. Common.
inundatum. Koch. D. and W. Not unfrequent.
Ægopodium.
‡ Podagraria. Linn. D. Rare. W. St. Valerie, Bray (R.M.B.) Roundwood and near Lough Dan.

Carum.
[Carui. Linn] Accidentally introduced.
Bunium.
flexuosum. With. D. and W. Frequent.
Pimpinella.
Saxifraga. Linn. D. and W. Common.
Sium.
latifolium. Linn. D. Curragha and Howth (Wade. Rar.)
angustifolium. Linn. D. Near Finglas; Raheny; Curragha. W. Murrough of Wicklow.

Œnanthe.
fistulosa. Linn. D. and W. Frequent.
Lachenalii. Gmel. D. and W. Common in salt-marshes.
crocata. Linn. D. and W. Frequent.
Phellandrium. Linn. D. and W. Frequent.
Æthusa.
‡ Cynapium. Linn. D. and W. Common.
Foeniculum.
‡ vulgare. Gaert. D. and W. In Wicklow and Dublin; near houses, especially towards the coast.

Crithmum.
maritimum. Linn. D. and W. Frequent on rocky shores.
Angelica.
sylvestris. Linn. D. and W. Common.
Pastinaca.
‡ sativa. Linn. D. Finglas, Ballygall, Beldrummond, Rush, Howth, &c. W. Fields near Murrough of Wicklow.

Heracleum.
Sphondylium. Linn. D. and W. Common.
Daucus.
Carota. Linn. D. and W. Common.
Torilis.
Anthriscus. Gaert. D. and W. Frequent.
nodosa. Gaert. D. and W. Not unfrequent.
Chærophyllum.
Anthriscus. Lam. D. Sandhills at Portrane and Portmarnock, and about Dublin. W Murrough of Wicklow.
sylvestre. Linn. D. and W. Common.
temulum. Linn. D. Coolock. Ballinteer. Raheny. Glasnevin. Donnybrook. Old Connaught. W. Herbert Road, Bray. (R.M.B.
Myrrhis.
*odorata. Scop. D. Orchards and hedges in Dublin. (Wade). Not seen recently.
Scandix.
‡Pecten-Veneris. Linn D. and W. Frequent in cultivated fields.
Conium.
maculatum. Linn. D. and W. Hedges and waste places.
Smyrnium.
‡Olusatrum. Linn. D. and W. Frequent.
Coriandrum.
[sativum. Linn.] Rare, and only as an escape from cultivation.

34. Araliaceæ.

Hedera.
Helix. Linn. D. and W. Common.

35. Cornaceæ.

Cornus. D. Hedges near Coolock. (Ir. Flor.)
*sanguinea. Linn. No doubt planted.

37. Caprifoliaceæ.

Sambucus.
nigra. Linn. D. and W. Frequent.
‡Ebulus. Linn. D. Roadsides towards Carton. A weed in Phœnix Park. W. Powerscourt. (Flor. Hib.) Near the Dargle bridge and roadside near Bray. (R.M.B.)
Viburnum.
Opulus. Linn. D. and W. Frequent.
Lonicera.
Periclymenum. Linn. D. and W. Common.

38. Rubiaceæ.

Rubia.	
peregrina. Linn.	D. Killiney. Dalkey. Howth.
Galium.	
verum. Linn.	D. and W. Frequent.
erectum. Huds.	D. Very rare. Stagstown. Killiney. and Violet Hill, Glasnevin.
Mollugo. Linn.	D. Between Swords and Skerries. Ballymun. Between Finglas, and Glasnevin. Sandymount. W. Vallombrosa, Bray.
saxatile. Linn.	D. and W. Common on heath and mountains.
palustre. Linn.	D. and W. Common.
[? uliginosum. Linn.]	W ? Not found recently, and probably G. Witheringii was mistaken for it.
Aparine. Linn.	D. and W. Common.
Asperula.	
odorata. Linn.	D. and W. Frequent.
Sherardia.	
arvensis. Linn.	D. and W. Frequent.

39. Valerianaceæ.

Centranthus.	D. Quarries near Leixlip, and at Howth.
[ruber. D.C.]	Walls at Glasnevin, Clontarf, Cabra, Lucan (Irish Flora).
Valeriana.	
officinalis. Linn.	D. and W. Frequent.
Valerianella.	
olitoria. Vahl.	D. and W. Frequent.
†dentata. Koch.	D. Feltrim Hill. Baldoyle. W. Bray.

40. Dipsaceæ.

Dipsacus.	
sylvestris. Linn.	D. Rare. Raheny. Cardiff's Bridge. Banks of Tolka. Raheny. Kilbarrack. Clontarf. Swords, etc.
Scabiosa.	
succisa. Linn.	D. and W. Common.
arvensis. Linn.	D. and W. Frequent.

41. Compositæ.

Silybum.	D. Kilbarrack and Portmarnock, &c.
*Marianum. Gaert.	W. Very rare on the coast, near Wicklow.
Carduus.	
tenuiflorus. Curt.	D. and W. Frequent, especially near the coast.

Carduus.
crispus. Linn. D. Rare, about Dublin and northwards.
lanceolatus. Linn. D. and W. Common.
palustris. Linn. D. and W. Common.
pratensis. Huds. D. About Marley. (Irish Flora.) W. Glencree and about Loughs Bray and Dan.
arvensis. Curtis. D. and W. Common.

Carlina.
vulgaris. Linn. D. and W. Frequent, especially on coast.

Arctium.
minus. Schkuhr.
b. intermedium. Lange. D. and W. Frequent.

Centaurea.
nigra. Linn. D. and W. Common.
Scabiosa. Linn. D. Rare. Rush. Chapelizod. Lucan. Finglas. Glasnevin, Santry, &c. W. Herbert Road, Bray. (R.M.B.) Greystones and Kilcool.
*Cyanus. Linn. D. and W. Rather rare.
[solstitialis. Linn.] Portmarnock and Clontarf. (Flor. Hib.)
[paniculata. Linn.] A single plant near Rush. (M. Dowd.)

Chrysanthemum.
‡Segetum. Linn. D. and W. Frequent, especially on sand.
Leucanthemum. Linn. D. and W. Common.

Matricaria.
[Parthenium. Linn.] An escape from cultivation.
inodora. Linn. D. and W. Common.
b. maritima. Linn. D. and W. Common.
‡Chamomilla. Linn. D. Very rare. Raheny and Greenogue (Irish Flora). Doubtful.

Tanacetum.
*vulgare. Linn. D. and W. Not common. An escape.

Anthemis.
‡Cotula. Linn. D. and W. Rather rare.
‡arvensis. Linn. D. Rare. Phœnix Park. Lyons. Dublin. Portmarnock.
nobilis. Linn. W. On Knock Cree, near Lough Bray. (Ir. Flor.) Rocky Valley, Enniskerry.

Achillea.
Millefolium. Linn. D. and W. Common.
Ptarmica. Linn. D. and W. Local and rather rare.

Artemisia.
*Absinthium. Linn. D. and W. Rare, and introduced.
†vulgaris. Linn. D. and W. Frequent.
maritima. Linn. D. Very rare. Killiney. Howth. Shore near Portrane House.

Filago.
germanica. Linn. D. and W. Common.

Filago.	
minima. Fries.	W. Rare. Murrough of Wicklow. Between Enniskerry and Lough Bray. Dargle. Drumgoff, etc.
Gnaphalium.	
uliginosum. Linn.	D. and W. Common.
sylvaticum. Linn.	W. Powerscourt. Rocky Valley, near Sugarloaf Mountain (R. M. B.) Near Shillelagh (H. C. Hart.)
dioicum. Linn.	D. and W. Rather rare. Chiefly on the coast and mountains.
Senecio.	
vulgaris. Linn.	D. and W. Common.
sylvaticus. Linn.	D. and W. Frequent.
†viscosus. Linn.	D. Very rare. Sutton side of Howth.
erucifolius. Linn.	D. Many places near Dublin. W. Near Bray and Kilrudderry.
Jacobæa. Linn.	D. and W. Common. The rayless variety is frequent on sand-hills towards Drogheda.
aquaticus. Huds.	D. and W. Common.
[saracenicus. Linn.]	Near Clonskeagh, Dublin. Introduced.
Bidens.	
cernua. Linn.	D. and W. Occasionally, in muddy bogs.
tripartita. Linn.	D. and W. Ditto. Both rare.
Inula.	
*Helenium. Linn.	W. Whaley Abbey, Wicklow.
crithmoides. Linn.	D. Killiney Hill. Dalkey Island. Howth. Lambay.
dysenterica. Linn.	D. and W. Frequent.
Bellis.	
perennis. Linn.	D. and W. Common.
Erigeron.	
acris. Linn.	D. Rare. Finglas quarries. Templeogue. Clonsilla. Lucan, Howth, etc.
	W. Between Enniskerry and Lough Bray.
Aster.	
Tripolium. Linn.	D. and W. Common.
Solidago.	
Virgaurea. Linn.	D. and W. Frequent.
b. cambrica. Huds.	D. and W. Rare. On the mountains.
Tussilago.	
Farfara. Linn.	D. and W. Common.
Petasites.	
vulgaris. Desf.	D. and W. Frequent.
[fragrans. Presl.]	Becoming naturalized.

Eupatorium.
cannabinum. Linn. D. and W. Rather rare.
Cichorium.
‡Intybus. Linn. D. and W. Chiefly on sand-hills along the coast, in Dublin and Wicklow.
Lapsana.
communis. Linn. D. and W. Frequent.
Hypochœris.
radicata. Linn. D. and W. Common.
Leontodon.
hirtus. Linn. D. and W. Frequent on the coast, rare inland.
hispidus. Linn. D. Portmarnock (Mackay). Near Santry (D. Orr). Lucan (A. G. M.) Finglas (D. Orr.)
W. Murrough of Wicklow (D. M.)
autumnalis. Linn. D. and W. Common.
Picris.
[hieracioides. Linn.] Portmarnock. (Flor. Hib.) Introduced, and not found for many years.
Helminthia.
echioides. Gaert. D. Howth, etc. Chiefly north and east of Dublin. Rare.
Tragopogon.
pratensis. Linn. D. and W. Rather rare.
Taraxacum.
officinale. Wigg. D. and W. Common.
Lactuca.
muralis. Fresen. W. Very rare. Roadside, from Lara Barracks to Clara.
Sonchus.
oleraceus. Linn. D. and W. Common.
b. asper. Hoffm. D. and W. Frequent.
†arvensis. Linn. D. and W. Common in cultivated land.
Crepis.
*taraxacifolia. Thuil. D. and W. Baldoyle. Howth. Dublin. Bray, etc.; spreading along the railways.
virens. Linn. D. and W. Common.
paludosa. Moench. D. and W. Frequent in hilly districts.
Hieracium.
Pilosella. Linn. D. and W. Frequent.
vulgatum. Fries. D. Leixlip. W. Powerscourt. Devil's Glen, and Dargle River.
gothicum. Fries. W. Glenmalure, Wicklow.
strictum. Fries. W. Glenmalure, Wicklow.
umbellatum. Linn. W. Glencree. Devil's Glen. Ballyarthur.
corymbosum. Fries. W. Glenmalure.

Hieracium.
boreale. Fries. — W. Glenmalure. Glendalough, and Devil's Glen.

42. Campanulaceæ.

Lobelia.
Dortmanna. Linn. — W. Glendalough. Loch Dan. Lower Lough Bray.

Jasione.
montana. Linn. — D. and W. Frequent.

Campanula.
*Trachelium. Linn. — D. Near Glasnevin. Introduced. W. Roundwood. Do.
*rapunculoides. Linn. — W. Wall near Bray Harbour. Murrough of Wicklow.
rotundifolia. Linn. — D. and W. Frequent.

Wahlenbergia.
hederacea. Reich. — D. Glencullen. W. Base of Sugarloaf. Glencree. Enniskerry.

43. Ericaceæ.

Vaccinium.
Oxycoccos. Linn. — D. and W. Rare. On the mountains.
Vitis-idæa. Linn. — W. Upper Lough Bray. Luggelaw. Lugnaquilla. Lug-duff.
Myrtillus. Linn. — D. and W. Common.

Andromeda.
polifolia. Linn. — D. Bogs along the Military-road from Roebuck to Lough Bray. (Irish Flora.) W. Between Djouce and Luggelaw. (R. M. B.) Side of Kippure. (H. C. Hart.)

Erica.
Tetralix. Linn. — D. and W. Common.
cinerea. Linn. — D. and W. Common.

Calluna.
vulgaris. Salisb. — D. and W. Common.

Pyrola.
minor. Linn. — W. Vale of Ovoca, near "Meeting of the Waters."

44. Jasminaceæ.

Fraxinus.
excelsior. Linn. — D. and W. Common.

*Ligustrum.
vulgare. Linn. — D. and W. Frequent, but planted.

45. Apocynaceæ.

Vinca.

[*major. Linn.]
[*minor. Linn.] — Both species occur occasionally escaped from cultivation.

46. Gentianaceæ.

Erythræa.

Centaurium. Pers. — D. and W. Frequent.
b. pseudo-latifolium. — D. Portmarnock sands, &c.
pulchella. Fries. — D. North Bull, Dublin.

Chlora.

perfoliata. Linn. — D. and W. Frequent, but local.

Gentiana.

Amarella, Linn. — D. and W. Rather local.
campestris. Linn. — D. W. Frequent.

Menyanthes.

trifoliata. Linn. — D. and W. Frequent.

Villarsia.

[nymphæoides. Link.] — Naturalized in the River Tolka at Glasnevin.

47. Polemoniaceæ.

Polemonium.

[caeruleum. Linn.] — Knockmaroon Hill, near Dublin. (Flor. Hib.) Not indigenous, and not seen lately.

48. Convolvulaceæ.

Convolvulus.

arvensis. Linn. — D. and W. Unfrequent.
Sepium. Linn. — D. and W. Frequent.
Soldanella. Linn. — D. and W. Frequent.

Cuscuta.

Epilinum. Weihe. — D. and W. In cultivated flax. Rare.
*Trifolii. Bab. — D. Ballybrack. W. Fassaroe, &c., near Bray. Thoroughly established for many years, on other plants besides clover (R.M.B.)

49. Solanaceæ.

Solanum.

Dulcamara. Linn. — D. and W. Frequent.
†nigrum. Linn. — D. Waste places near Dublin. Very rare. W. Near Wicklow (Hon. Miss Ruthven).

Atropa.

[Belladonna.] — D. Formerly at Dundrum (Rutty). Near Blessington-street (Irish Flora). Not seen recently.

Hyoscyamus.

niger. Linn. — D. and W. Rare, and chiefly on coast. On Murrough of Wicklow, &c.

50. Scrophulariaceæ.

Verbascum.	
Thapsus. Linn.	D. and W. Frequent.
[Blattaria. Linn.]	A few plants near Wicklow.
Scrophularia.	
Balbisii. Hornem.	D. and W. Rather local.
nodosa. Linn.	D. and W. Frequent.
Digitalis.	
purpurea. Linn.	D. and W. Frequent.
Antirrhinum.	
‡Orontium. Linn.	D. Near Dundrum, Dublin (D. Orr).
[majus. Linn.]	Naturalized.
Linaria.	
[Cymbalaria. Mull.]	Naturalized. On garden walls, etc.
repens. Mull.	D. In Bushy Park, near Rathfarnham Bridge.
vulgaris. Mull.	D. Baldoyle and Knockmaroon Hill. W. Murrough of Wicklow.
minor. Desb.	D. Stillorgan and Sidney Parade, and along the M. G. W. Railway near Dublin.
Mimulus.	
[luteus. Linn.]	W. Plentiful in the river, near Enniskerry.
Veronica.	
hederifolia. Linn.	D. and W. Common.
polita. Fries.	D. and W. Common.
agrestis. Linn.	D. and W. Common.
*Buxbaumii. Pers.	D. and W. Dublin and Wicklow. An introduced weed, and increasing.
arvensis. Linn.	D. and W. Common.
serpyllifolia. Linn.	D. and W. Common.
officinalis. Linn.	D. and W. Frequent.
Chamædrys. Linn.	D. and W. Common.
montana. Linn.	D. Abundant near Dublin. W. Powerscourt, &c., frequent in Wicklow.
scutellata. Linn.	D. and W. Frequent.
Anagallis. Linn.	D. and W. Frequent.
Beccabunga. Linn.	D. and W. Common.
Euphrasia.	
officinalis. Linn.	D. and W. Common.
Bartsia.	
Odontites. Hud.	D. and W. Frequent.
Pedicularis.	
palustris. Linn.	D. and W. Frequent.
sylvatica. Linn.	D. and W. Frequent.
Rhinanthus.	
Crista-galli. Linn.	D. and W. Frequent.

Melampyrum.
pratense. Linn. D. and W. Frequent.
b. montanum. Johnst. W. Great Sugarloaf, Wicklow

51. Orobanchaceæ.

Lathræa.
Squamaria. Linn. D. and W. Local, and rare.
Orobanche.
major. Linn. W. Luggelaw and Lough Dan, Devil's Glen, Glen of Downs, Seven Churches. Between Rathdrum and Lara; Kilbride.
Hederæ. Duby. D. Palmerstown, Woodlands, Leixlip, Howth, and Kingstown. W. Glen of the Downs, east side (R.M.B.)

52. Verbenaceæ.

Verbena.
*officinalis. Linn. D. and W. Local and rare, and probably outcast from gardens.

53. Labiatæ.

Lycopus.
Europæus. Linn. D. Rare and local. W. Not unfrequent.
Mentha.
‡rotundifolia. Linn. D. Near Castle Kelly. W. At Glendalough, and Roundwood. Near Enniskerry, an escape (R.M.B.)
hirsuta. Linn. D. and W. Very common.
‡sativa. Linn. } W. Glen of the Downs. Enniskerry river.
b. ‡rubra. Sm. }
arvensis. Linn. D. and W. Frequent.
b. agrests. Not unfrequent.
Pulegium. Linn. W. Base of Great Sugarloaf.
Thymus.
Serpyllum. Fries. D. and W. Common.
Origanum.
vulgare. Linn. D. and W. Rather local.
Calamintha.
[Clinopodium. Benth.] W. Said to have been found between Enniskerry and Bray, but C. menthifolia was probably mistaken for it.
‡Acinos. Clairv. D. Portmarnock. W. Murrough of Wicklow. A few plants near Tulla Church, Carrickmines.
menthifolia. Host. D. Several places. Strawberry beds, &c. W. Plentiful between Enniskerry and Bray, &c.

Nepeta.
†Cataria. Linn. — D. Banks of Dodder above Rathfarnham. (Flor. Hib.) Sandy fields about Rush and Skerries (Irish Flora.)

Glechoma. Benth. — Common.

Salvia.
Verbenaca. Linn. — D. Many places near Dublin. W. Murrough of Wicklow.

Prunella.
vulgaris. Linn. — D. and W. Frequent.

Scutellaria.
[galericulata. Linn.] — D. Marshes at Howth (Wade Rar.)
minor. Linn. — W. Glenmalure, Rathdrum, and near Lough Bray and Roundwood.

Marrubium.
†vulgare. Linn. — D. Churchyard at Howth (Flor. Hib.) W. Coast of Wicklow; Bray; and Loughlinstown.

Ballota.
nigra. Linn. — D. and W. Rather rare.

Stachys.
Betonica. Benth. — D. Near Abbotstown (Wade Rar.) Not found recently.
palustris. Linn. — D. and W. Common.
ambigua. Sm. — D. and W. Rare.
sylvatica. Linn. — D. and W. Frequent.
‡arvensis. Linn. — W. Shillelagh, and railway banks near Wicklow.

Galeopsis.
‡Ladanum. Linn. — D. Dundrum; Templeogue, and along the Dodder near Dublin. Malahide; Knockmaroon; Cardiffi Bridge. W. Greystones and Bray. Often plentiful at Fassaroe (R.M.B.)
[versicolor. Curt. — Near Glasnevin formerly. Mackay Cat.]
Tetrahit. Linn. — D. and W. Common.

Leonurus.
[Cardiaca. Linn.] — Roper's Rest, Dublin (Threlkeld). About Rush and Skerries (Ir. Fl.)

Lamium.
amplexicaule. Linn. — D. Not unfrequent about Dublin. W. Bray Commons (R.M.B.) Abundant on Murrough of Wicklow.
incisum. Willd. — D. and W. Rare.
purpureum. Linn. — D. and W. Common.
†album. Linn. — D. and W. and near houses. Local.
Galeobdolon. Crantz. — D. Several localities near Dublin; Leixlip; Finglas; Woodlands; Kelly's Glen. W. Dargle and Powerscourt woods.

Ajuga.
reptans. Linn. — D. and W. Frequent.

Teucrium.
[Chamædrys. Linn.] — D. Greenhills, near Tallaght (Wade, Rar.)
Scorodonia. Linn. — D. and W. Common.

54. Boraginaceæ.

Echium.
†vulgare. Linn. — D. Portmarnock, near Skerries and Balbriggan. W. Railway banks near Wicklow.

Mertensia.
maritima. Don. — D. Shore at Hampton Bank, near Balbriggan, and at Loughshinny, between the two lime kilns. (Wade.) W. Kilcool, on the Murrough. Sparingly.

Lithospermum.
officinale. Linn. — D. Rare. Several localities near Dublin. W. Bray and Murrough of Wicklow.
‡arvense. Linn. — D. and W. Rather local, and rare.

Myosotis.
cæspitosa. Schultz. — D. and W. Common.
palustris. With. — D. and W. Frequent.
repens. Don. — D. and W. Not unfrequent on boggy hills.
arvensis. Hoffm. — D. and W. Common.
collina. Reich. — D. and W. Abundant on the coast, Murrough of Wicklow, at Portmarnock, and at Malahide.
versicolor. Reich. — D. and W. Frequent.

Anchusa.
‡arvensis. Linn. — D. Frequent, and chiefly on the coast. W. Murrough of Wicklow.
[sempervirens. Linn.] — Near Finglas (Wade, Dublin).

Symphytum.
officinale. Linn. — D. and W. Frequent. Often occurs with purple flowers.

Cynoglossum.
officinale. Linn. — D. Frequent near Dublin. On the coast. W. Murrough of Wicklow.
*montanum. Lam. — D. Near Balbriggan; very rare, and probably introduced in this the only Irish locality.

55. Lentibulariaceæ.

Pinguicula.
vulgaris. Linn. — D. and W. Frequent in the mountain district.
lusitanica. Linn. — D. Foot of the Dublin Mountains. W. Near Roundwood, Annamoe, Lough Dan, etc.

Utricularia.	
vulgaris. Linn.	D. and W. Rare. Abundant in ditches on the Murrough of Wicklow.
minor. Linn.	W. On Calary Bog. Sparingly. (W. Archer).

56. Primulaceæ.

Primula.	
vulgaris. Huds.	D. and W. Common. The oxlip occurs in Howth.
officinalis. Linn.	D. and W. Common.
Lysimachia.	
[vulgaris. Linn.]	D. About Loughlinstown and Old Connaught (Irish Flora.)
[Nummularia. Linn.]	D. At the Old Camp near Loughlinstown (Irish Flora.) Kilmashogue (Wade, Dublin). An escape only.
Nemorum. Linn.	D. and W. Frequent.
Anagallis.	
arvensis. Linn.	D. and W. Frequent.
tenella. Linn.	D. and W. Frequent.
Glaux.	
maritima. Linn.	D. and W. Common on the sea shore.
Samolus.	
Valerandi. Linn.	D. and W. Frequent, especially near the coast.

57. Plumbaginaceæ.

Armeria.	
maritima. Willd.	D. and W. Common on the coast.
Statice.	
Bahusiensis. Fries.	D. and W. Muddy sea shores, but rather local.
occidentalis. Lloyd.	D. and W. Rocky and gravelly shores. Rather rare.

58. Plantaginaceæ.

Plantago.	
major. Linn.	D. and W. Common.
lanceolata. Linn.	D. and W. Common.
maritima. Linn.	D. and W. Common.
Coronopus. Linn.	D. and W. Common.
Littorella.	
lacustris. Linn.	D. Howth (Irish Flora.) W. Lough Dan, Luggelaw, Kelly's Lough, etc.

61. Chenopodiaceæ.

Suæda.	
maritima. Dum.	D. and W. Muddy sea shore. Frequent.
Salsola.	
Kali. Linn.	D. and W. Sandy sea shores. Frequent.

Salicornia.
herbacea. Linn. D. and W. Muddy salt marshes. Common.
b. procumbens. Sm. D. and W. Frequent.
Beta.
maritima. Linn, D. and W. Sea shores. Common.
Chenopodium.
†olidum. Curt. D. Formerly in Dublin, but not found for many years.
album. Linn. D. and W. Frequent.
b. viride. Linn. D. and W. Not uncommon.
†murale. Linn. D. Very scarce near Dublin. Howth. Clontarf. Baldoyle. Portobello.
rubrum. Linn. D. Rubbish-heaps at mouth of Tolka and Liffey.
‡Bonus-Henricus. Linn. D. and W. Frequent.
Atriplex.
littoralis. Linn. D. Sutton. Howth. Portmarnock, etc.
angustifolia. Sm. D. and W. Frequent.
b. erecta. Huds. D. and W. Frequent.
hastata. Sm. D. and W. Frequent.
b. deltoidea. Bab. D. and W. Common about Dublin.
Babingtonii. Woods. D. and W. Common on the sea-shore.
arenaria. Woods. D. Sutton. Baldoyle.
portulacoides. Linn. D. Sutton side of Howth. Portrane.

62. Polygonaceæ.

Rumex.
conglomeratus. Mun. D. and W. Common.
nemorosus. Schrad.
a. viridis. Sibth. D. and W. Frequent.
maritimus. Linn. Dublin or Meath. Formerly on the bog at Garristown, but now apparently extinct. Not seen in 1877.
[palustris. Sm.] Once found by the Canal, near Broadstone Station. Accidental.
‡pulcher. Linn. D. Bullock Harbour, between Kingstown, and Dalkey. Baldoyle. W. Near the harbour at Bray.
obtusifolius. Linn. D. and W. Common.
crispus. Linn. D. and W. Common.
Hydrolapathum. Huds. D. Malahide, between Raheny and Baldoyle. W. Murrough of Wicklow.
Acetosa. Linn. D. and W. Common.
Acetosella. Linn. D. and W. Common.
Polygonum.
Convolvulus. Linn. D. and W. Frequent.
aviculare. Linn. D. and W. Common.

Polygonum.

Raii. Bab.	D. and W.	Sandy sea-shores. Not unfrequent.
Hydropiper. Linn.	D. and W.	Common.
minus. Huds.	W.	Near Enniskerry. (J. Ball.) Not gathered recently.
Persicaria. Linn.	D. and W.	Common.
lapathifolium. Linn.	D. and W.	Unfrequent.
amphibium. Linn.	D. and W.	Frequent.
‡Bistorta. Linn.	D.	In a field at Ashtown, near Monkstown. (Mackay Cat. Ir.) Not found recently.

67. Empetraceæ.

Empetrum.

nigrum. Linn.	D. and W.	Frequent on the Dublin and Wicklow mountains.

68. Euphorbiaceæ.

Euphorbia.

‡Helioscopia. Linn.	D. and W.	Frequent in cultivated land.
Paralias. Linn.	D. and W.	Frequent on sandy shores.
Portlandica. Linn.	D. and W.	Sandy shores, and rocks. Frequent.
‡Peplus. Linn.	D. and W.	Frequent in cultivated land.
‡exigua. Linn.	D. and W.	Rather rare in cultivated land.

Mercurialis.

perennis. Linn.	D.	Very rare. Hedge-bank near Finglas.
†annua. Linn.	D.	Abundant near Dublin.

71. Urticaceæ.

Parietaria.

diffusa. Koch.	D. and W.	Not unfrequent.

Urtica.

dioica. Linn.	D. and W.	Common.
urens. Linn.	D. and W.	Not unfrequent.

Ulmus.

*suberosa. Ehrh.	D. and W.	Common, but planted.
b. parvifolia.	D.	Santry. W. Roundwood, &c.
*montana. With.	D. and W.	Frequent, but planted.

72. Amentiferæ.

Quercus.

Robur. Linn.	D. and W.	Common.
b. sessiliflora. Salisb.	W.	Glens near West Aston.

Alnus.

glutinosa. Linn.	D. and W.	Common.

Betula.

alba. Linn.	D. and W.	Frequent.

Myrica.
- Gale. Linn. — D. and W. In mountainous and boggy situations. Local.

Populus.
- tremula. Linn. — D. and W. Rocks and mountains, rather rare.

Salix.
- *fragilis. Linn. — D. and W. Frequent, but planted.
- *alba. Linn. — D. and W. Frequent, but planted.
- *viminalis. Linn. — D. and W. Frequent, but planted.
- †Smithiana. Willd. — D. and W. Not unfrequent.
- †acuminata. Sm. — D. and W. In hedges, occasionally.
- cinerea. Linn. — D. and W. Common.
  - *b.* aquatica. Sm. — D. and W. Not unfrequent.
  - *c.* oleifolia. Sm. — D. and W. Not unfrequent.
- aurita. Linn. — D. and W. Frequent.
- caprea. Linn. — D. and W. Frequent.
- repens. Linn. — D. and W. Frequent.
  - *c.* prostrata. Sm. — D. and W. Not unfrequent.
  - *f.* incubacea. Linn. — D. and W. Not unfrequent.
  - *g.* argentea. Sm. — D. and W. Not unfrequent.
- herbacea. Linn. — W. Thonelagee and Lugnaquillia.

73. Coniferæ.

Taxus.
- *baccata. Linn. — D. and W. Rare, and escaped from plantations.

74. Typhaceæ.

Typha.
- latifolia. Linn. — D. and W. Frequent, but local.
- angustifolia. Linn. — D. Formerly near Sandymount and Merrion. (Extinct through drainage.)

Sparganium.
- ramosum. Huds. — D. and W. Frequent.
- simplex. Huds. — D. and W. Not unfrequent.
- minimum. Fries. — D. or Meath. Garristown Bay, rare. W. Murrough of Wicklow (D.M.)

75. Araceæ.

Arum.
- maculatum. Linn. — D. and W. Not unfrequent.

76. Lemnaceæ.

Lemna.
- trisulca. Linn. — D. and W. Not unfrequent.
- minor. Linn. — D. and W. Common.
- gibba. Linn. — D. Pond at Glasnevin.
- polyrrhiza. Linn. — D. Near Irishtown and in Phœnix Park.

77. Naiadaceæ.

Potamogeton.
- natans. Linn. — D. and W. Frequent.
- polygonifolius. Pom. — D. and W. Boggy places, ponds, lakes, etc.
- plantagineus. Ducros. — W. Ditches near Murrough of Wicklow.
- rufescens. Schrad — W. Murrough of Wicklow, rare (D.M.)
- heterophyllus. Schrad. — D. In the Liffey, &c. W? In the lakes?
- lucens. Linn. — D. Phœnix Park. (Wade.) In both Canals near Dublin (D.M.)
- perfoliatus. Linn. — D. Liffey above Chapelizod?
- crispus. Linn. — D. and W. Frequent.
- †densus. Linn. — D. Canal at Portobello, Dublin. Probably conveyed by traffic from the West.
- pusillus. Linn. — D. and W. Frequent.
- pectinatus. Linn. — D. and W. Local, abundant in the Canals and on Murrough of Wicklow.

Zannichellia.
- palustris. Linn. — D. and W. Frequent.

Ruppia.
- rostellata. Koch. — D. and W. Not unfrequent.

Zostera. Linn.
- marina. Linn. — D. and W. Common.
- nana. Roth. — D. Mud-flats, near Baldoyle.

78. Alismaceæ.

Triglochin.
- palustre. Linn. — D. and W. Frequent.
- maritimum. Linn. — D. and W. Frequent in muddy salt marshes.

Sagittaria.
- †sagittifolia. Linn. — D. In the Canals near Dublin, and along the Tolka, but probably introduced.

Alisma.
- Plantago. Linn. — D. and W. Frequent.
- ranunculoides. Linn. — D. and W. Frequent in boggy places.

Butomus.
- ‡umbellatus. Linn. — D. River Tolka, below Glasnevin Bridge, (probably escaped.)

79. Hydrocharidaceæ.

Hydrocharis.
- Morsus-ranæ. Linn. — D. Bogs of Curragha and Garristown and near Balruddery.

Elodea.
- canadensis. Rich. — D. and W. Plentiful in the Canals and streams.

80. Orchidaceæ.

Orchis.

pyramidalis. Linn. D. and W. Frequent, especially near Dublin.

Morio. Linn. D. and W. Local and rare. Howth, Kelly's Glen, Baltinglass and near Wooden Bridge, &c.

mascula. Linn. D. and W. Common.

latifolia. Linn. D. and W. Frequent.

b. incarnata. Linn. D. and W. Frequent.

maculata. Linn. D. and W. Common.

Gymnadenia.

conopsea. R. Br. D. and W. Frequent.

albida. Rich. D. Three Rock Mountain, and Kelly's Glen. W. Luggelaw, and other places in Wicklow.

Habenaria.

viridis. R. Br. D. and W. Rather rare.

bifolia. R. Br. D. and W. Rather rare.

b. chlorantha. Bab. D. and W. Frequent.

Ophrys.

apifera. Huds. D. and W. Rare, and chiefly on coast.

[muscifera. Linn. Recorded by Wade probably erroneously.]

Spiranthes.

autumnalis. Rich. D. Rare and local. Killiney. Dalkey. Phœnix Park. Loughlinstown. W. On the commons at Bray.

Listera.

cordata. R. Br. W. Lough Bray. Glencree. Lough Nahanagan. D. Kelly's Glen.

ovata. R. Br. D. and W. Not unfrequent.

Neottia.

Nidus-avis. Rich. D. Luttrellstown-wood, now Woodlands. W. Dargle Woods.

Epipactis.

latifolia. Linn. D. and W. Rather rare.

palustris. Linn. D. Portmarnock. Portrane. Howth. Foot Dublin Mountains. W. Murrough of of Wicklow; Enniskerry.

Malaxis.

paludosa. Sw. D. Kelly's Glen. W. Above the Powerscourt Waterfall. Sugar-loaf Mountain. Roundwood. Ballymurtagh. Tythetewer and Glencree.

81. Iridaceæ.

Iris.

[*foetidissima. Linn.] D. and W. Occasionally, as an escape from cultivation.

Iris.
Pseudacorus. Linn. D. and W. Common.
Crocus.
[vernus. All.] Near the old castle at Dunganstown (Flor. Hib.)

82. Amaryllidaceæ.

Narcissus.
[Pseudo-narcissus. Linn.] Near Dublin, escape.
[major. Curt.] Near Templeogue, escape.
†biflorus. Curt. D. Howth. Clontarf. Raheny. Finglas. Killiney. Not unfrequent near Dublin.

84. Liliaceæ.

Scilla.
verna. Linn. D. Killiney. Howth. Ireland's Eye. Malahide. W. Murrough of Wicklow and Rockfield.
nutans. Sm. D. and W. Frequent.
Allium.
vineale. Linn. D. Plentiful at Portmarnock and Feltrim Hill, Glasnevin, Phœnix Park, etc. W. Rockfield.
ursinum. Linn. D. and W. Not unfrequent.
Narthecium.
Ossifragum. Huds. D. and W. Frequent.
Colchicum.
[autumnale. Linn.] Near Finglas and Scribblestown (Irish Flora.) Probably an error.

86. Juncaceæ.

Luzula.
pilosa. Willd. D. and W. Frequent in Wicklow and Dublin.
sylvatica. Beck. D. and W. Frequent.
campestris. D.C. D. and W. Frequent.
multiflora. Koch. D. and W. Bogs and mountains. Frequent.
Juncus.
acutus. Linn. W. Sand-hills and muddy estuaries between Wicklow and Arklow.
maritimus. Sm. D. and W. Frequent.
conglomeratus. Linn. D. and W. Common.
effusus. Linn. D. and W. Common.
glaucus. Sibth. D. and W. Frequent near the sea.
obtusiflorus. Ehrh. D. Boggy margin of the shore a little east of Dollymount.
acutiflorus. Ehrh. D. and W. Common.
lamprocarpus. Ehrh. D. and W. Frequent.

Juncus.

supinus. Moench.	D. and W.	Frequent in boggy places.
bufonius. Linn.	D. and W.	Frequent.
Gerardi. Lois.	D. and W.	Frequent on the coast.
squarrosus, Linn.	D. and W.	Frequent on the mountains.

87. Cyperaceæ.

Schœnus.

nigricans, Linn.	D. Portmarnock and Portrane sands; near Balbriggan, &c. W. Murrough of Wicklow.

Cladium.

Mariscus. Brown.	W. Murrough of Wicklow.

Rhynchospora.

alba. Vahl.	D. and W. Local, and rather rare.

Blysmus.

rufus. Link.	D. Baldoyle, North Bull. Between Balbriggan and Hampton.

Scirpus.

palustris. Linn.	D. and W. Frequent.
uniglumis. Link.	D. Shore, east of Dollymount. W. Near Killoughter; Wicklow, Arklow, etc., along the coast.
multicaulis. Sm.	W. Plentiful near Lough Dan, and along Annamoe river (A.G.M.)
pauciflorus. Lightf.	D. Howth, North Bull; Dollymount; Baldoyle; Portmarnock; Balbriggan.
cæspitosus. Linn.	D. and W. Common on mountain heaths.
parvulus. R. and S.	W. On soft mud in the creeks, north side of the mouth of river at Arklow. The only locality in Ireland.
fluitans. Linn.	D. and W. Not unfrequent.
Savii. S. and M.	D. and W. Not unfrequent. On coast.
setaceus. Linn.	D. and W. Rare? and chiefly inland.
lacustris. Linn.	D. and W. Frequent.
Tabernaemontani. Gm.	D. and W. Frequent on the coast.

Scirpus.

maritimus. Linn.	D. and W. Frequent on the coast.

Eriophorum.

vaginatum. Linn.	D. and W. Frequent on moors and bogs.
angustifolium. Roth.	D. and W. Common.
[latifolium. Hoppe.	Formerly near Enniskerry. Now extinct, as the ground has been drained.

Carex.

dioica. Linn.	D. and W. Dublin and Wicklow Mountains. Local.
pulicaris. Linn.	D. and W. Frequent on dry and boggy heaths.

Carex.

divisa. Huds.	D. North Lots, near mouth of Liffey. The only locality in Ireland.
disticha. Huds.	D. and W. Not unfrequent.
arenaria. Linn.	D. and W. Frequent.
paniculata. Linn.	D. and W. Local and rather rare.
vulpina. Linn.	D. and W. Not common, and chiefly near coast.
muricata. Linn.	D. Stepaside. Curragha Bog. Howth. W. Fassaroe, near Bray. Delgany.
divulsa. Good.	D. Killiney; near Stillorgan : Feltrim Hill; Castleknock; Celbridge. W. Glen of the Downs, St. Valerie, and Fassaroe.
stellulata. Good.	D. and W. Common.
remota. Linn.	D. and W. Not unfrequent.
? axillaris. Good.	W. ? Luggelaw, Wicklow. (Flor. Hib.)
curta. Good.	D. Curragha Bog. Foot of Three Rock Mountain. W. Near Lough Dan and Roundwood. Shore of Lough Firrib, at 2,100 feet (A.G.M).
ovalis. Good.	D. and W. Frequent.
stricta. Good.	D. By the side of Royal Canal, etc. W. About the lakes in Wicklow.
rigida. Good.	W. Top of Lugnaquillia Mountain, Wicklow, at 3,000 feet.
vulgaris. Fries.	D. and W. Common.
glauca. Scop.	D. and W. Common.
? limosa. Linn.	D. "Curragha Bog." (Wade Rar.) Not found recently.
pilulifera. Linn.	D. and W. Frequent.
præcox. Jacq.	D. and W. Frequent.
pallescens. Lam.	D. Curragha Bog (Wade.) Howth (Ir. Flora.) W. Moist banks near Glendalough.
panicea. Linn.	D. and W. Common.
pendula. Huds.	D. and W. Rare in both counties.
strigosa. Huds.	D. Woodlands, Marino, (Mackay Rar.) and Curragha. (Wade Rar.) W. Dargle and Devil's Glen.
sylvatica. Huds.	D. and W. Frequent.
lævigata. Sm.	D. Kelly's Glen, Dublin. W. Devil's Glen and Enniskerry.
binervis. Sm.	D. and W. Frequent.
distans. Linn.	D. and W. Frequent on the sea shore.
fulva. Good.	D. Howth and Portmarnock. W. Luggelaw, and near Lough Dan.
extensa. Good.	W. Murrough of Wicklow.
flava. Linn.	D. and W. Frequent.
b. lepidocarpa. Tausch.	D and W. Not unfrequent.
c. Œderi. Ehrh.	? Frequent.

Carex.

hirta. Linn.	D. and W. Not unfrequent.
Pseudo-cyperus. Linn.	D. Brackenstown, and near Curragha. (Wade.) W. Dargle, (Wade), and near Newcastle, Wicklow. (A.G.M).
paludosa. Good.	D. Grand Canal, near Dublin. Plentiful. W. Murrough of Wicklow. Newcastle.
riparia. Curtis.	D. Donabate. W. Murrough of Wicklow.
ampullacea. Good.	D. and W. Local.
[? vesicaria. Linn.]	Curragha Bog. (Wade.) Probably C. ampullacea was mistaken for it.

88. Gramineæ.

Anthoxanthum.

odoratum. Linn.	D. and W. Common.

Digraphis.

arundinacea. Trin.	D. and W. Frequent.

Phalaris.

[canariensis. Linn.]	Occasional. Not indigeneus.

Alopecurus.

geniculatus. Linn.	D. and W. Frequent.
pratensis.	D. and W. Not unfrequent.

Phleum.

pratense. Linn.	D. and W. Not common.
arenarium. Linn.	D. Sandymount. Howth. Baldoyle. Portmarnock. W. Arklow. Murrough of Wicklow.

Agrostis.

canina. Linn.	D. and W. Frequent on heaths and bogs.
alba. Linn.	D. and W. Common.
vulgaris. With.	D. and W. Common.
b. pumila. Lightf.	D. and W. Not unfrequent.

Psamma.

arenaria. R. et S.	D. and W. Frequent on sandy sea-shores.

Phragmites.

communis. Trin.	D. and W. Common.

Milium.

effusum. Linn.	W. Newtown-Mount-Kennedy. Tinnehinch, Dargle, and Powerscourt.

Aira.

cæspitosa. Linn.	D. and W. Very frequent.
flexuosa. Linn.	D. and W. Frequent, but local.
caryophyllea. Linn.	D. and W. Frequent.
præcox. Linn.	D. and W. Frequent.

Avena.

flavescens. Linn.	D. and W. Not common, and local.

Avena.	
pubescens. Linn.	D. and W. Not unfrequent.
[strigosa. Schreb.]	Cultivated land. Rare.
‡fatua. Linn.	Portmarnock.
elatior. Linn.	D. and W. Common.
Holcus.	
mollis. Linn.	D. and W. Not common.
lanatus. Linn.	D. and W. Common.
Triodia.	
decumbens. Beauv.	D. and W. Frequent.
Kœleria.	
cristata. Pers.	D. and W. Not unfrequent.
Molinia.	
cærulea. Mœnch.	D. and W. Frequent.
Melica.	
uniflora. Retz.	D. and W. Not unfrequent.
Catabrosa.	
aquatica. Beauv.	D. and W. Not unfrequent.
Glyceria.	
fluitans. Brown.	D. and W. Common.
b. plicata. Fries.	D. and W. Near Glasnevin and Dublin, etc.
aquatica. Sm.	D. Plentiful in the canals near Dublin, and along the Liffey. W. Murrough of Wicklow.
Sclerochloa.	
maritima. Lindl.	D. and W. Frequent.
distans. Bab.	D. Howth. Clontarf. North-wall. Ringsend. Kingstown, etc.
Borreri. Bab.	D. Plentiful in the North Lots, near mouth of Liffey. The only Irish locality.
rigida. Link.	D. Common near Dublin and Wicklow.
loliacea. Woods.	D. and W. Frequent on the coast.
Poa.	
annua. Linn.	D. and W. Common.
nemoralis. Linn.	D. Plentiful at Woodlands, near Dublin. W. At the Dargle.
[compressa. Linn.]	Foot of Dublin mountains? (White MS.) Probably a mistake.
pratensis. Linn.	D. and W. Common.
trivialis. Linn.	D. and W. Common.
Briza.	
media. Linn.	D. and W. Frequent.
Cynosurus.	
cristatus. Linn.	D. and W. Common.
Dactylis.	
glomerata. Linn.	D. and W. Common.

Festuca.

uniglumis. Soland.	D.	Portmarnock. Ireland's Eye. Portrane. W. Wicklow and Arklow.
Pseudo-myurus. Soyer.	D.	Howth and Donnybrook. W. Arklow and Wicklow.
sciuroides. Roth.	D. and W.	Not unfrequent.
ovina. Linn.	D. and W.	Common.
rubra. Linn.	D. and W.	Frequent.
a. duriuscula. Linn.	D. and W.	Frequent.
b. arenaria. Osb.	D. and W.	Frequent on sand-hills.
sylvatica. Vill.	W.	Dargle. Powerscourt. Devil's Glen.
elatior. Linn.	D. and W.	Rather local.
b. arundinacea. Schreb.		Rather local. On sea-shore.
pratensis. Huds.	D. and W.	Frequent.
b. loliacea. Huds.	D. and W.	Occasional.

Bromus.

giganteus. Linn.	D. and W.	Frequent.
asper. Linn.	D. and W.	Frequent.
erectus. Huds.	D.	Portmarnock, Glasnevin, Finglas, Santry, sides of Royal Canal, &c. W. Bray Head.
sterilis. Linn.	D.	Common near Dublin.
[secalinus. Linn.]		Cornfields, rare.
racemosus. Linn.	D. and W.	Not unfrequent.
commutatus. Schrad.	D.	Between Raheny and Howth? Sandymount.
mollis. Linn.	D. and W.	Common.

Brachypodium.

sylvaticum. R. et S.	D. and W.	Frequent.

Triticum.

caninum. Huds.	D.	Woodlands and other places near Dublin. W. Powerscourt.
repens. Linn.	D. and W.	Common.
b. pungens. Pers.	D. and W.	Sea-shore, frequent.
acutum. D. C.	D. and W.	Frequent on sea sands.
junceum. Linn.	D. and W.	Frequent on sea sands.

Lolium.

perenne. Linn.	D. and W.	Frequent.
[italicum. Brown.]		An escape from cultivation.
‡temulentum. Linn.	D. and W.	Locally abundant.
b. arvense.	D. and W.	Not unfrequent.

Lepturus.

incurvatus. Trin.	D. and W.	Frequent.

Hordeum.

‡sylvaticum. Huds.	D.	In a shrubbery at Mount Merrion, near Dublin. The only locality in Ireland.
pratense. Huds.	D.	Fields at Glasnevin and Portmarnock. Meadows near Dublin. W. Murrough of Wicklow.

Hordeum.
†murinum. Linn. — D. Common about Dublin. W. Near Wicklow.

Nardus.
stricta. Linn. — D. and W. Frequent on mountain heaths.

89. FILICES.

Hymenophyllum.
Wilsoni. Hook. — D. Kelly's Glen. W. Frequent in the Glens and mountains.

[Trichomanes.]
[radicans. Sw.] — W.? Found many years ago at Powerscourt Waterfall, and in Hermitage Glen, Wicklow (*fide* Flora Hibernica).

Pteris.
aquilina. Linn. — D. and W. Common.

Blechnum.
boreale. Sw. — D. and W. Frequent in mountainous districts.

Asplenium.
Ruta-muraria. Linn. — D. and W. Frequent.
Trichomanes. Linn. — D. and W. Frequent.
marinum. Linn. — D. and W. Frequent on rocky shores.
Adiantum-nigrum. L. — D. and W. Frequent.
[*b.* acutum. Bory.] — Dunran Wood, near Newtown-mount-Kennedy, Wicklow, (D. Orr.)

Athyrium.
Filix-fœmina. Bernh. — D. and W. Common.

Ceterach.
officinarum. Willd. — D. and W. Rare and local.

Scolopendrium.
vulgare. Sm. — Frequent.

Cystopteris.
fragilis. Bernh. — W. Maulin mountain, Glen Cree.

Polystichum.
aculeatum. Roth. — D. and W. Very local, and rare.
angulare. Newm. — D. and W. Abundant.

Lastrea.
Filix-mas. Presl. — D. and W. Common.
b. Borreri. Newm. — D. and W. Frequent.
spinulosa. Presl. — W. Near the Powerscourt Waterfall.
dilatata. Presl. — D. and W. Common.
æmula. Brack. — D. Cotbrook Glen, and Glen in Featherbed mountain, and north side of Howth. W. Plentiful at Glendalough, &c.
Thelypteris. Presl. — D. Kelly's Glen. W. Glencree (Mackay).
Oreopteris. Presl. — D. Rare. Kelly's Glen, and near Step aside, at base of Dublin Mountains. W. Glendalough, Sugarloaf Mountain, &c. Not unfrequent.

Polypodium.
vulgare. Linn. D. and W. Frequent.
b. cambricum. W. In the Dargle.
Phegopteris. Linn. W. Powerscourt Waterfall and Maulin Mountain, Glen Cree.

Osmunda.
regalis. Linn. D. Kelly's Glen (Mackay). Probably extinct. W. Side of river below Glendalough, Devil's Glen, &c.

Ophioglossum.
vulgatum. Linn. D. and W. Rare.

Botrychium.
Lunaria. Sw. D. and W. Rather rare. Kelly's Glen, &c.

90. Lycopodiaceæ.

Lycopodium.
clavatum. Linn. D. and W. Local in the Dublin and Wicklow Mountains.
alpinum. Linn. D. On Feather-bed Mountain, above Killakee (D. Orr).
Selago. Linn. D. and W. Frequent on the mountains.

Selaginella.
spinosa. A. Br. D. Sandhills at Portmarnock and Portrane; Howth. W. Glencree, Glencullen, &c.

Isoetes.
lacustris. Linn. W. Upper Lough Bray and Lough Dan. The plant here grows to an extraordinary length, often 24 to 27 inches.
b. echinospora. Dur. W. Upper Lough Bray (Milde).

92. Equisetaceæ.

Equisetum.
arvense. Linn. D. and W. Frequent.
maximum. Lam. D. Very rare. Near Howth, Kelly's Glen, and Dodder Valley. W. Near the Dargle, and in Powerscourt, &c.
sylvaticum. Linn. D. Kelly's Glen, Ballinascorney, and Portmarnock. W. Roundwood, &c.
palustre. Linn. D. and W. Common.
limosum. Linn. D. and W. Common.
hyemale. Linn. D. Near Whitechurch, Finglas (Rutty), Lucan, Woodlands, Leixlip.
W. Powerscourt and Kilcroney.
b. Moorei. Newman. W. Sandhills on the coast, between Arklow and Wicklow.
variegatum. Schl. D. Portmarnock and Portrane.
b. Wilsoni. Newm. Banks of Royal Canal, east of Clonsilla station; and sparingly near the Cross Guns, Glasnevin.

LIST OF THE MOSSES OF THE COUNTIES OF DUBLIN AND WICKLOW, WITH THEIR PRINCIPAL LOCALITIES,

BY

DAVID MOORE, PH.D., F.L.S.

[Read March 18, 1878.]

For full list of Irish Mosses, see "Synopsis of all the Mosses known to inhabit Ireland." Proceedings of Royal Irish Academy, Vol. 1, Series 2. Science by D. Moore, Ph.D.

TRIBE 1.—TETRAPHIDEÆ.

Tetraphis. Hedw.

pellucida, Hedw. Species Musc., tab. 7, f. 1. Eng. Bot., tab. 1020. Bryol. Brit., p. 86, tab. 8. W. On dry banks at Lough Bray. Rare.

Tetrodontium. Schwæger.

Brownianum, Dicks. Bryol. Brit., p. 195, tab. 8. Tetraphis Browniana, Muscol. Brit., Ed. 2, p. 33, tab. 1. Grimmia Browniana, Eng. Bot. tab. 1422. W. Dry shaded rocks, at Lough Bray. D. In similar places at the head of Kelly's Glen. Rare.

TRIBE 2.—DICRANEÆ.

Pleuridium. Schimp.

subulatum, Schimp. Bryol. Europ., vol. 1, tab. 9. Coroll., p. 6. Phascum subulatum, Linn., Engl. Bot., tab. 2177. Muscol. Brit., Ed. 2, p. 6, tab. 5. Clay banks, and pasture fields. D. In similar places.

Brachyodus. Nees et Hornsch.

trichodes, Nees et Hornsch. Bryol. Germ., tab. 25. Weissia trichodes, Musc. Brit., Ed. 2, p. 83, tab. 15. Grimmia trichodes, Engl. Bot., tab. 2563. W. On rocks of granite and sandstone, near Lough Bray. D. On the same formation, in Kelly's Glen. Rare.

Dicranella. Schimp.

squarrosa, Schimp. Synops. Musc., p. 71. Briol. Ital., p. 642. Dicranum squarrosum, Schrad, Journ.-Muscol. Brit., Ed. 2, p. 98. W. On wet banks, near Seven Churches. D. By the margins of streams, in Kelly's Glen.

Schreberi, Hedw. Dicranum Schreberi. Bryol. Europ., vol. 1, Monog., p. 18, tab. 53. D. On moist, clayey banks, near Dunsink. Not hitherto observed elsewhere in Ireland.

Grevilleana, Schimp. Dicranum Grevilleanum, Bryol. Brit., p. 69, t. 33. D. Schreberianum, Muscol. Brit., ed. 2, p. 95. W. Wet gravelly banks on the side of Lugnaquilla mountain. Barren.

cerviculata, Schimp. Synops. Musc., p. 72. Dicranum cerviculatum Hedw., Bryol. Brit., p. 72, t. 16. W. On moist banks, where the soil is of a peaty nature, frequent. D. In similar places, frequent.

heteromalla, Schimp. Synops. Musc., p. 75. Dicranum heteromallum Hedw. Turner, Muscol. Hib., p. 161. Bryol. Brit., p. 73, t. 18. W. Damp ditch banks. C. D. Common.

varius, Schimp. Synop. Muscor., p. 72. Dicranum varium, Hedw. W. On moist sandy banks, and by road-sides. C. D. C.

rufescens, Schimp. Synops. Musc., p. 74. Dicranum rufescens, Turn. Musc. Hib., p. 66. W. Damp places, Lough Bray. D. In Kelly's Glen.

Ceratodon. Bridel.

purpureus, Bridel. Bryol. Univ., 1, p. 480. Didymodon purpureum Muscol. Brit., ed. 2, p. 113. W. On dry banks, sand hills near the sea coast, and on heaths which have been burned. C. D. In similar places. Common.

Rhabdoweissia. Br. et Schimp.

fugax, Br. et Schimp. Bryol. Europ., vol. 1, t. 41. Weissia striata var. minor. Hook and Tayl., Muscol. Brit., ed. 2, p. 81. W. Crevices of rocks, &c., Glenmalur and Powerscourt Waterfall.

denticulata, Br. et Schimp. Weissia denticulata, Bryol. Univer., 1, p. 342. W. Crevices of rocks, Glenmalur and Upper Lough Bray.

Blindia. Br. et Schimp.

acuta Br. et Sch. Bryol. Europ., vol. 2. Monog., p. 3, t. 114. Weissia acuta, Hedw. W. Dripping rocks, and moist banks in sub-alpine places, Lough Bray. D. Kelly's Glen.

Cynodontium. Br. et Schimp.

Bruntoni Br. et Schimp. Bryol. Europ., vol. 1, t. 44. Dicranum Bruntoni, Eng. Bot., t. 2509. Didymodon Bruntoni, Muscol. Brit., ed. 2, p. 117. W. Damp rocks, at the Waterfall, Powerscourt, and near Seven Churches. Rare.

Dicranum. Hedw.

Scottianum, Turner. Muscol. Hib., p. 75. Eng. Bot., t. 1977. Bryol. Brit., p. 75, t. 18. W. Damp rocks, at Lough Bray and Glenmalur. Rare.

fuscescens, Turner. Muscol. Hib., p. 60. Bryol. Brit., p. 77, t. 18. Dicranum Scoparium, var. β. fuscescens. Muscol. Brit., ed. 2, p. 101. Hab. W. Damp rocks, Luggelaw and Upper Lough Bray. Rare.

scoparium, Hedw. Sp. Musc., t. 126. W. On rocks and trees, with its varieties. C. D. In similar places. Common.

majus, Turner. Muscol. Hib., p. 58. Dicranum scoparium var. majus. Muscol. Brit., ed. 2, p. 101. W. Trunks of trees in shady situations, and on banks and rocks at Lough Bray, and Powerscourt Waterfall.

Campylopus. Bridel.

longipilus, Bridel. Bryol. Univ., 1, p. 477. Bryol. Brit., p. 90, t. 40. Dicranum longipilum, C. Muller, Synop. Muscor., 1, p. 414. W. Turf bogs and wet rocks, at Seven Churches. Barren.

brevipilus, Br. et Schimp. Bryol. Europ., vol. 1, t. 92. Bryol. Brit., p. 8!, t. 40. Dicranum brivipilum. C. Muller, Synops. Muscor., vol. 1, p. 412. D. Bogs and wet banks, on the Hill of Howth. Barren.

alpinus, Schimp. Muscor. Europ. Nov., fasc. 1 et 2. C. intermedius, Wils. M. S. fide Braithwaite, in "Journal of Botany," p. 4, Dec. 1870. W. On moist rocks and banks, Lough Bray and Powerscourt Waterfall. D. Kelly's Glen.

flexuosus, Dill. Bryol. Europ., vol. 1, Monogr., p. 3, t. 89. Bryol. Brit., p. 90, t. 16. Dicranum flexuosum, Muscol. Brit., ed. 2, p. 94. W. Damp rocks and moist banks, at Lough Bray. D. In similar places, Kelly's Glen.

setifolius, Wils. Bryol. Brit., p. 89, t. 40. Schimp. Musc. Europ., No. 1055. W. On wet banks among grass and heath, near the Waterfall at Powerscourt.

fragilis, Br. et Schimp. Bryol. Europ. vol. 1, Monogr., p. 4, t. 90. C. densus, Bryol. Brit., p. 88, t. 40. Dicranum flexuosum var. fragile, Turner, Muscol. Hib., p. 74. W. Bogs, rocks, and shady banks at Lough Bray and Powerscourt. D. Hill of Howth.

torfaceus, Br. et Schimp. Bryol. Europ., vol. 1, Monogr., p. 5, t. 91. Dicranum flexuosum Hedwig, Sp. Musc., t. 28. Bryum fragile, Dicks, fasc. 3, p. 5. W. Shady banks, margins of cut, drains, &c. C. D. In similar situations. Common.

Dicranodontium. Bruch et Schimp.

longirostre, Br. et Schimp. Bryol. Europ., vol. 1, tab. 88. Bryol. Brit., p. 86, t. 39. Didymodon longirostrum, Web. et Mohr. W. Shady banks and crevices of rocks, at Lough Bray and Glenmalur.

TRIBE 3.—GRIMMIEÆ.

Campylostelium Bruch et Schimp.

saxicola, Br. et Schimp. Broyl. Brit., p. 52, t. 13. Dryoptodon saxicola, Bridel. Bryol. Univ., 1, p. 770. Grimmia saxicola Musc. Brit., ed. 2, p. 67. W. On granite rocks near Lough Bray. D. On similar formation, about Kelly's Glen.

Grimmia Ehrh.

pulvinata, Smith. Engl. Bot., t. 1728; Muscol. Brit., ed. 2, p. 68. W. On walls and rocks. C. D. Common.

orbicularis, Br. et Sch. Bryol. Europ., vol. 3. Monogr., p. 13, t. 240. Broyl. Brit., p. 154, t. 45. D. On the faces of walls in warm situations; wall by the roadside leading to Dublin from Stillorgan.

spiralis, Hook and Taylor. Muscol. Brit., p. 69. Dryoptodon spiralis, Bridel. Broyl. Univ. 1, p. 772. W. On rocks at Upper Lough Bray. (Barren.)

torquata, Greville. Scot. Crypt. Fl., t. 199. G. torta, Nees et Hornsch. Bryol. Brit., p. 156, t. 32. W. On moist rocks near the summit of Sugarloaf Mountain.

trichophylla, Greville. Scot. Crypt. Fl. t. 100. Dicranum pulvinatum, var. argenteum, Turn. Musc. Hib., p. 78. W. On rocks where the river is crossed going from Luggelaw to Lough Dan. D. On the mountains. Frequent.

Schultzii, Bridel. Bryol. Univ., 1, p. 199. Bryol. Brit., p. 157, t. 45. Trichostomum patens, Var. piliferum. Muscol. Brit., p. 105. D. Rocks at Luggelaw. D. Near the Scalp.

patens, Br. et Sch. Bryol. Europ., vol. 3. Monogr., p. 18, t. 246. Trichostomum patens, Schwægr. Suppl., t. 37. W. Moist rocks at the Waterfall, Powerscourt.

ovata, Web. et Mohr. Bryol. Brit., p. 160, t. 13. Muscol. Brit., ed. 2, p. 71. D. On rocks, Hill of Howth, and Killiney Hill. (Barren.)

Schistidium, Br. et Schimp.

maritimum, Br. et Sch. Bryol. Europ. Monogr., p. 10, t. 255. Bryol. Brit., p. 151, t. 13. Grimmia maritima Turn. Musc. Hib., t. 3, p. 2. On rocks close to the sea, D. W. Common.

Ptychomitrium, Br. et Schimp.

polyphyllum, Br. et Schimp. Bryol. Europ., vol. 3. Monogr. p. 4, t. 229. Bryol. Brit., p. 173, t. 19. Trichostomum polyphyllum, Turn Musc. Hib., p. 35, t. 7. W. On rocks at Lough Bray. D. Near the Scalp, and at Killake.

Racomitrium, Bruch et Schimp.

canescens, Bridel. Bryol. Univ., 208. Bryol. Brit., p. 170, t. 19. Trichostomum canescens Hedw., St. Cr., 3, t. 3. Eng. Bot. t. 2534. W. Damp sandy ground, and among rocks frequent. D. In similar places frequent.

lanuginosum, Bridel. Bryol. Univ., 1, p. 215. Bryol. Brit., p. 169. t. 19. Trichostomum lanuginosum Hedw. Turner Muscol. Hib., p. 38. W. On heaths and on the roofs of thatched houses in continuous layers. D. In similar situations. Common. In both places.

heterostichum, Bridel. Bryol. Univ., 1, p. 214. Bryol. Brit., p. 163, t. 19. Trichostomum heterostichum Hedw., Smith, Eng. Bot., t. 1347. W. Among rocks and on walls, Lough Bray and Seven Churches. D. In similar places. Frequent. The varieties β. alopecurum, γ. gracilescens, δ. pumilum occasionally occur in both counties.

sudeticum, Br. et Schimp. Bryol. Europ., vol 3. Monogr., p. 7, t. 264. Trichostomum microcarpon, Hedw. Turner, Muscol. Hib. p. 40. W. On rocks at Lough Bray.

aciculare, Bridel. Bryol. Univ., 219. Bryol. Brit., p. 165, t. 19. Trichostomum aciculare, Muscol. Brit., p. 107. W. On rocks, in the beds of the mountain streams, Lough Bray, and Powerscourt. D. In similar places about Killakee. Frequent in both counties.

protensum, Al. Braun. Bryol. Europ., vol. 3, Monogr. p. 6. t. 263. R. aquaticum, Bridel. Bryol. Univ., 1, p. 222. Dicranum aciculare, γ. gracile. Turn. Musc. Hib., p. 67. W. Rocks in the mountain torrents, at Upper Lough Bray.

ellipticum, Br. et Sch. Bryol. Europ., vol. 3, Monogr. p. 5, t. 261. Dicranum ellipticum, Turn, Muscol. Hib., p. 76. Trichostomum ellipticum, Muscol. Brit., ed. 2., p. 109. W. Moist rocks near the summit of Lugnaquilla.

fasciculare, Bridel. Bryol. Univ., 1, p. 218. Trichostomum fasiculare, Turn., Musc. Hib. p. 39. W. On rocks and stones among the mountains. C. D. In similar places. Common in both counties.

TRIBE 4.—LEUCOBRYEÆ.

Leucobryum. Hampe.

glaucum, Hampe. Rabenhor. Bryothee. Europ., No. 30. Bryol. Brit., p. 82, t. 16. Dicranum glaucum, Hedw. Turner, Musc. Hib., p. 73. Eng. Bot. t. 2166. Oncophorus glaucus. Bryol. Europ., vol. 1, Monogr., p. 5, t. 97 et 98. W. On heaths and bogs on the mountains, frequent. D. In similar places, on the Hill of Howth, and the mountains about Killakee, frequent, but barren.

TRIBE 5.—TRICHOSTOMACEÆ.

Phascum.

cuspidatum, Schreber. De phasc, p. 8, t. 1, f. 2. Bryol. Brit., p. 31, t. 5. P. acaulon, Linn. Sp. Plant, 1570. D. Banks and fields, frequent. The variety δ. piliferum. Bryol. Brit., occurs on hedge banks near Baldoyle and at Howth.

p. bryoides, Dicks. Crypt. Fasc. 4, t. 10, f. 3. Eng. Bot. t. 1180. Bryol. Brit., p. 33, t. 5. D. On banks and in fields. Hill of Howth, very rare. The only locality in Ireland at present known.

rectum, Wither. Bot. Arr., ed. 4, p. 771. t. 18, f. 1. Bryella recta, Berk. Handb. Brit. Mosses, p. 300. D. Frequent, but rarer elsewhere through the country.

curvicollum, Hedw. Sp. Muscor., p. 21, Eng. Bot., t. 905. D. "On Banks near Dublin; more rare than the last." (fide Taylor*).

* In Fl. Hib. I hav never collected this plant in Ireland, nor have I seen Irish specimens of it.—D.M.

Gymnostomum. Hedwig.

rupestre, Schwaegr. Suppl., vol. 1, p. 11, t. 33-34. Muscol. Brit. p. 19. Bryol. Brit., p. 42, t. 32. W. Fissures of wet rocks in sub-alpine rivulets, Dargle river. D. Killakee Glen, sparingly.

microstomum, Hedw. Stirp. Crypt., 3, p. 71, t. 30. Eng. Bot., t. 2215. Hymenostomum, Bryol. Europ. vol. 1. Monogr. p. 4, t. 16. W. Banks and fields. C. D. In similar places Common.

Pottia. Ehrh.

cavifolia, Ehrh. Beitrage. Bryol. Europ., vol. 2. Monogr. p. 7, t. 118. Gymnostomum ovatum, Hedw. Eng. Bot. 1889. Barbula cavifolia, Schimp. Synop. Muscor., p. 734. D. On the tops of mud walls by waysides. C. But only so in that county.

Wilsoni, Br. et Schimp. Bryol. Europ., vol. 2, Monogr., p. 11, t. 122. Gymnostomum, Wilsoni, Hook, in Bot. Miscel, 1830, vol. 1, p. 43, t. 41. Suppl. Eng. Bot., t. 2710. D. Banks and tops of walls built of mud, especially near the sea, at Howth and Killiney. W. At Bray Head.

Starkeana, C. Muller. Synops. Musc. Mitten, in "Journal of Botany," vol. 9, No. 97. Weissia Starkeana, Muscol. Brit., p. 79, t. 14. Grimmia Starkeana, Turner, Musc. Hib., p. 26. Gymnostomum conicum, Schwaegr., Suppl., t. 9. D. Banks and fields at Howth, Killiney, and near Clontarf.

The Variety β. brachyodus, Weissia affinis, Hook and Tayl. Grows on the Railway banks near the Killiney Station.

Heimii, Br. et Schimp. Bryol. Europ., vol. 2, Monogr., p. 12, t. 124. Bryol. Brit., p. 96, t. 7. Gymnostomum Heimii, Hedw. Turn. Musc. Hib., p. 9. Muscol. Brit., p. 22. D. Banks and marshy places near the sea, near the North Wall, and Portmarnock.

lanceolata, Müller. Synops. Muscor., Mitten in "Seeman's Journal of Botany," vol. 9, p. 3. Anacalypta lanceolata, Rohling, Moosgeschichte Deutchl. Gymnostomum intermedium, Turner, Musc. Hib., p. 7, t. 1, fig. a. c. D. Fields, banks, and waste ground where the soil is of a calcareous nature frequent.

truncata, Br. et Schimp. Bryol. Europ., vol. 2, Monogr., p. 9, t. 120-121. Bryol. Brit., p. 94, t. 7. Gymnostomum truncatum, Nees et Hornsch. Bryol. Germ., t. 9, fig. 8. W. Fallow fields, banks and moist ground. C. D. In similar places. Common.

crinita, Wilson. Bryol. Europ., vol. 2, Suppl. 1, t. 123. Bryol. Brit., p. 95, t. 41. D. Banks facing the sea, Hill of Howth, rare.

Anœctangium. Br. et. Schimp.

compactum, Schwægr. Suppl., t. 2. Bryol. Brit., p. 311, t. 6. Gymnostomum æstivum, Hedw. Sp. Musc., t. 2, fig. 4. G. luteolum, Engl. Bot., t. 220. Hedwigia æstiva, Muscol. Brit., p. 18. W. In crevices of wet rocks. Upper Lough Bray, rare.

Weissia, Hedw.

viridula, Bridel. Bryol. Europ., Vol. 1., Monogr., p. 5, t. 21. W. controversa, Hedw. Hook and Tayl. Muscol. Brit., p. 85. Bryol. Brit., p. 46, t. 15. W. Dry banks and waste places. C. D. In similar places. Common.

cirrhata, Hedw. Sp. Musc., t. 12. Bryol. Brit., p. 47, t. 15. W. On rocks on Sugar-loaf Mountain, and Lough Bray. D. Hill of Howth, and at Killiney.

verticillata, Bridel. Spec. Musc., p. 121. Bryol. Brit., p. 49, t. 15. Grimmia verticillata, Turner, Musc. Hib., p. 31. Eucladium verticillatum, Bryol. Europ., vol. 1, Monogr., p. 3, t. 40. W. On calcareous wet rocks, Lough Bray. D. On similar formation, near the sea, at Howth.

Splachnobryum, C. Muller.

Wrightii, C. Mull. Braithwaite, in "Journal of Botany" for July 1872, plate 123. Entosthodon minimus, Hunt in "Manchester Lit. and Phil. Society's Memoirs," 11, p. 19, 1871. Amblyphyllum hibernicum, Lindb. MS. On the walls and floors of a forcing plant pit, Botanic Garden, Glasnevin. This little moss has for several years been noticed growing annually within this limited locality. It is, no doubt, an alien which has been introduced with foreign plants from the West Indies, and become naturalised here, where it grows.

Didymodon. Br. et Schimp.

cylindricus, Br. et Schimp. Bryol. Europ., vol. 2, Monogr. p. 5, t. 187. Trichostomum tenuirostre, Lindberg, Trichost, Europ. p. 15. Weissia tenuirostris, Muscol. Brit., p. 83, t. 3. W. On wet banks and rocks in the mountain streams Lough Bray and Powerscourt Waterfall. D. In similar places, frequent among the mountains.

rubellus, Br. et Schimp. Bryol. Europ. vol. 2. Monogr. p. 3, tab. 185. Weissia curvirostra. Hook and Tayl., Muscol. Brit. p. 84. W. Wet banks and damp walls, frequent. D. In similar situations, frequent.

Trichostomum. Br. et Schimp.

flavovirens, Bruch. In Mull. Musc. Sardin. Bryol. Europ., vol. 2. Monogr., p. 6, t. 172. W. Sandhills near the sea. C. D. In similar places. Common.

crispulum, Bruch et Schimp. Bryol. Europ., vol. 2. Monogr. p. 7, t. 173. Byrol. Brit, p. 111, t. 41. Diodymodon crispulus. Tayl. in Fl. Hib., p. 18. W. Rocks and banks, chiefly on limestone formation, frequent. D. On similar formation. Common.

tophaceum, Br. et Schimp. Bryol. Europ., vol. 2. Monogr. p. 9, t. 175. Bryol. Brit., p. 113, tab. 20. Didymodon trifarium. Hook and Tayl. Muscol. Brit. ed. 2, p. 118, 20. W. On wet clay banks and on rocks, frequent. D. Frequent.

Ditrichum. Timm.

flexicaule, Hampe. l. c. Leptotrichum flexicaule, Muller. Synop. Muscor., 1, p. 449. Trichostomum flexicaule, Bryol. Europ. vol. 2. Monogr. p. 15, tab. 180. Bryol. Brit. p. 116, tab. 42. Hab. W. On sand hills near the sea, and on dry rocky places inland. Murrough of Wicklow and Arklow, and generally distributed through the county. D. In similar places, Portmarnock and Malahide sands, and at the North Bull, frequent.

Tortula, et Barbula, Hedw.

lamellata, Lindberg, Om. de. Europeiska Trichostomeæ, p. 23. Helsingfors, 1864. Gymnostomum ovatum, var. δ gracilis Wils. Bryol. Brit., p. 93. G. ovatum, var. β gracilis. Hook and Tayl. Musc. Brit., ed. 2, p. 2. D. On the tops of mud walls. C.

rigida, Schultz. Recens. Gen. Barbula. et Syntrichia, t. 32, f. 1. Barbula rigida, Bryol. Europ., vol. 2. Monogr., p. 13. t. 137. D. On the tops of walls, frequent.

ambigua, Wils. Bryol. Brit., p. 120, t. 42. T. rigida. Turner. Musc. Hib. Spicil., p. 43. D. On the tops of walls. Common.

aloides, Koch. De Notr. Musc. Ital., 1, p. 15, tab. 1. Barbula aloides, Byrol. Europ., vol. 2, Monogr. p. 15. t. 139. Hab. W. On clay banks. C. D. Common.

atrovirens, Taylor. In "London Journal of Botany." Jan. 1846 Grimmia atrovirens. Smith, Engl. Bot. tab. 2015. Hab. W. On banks near the sea. C. D. Common.

revoluta, Schwaegr. Suppl. 1. 127, tab. 32. Barbula revoluta Bryol. Europ., vol. 2. Monogr. p. 27, t. 153. W. On walls. W. D. Common.

convoluta, Hedw. Stirp 1, p. 86. Bryol. Brit., p. 127, t. 12. Barbula convoluta, Rabenhor. Bryothec. Europ., No. 229, W. On walls, and on hard ground. C. D. C. The variety β. Sardoa. Wils., was found near Luttrelstown, Dublin, by Dr. Taylor.

cuneifolia, Dickson. Bryum cuneifolium Dicks., Peant. Crypt. Brit., fasc. 3, p. 7. Bryol. Brit., p. 128, t. 12. D. On banks near the sea. North side of the Hill of Howth. Rare.

Vahliana, Schultz. Recens. 222, t. 34, f. 34. T. oblongifolia, Bryol. Brit., p. 129, t. 43. Var. β. subflaccida, Lindberg. D. On mud banks frequent. The variety β. subflaccida is also frequent.

muralis, Timm. Fl. Megapol., p. 220. Bryol. Brit., p. 130. W. Walls and banks. C. D. Common.

unguiculata, Hedw. De Notr., Syllab., No. 932. Bryol. Brit., p. 24, t. 12. W. On walls, rocks, and banks. C. D. Common.

fallax, Hedw. De Notr. Musc. Ital., 1, p. 58, t. 29. Bryum imberbe Huds., Fl. Angl., Ed. 1, p. 409. W. Banks and damp walls. C. D. Common.

vinealis, Bridel. Bryol. Brit., p. 124, t. 10. W. On walls and rocks. C. D. Common.

rigidula, Mitten. In "Seeman's Journal of Botany," vol. 5, 1867. Trichostomum rigidulum, Turn., Musc. Hib., p. 34. Bryol. Brit., p. 114. W. On wet clay banks frequent. D. In similar places frequent.

insulana, De Notr. In Mem. Acad., Turin, p. 40, 320, id. Syllab., p. 180. T. vinealis, β. flaccida, Bryol. Brit., p. 124. Zygotrichia cylindrica Tayl. in Fl. Hib., p. 26. W. By the side of the Dargle River.

subulata, Bridel. Spec. Musc., vol, 1, p. 267. Bryum subulatum Lin. Spec. Plant. T. subulata, Hedwig. Eng. Bot., tab. 1101. Bryol. Brit., p. 132, t. 12. W. and D. Hedge-banks, on the trunks of trees, and on walls, frequent.

latifolia, Bruch. Bryol. Brit., p. 133, t. 43. Syntrichia latifolia, Bruch. M.S. Hubener, Muscol. Germ., p. 342. D. On old wood, and on the stems of Alder and Willows which are frequently submerged, by the side of the River Tolka.

Var β. mutica, Schultz. W. On trees at Westaston.

lævipila, Bridel. Bryol. Brit., p. 133 tab. 43. T. ruralis β. lævipila, Hook, and Grev. Barbula lævipila. Bryol. Europ., vol. 2, Monogr., p. 40, t. 164. W. and D. On trunks of trees. Common.

ruralis, Linn. Musc. Hib., p. 50. Bryol. Brit., p. 134, t. 12. Bryum rurale, Linn. Sp. Plant., 1, ed. 2, p. 1116. W. and D. Roofs of thatched cottages, and walls. Common.

papillosa, Wils. Bryol. Brit., p. 135, t. 44. Barbula papillosa, Rabenhor. Bryothec Europ., No. 455. W. On the trunks of trees at Powerscourt. D. Old Elm trees in the Botanic Garden, Glasnevin, and other places, frequent.

sinuosa, Wilson. M.S. fide Mitten in Seeman's "Journal of Botany," vol. 5, p. 327, (1867). D. On limestone rocks; also on the roots of trees in the Phœnix Park, and between Malahide and Portmarnock.

squarrosa, De Notr. Syllab., p. 180. Bryol. Brit., p. 126, t. 43. Pleurochœte squarrosa, Lindberg. Europ. Trichost., p. 47. W. On limestone rocks and sand-hills. Arklow and Woodenbridge. D. Sands at Portmarnock and Malahide.

Encalypta. Schreber.

streptocarpa, Hedw. Spec. Mus., p. 62, t. 10. Bryol. Brit., p. 145, tab. 13. D. On a mortared wall by the roadside leading to Finglass. Barren.

vulgaris, Hedw. Spec. Musc., p. 60. Bryol. Brit., p. 142., tab. 13. Hab. D. On the tops of walls near Donnybrook. Plentiful in an old limestone quarry near Cloghran, north of Dublin.

Cinclidotus. Beauvois.

fontinaloides, Beauv. Prodr., p. 52. Bryol. Brit., p. 139, t. 11. W. In rivulets and streams attached to stones. C. D. Common.

TRIBE 6.—ORTHOTRICHEÆ.

Orthotrichum. Hedwig.

anomalum, Hedw. Stirp. Crypt., tab. 37. Bryol. Europ., vol. 3. Monogr., p. 10, t. 210. D. On limestone rocks near the Dodder River at Sallygap. Very rare.

saxatile, Bridel. Bryol. Univers. 1, p. 275. Oanomalum, Wilson. Eng. Bot. Suppl., tab. 2696. Turn. Musc. Hib., p. 94. W. and D. Rocks and walls. Common.

Sturmii, Hornsch. et Hoppe. Crypt. Cent. 2 Decas, 2. Bryol. Europ., vol. 3, Monogr., p. 9, tab. 209. W. On rocks by the side of the lake at Luggelaw.

tenellum, Bruch. Bryol. Europ., vol. 3, Monogr. p. 15, t. 212. Bryol. Brit., p. 178, t. 45. W. On trees at Westaston. D. Near Ashtown.

stramineum, Hornsch. Bryol. Europ., vol. 3, Monogr., p. 23, t. 218. W. On trees near Seven Churches. Also at Westaston, and near Woodenbridge.

pumilum, Dickson. Crypt. Fasc. 4., p. 5. Bryol. Brit., p. 178, t. 45. D. On trees near Malahide.

pallens, Bruch et Schimp. Bryol. Europ., vol. 3., Monogr., p. 24, tab. 218. Bryol. Brit., p. 179, t. 45. W. On trees at Westaston.

rivulare, Turner. Musc. Hib., p. 96, t. 8. Bryol. Brit., p. 183, tab. 24. W. On rocks and stones in the Dargle River.

affine, Schrad. Bryol. Brit., p. 181, tab. 21, Hab. W. and D. On trees. Common.

fastigiatum, Bruch. Bryol. Brit., p. 180, tab. 45. D. On trunks of trees at Woodlands.

Lyellii, Hook. et Tayl. Muscol. Brit., p. 129, tab. 22. Bryol. Brit., p. 183, t. 22. W. On trunks of trees at Westaston, and Seven Churches.

diaphanum, Schrad. Spicil. Tl. Germ., p. 69. Bryol. Brit., p. 185, t. 21. W. and D. On trees. Common.

leiocarpum, Br. et Sch. Bryol. Europ., vol. 3, Monogr., p. 28, t. 220. O. striatum, Hedwig. Turn. Musc. Hib., p. 95. W. and D. On trees. Common.

pulchellum, Smith. Engl., Bot., tab. 1787. Bryol. Brit., p. 186, tab. 21. D. On trees at Ballinascorney Glen.

Drummondi, Hook. et Grev. In "Edin. Journ. of Science," vol. 1, p. 120. Bryol. Brit., p. 189, tab. 34. Ulota Drummondi, Bridel. W. On trunks; usually of young trees, frequent.

O. Hutchinsiæ, Hook. et Tayl. Muscol. Brit., p. 131, tab. 21. Bryol. Brit., p. 190, tab. 21. Ulota Hutchinsiæ, Briol. Ital., p. 290. W. On rocks among the mountains. Luggelaw and Lough Dan.

O. crispum, Hedw. Sp. Musc., p. 162. Bryol. Brit., p. 188, t. 21. W. On trees, and sometimes rocks frequent. D. Common.

phyllanthum, Bruch et Schimp. Bryol. Europ., vol. 3, Monogr., p. 30, tab. 223. W. On trees, and rarely on rocks. C. D. Common.

Zygodon. Hook. et Tayl.

viridissimus, Bridel. Bryol. Univ. 1, p. 592. Gymnostomum viridissimum, Smith. Eng. Bot., tab. 1583. W. On trees at Westaston. D. On rocks near Malahide, and on trees near Dunsink.

conoideus, Dickson. Crypt. Fasc. 4, tab. 11, fig. 2. Bryol. Brit., p. 193, t. 21. W. On the trunks of trees at Powerscourt.

TRIBE 7.—FUNARIEÆ.

Sphaerangium. Schimp.

muticum, Schimp. Synops. Muscor, p. 13. Phascum. muticum, Schreb. de Phasc., p. 8, t. 1, figs. 11–12. D. Damp sands at Malahide. Rare.

Physcomitrium. Bridel.

ericetorum, Br. et Schimp. Bryol. Europ., vol. 3, Monogr., p. 13, tab. 300. Gymnostomum fasciculare, Hook. et Tayl. Muscol. Brit., Ed. 2, p. 24. W. On heaths and on damp ground. Luggelaw and Lough Bray frequent. D. Glenmacnass and Glencree.

pyriforme, Br. et Schimp. Bryol. Europ., vol. 3, Monogr., p. 2, tab. 299. Hab. W. On damp ground. C. D. Common.

Entosthodon. Schwægr.

Templetoni, Schwægr. Suppl. tab. 13. Funaria Templetoni, Smith. Engl. Bot., t. 2524. Weissia Templetoni, Hook, and Tayl. Muscol. Brit., p. 77. W. On moist banks, and in crevices of wet rocks at Upper Lough Bray. C. Near Stepaside and other places by the sides of damp banks.

Funaria. Schreber.

hygrometrica, Hedw. Sp. Musc., p. 172. Bryol. Brit., p. 269. On banks and walls. C. D. Common.

TRIBE 8.—SPLACHNEÆ.

Splachnum. Br. et Schimp.

ampullaceum, Linn. Sp. Pl., p. 1572. Bryol. Brit., p. 289, t. 9. W. Boggy places and heaths, on the dung of herbivorous animals. Frequent. D. Killakee, and other mountainous parts.

sphæricum, Hedw. Stirp. 2, 46, t. 16. Bryol. Brit., p. 290, tab. 9. Hab. W. In similar places as the preceding, and often found growing with it, in both counties.

mnioides, Linn. fil. Meth. Musc., p. 6. Eng. Bot., t. 1589. Tetraplodon mnioides, Br. et Sch. Bryol. Europ., vol. 3, Monog., p. 5, t. 289. W. Moist places on the dung of Animals, Lugnaquilla. Rare.

TRIBE 9.—BARTRAMIEÆ.

Bartramia. Hedw.

fontana, Bridel. Bryol. Univer., 2, p. 20. Bryol. Brit., 279, t. 23. W. In wet boggy places. C. D. Common.

The Var. falcata, De Notaris, Wils. and Brid. W. On the ascent to Lugnaquilla.

calcarea, Br. et Sch. Bryol. Europ., vol. 4, Monog., p. 19, t. 325. W. Sides of streams in limestone districts, at Glenmalur.

caespitosa, Wils., fide Hunt, in "Memoirs of the Literary and Philosophical Society of Manchester," third series, vol. 3, p. 239, 1867. W. On damp ground Glenmalur, and near Kelly's Lake, rare.

rigida, Bals. et De Notr. Pugill., No. 1. Bryol. Brit., p. 278, t. 52. Hab. W. On shady rocks between Arklow and Woodenbridge.

ithyphylla, Bridel. Bryol. Univ., 2, p. 43. Eng. Bot., t. 1710. W. Rocks in mountainous parts. Lough Bray and Dargle.

pomiformis, Hedw. Sp. Musc. 164. Eng. Bot., t. 998. W. On dry banks at Seven Churches. D. Kelly's Glen.

arcuata, Bridel. Muscol. 4, p. 139. Eng. Bot., t. 1237. Bryol. Brit., p. 283, t. 23. W. On shaded rocks, Lough Bray.

Tribe 10.—Bryeæ.

Bryum. Hook. et Tayl.

acuminatum, Br. et Schimp. Bryol. Europ., vol. 4, Monogr., p. 21, t. 342, 343. Pohlia acuminata, Hornsch., in New Bot. Zeit. 2, p. 94. Hab. W. On the rocky sides of mountain streams, on Toole's rocks.

crudum, Schreb. Flor. Lips., p. 83. Webera cruda, De Notr., Briol. Ital., p. 424. W. Banks and wet rocks, Seven Churches and Lough Bray. D. Kelly's Glen.

nutans, Schreb. Spié. Flor. Lips., p. 81. Bryol. Brit., p. 225, t. 29. Hab. W. On heaths and sandy banks. C. D. Common.

annotinum, Hedw. Sp. Musc., t. 43. Bryol. Brit., p. 226, t. 47. Webera annotina, De Notr., Briol. Ital., p. 421. Hab. W. Banks and sand hills near the Seven Churches, in fruit. D. Portmarnock and other sand hills round the coast.

carneum, Linn. Sp. Pl., p. 1587. Bryol. Brit., p. 227. t. 29. Hab. W. shady moist banks. C. D. Common.

Wahlenbergii, Schwægr. Suppl., t. 70. Webera albicans De Notr., Briol. Ital., p. 420. Hab. W. Wet banks on sides of streams, at Lough Bray and Seven Churches. D. Kelly's Glen.

Warneum, Blandow. Bryol. Univ. 1, p. 675. Pohlia Warnensis, Schwægr., Suppl., t. 236. D. Sand hills near the sea, North Bull, Portmarnock and Malahide. Very local.

Maratii, Wils. Bryol. Brit. Addenda, p. 18, t. 32 b. Bryol. Europ., Suppl. 2, t. 640. D. Damp sandy ground, North Bull, Dublin. Rare.

alpinum, Linn. Syst. Pl., p. 949. Eng. Bot., t. 1263. Bryol. Brit., p. 231. W. Damp rocks Lough Bray.

pallens, Swartz. Musc. Suec., t. 4. Bryol. Brit., p. 233, t. 29. W. and D. In glens among the mountains, frequent.

uliginosum, Br. et Sch. Bryol. Europ., vol. 4, Monogr., p. 18, t. 339. D. Marshy ground on the mountains, very rare.

pendulum, Schimp. Synops. Muscorum, p. 348. B. cernuum, Bryol. Europ., vol. 4. Monogr., p. 14, t. 331. Bryol. Brit., p. 235, t. 47. D. Walls and gravelly places, near Baldoyle, and on a wall in the Phœnix Park.

inclinatum, Br. et Schimp. Bryol. Europ. Monogr., p. 16, t. 334. D. Peaty banks among the mountains, and on the tops of walls, frequent.

intermedium, Bridel. Bryol. Univ. 1, p. 632. Bryol. Brit., p. 237, t. 49. D. Tops of walls and sand hills, near Malahide and other places frequent.

bimum, Schreb. Sp. Flor. Lips., p. 83. B. ventricosum, Dicks. Pl. Crypt., Fasc. 1, p. 4. W. Marshy and boggy places. C. D. In similar places. Common.

torquescens, Br. et Schimp. Bryol. Europ. vol. 4, Monogr. p. 49, tab. 358. D. On the top of a wall at Sheep-hill Demesne, also at Ashtown.

capillare, Hedw. Sp. Muse. p. 131. Bryol. Brit. p. 242, t. 29. W. On walls and rocks. C. D. Common.

Donianum, Greville, in Linn. Soc. Transact., vol. 15, p. 345, t. 3, f. 6. B. platyloma, Bryol. Europ., vol. 4, Monogr, t. 58, p. 366. D. On the north side of the Hill of Howth, on a damp bank by the side of one of the new roads. Barren.

cœspititium, Linn, Sp. Pl., p. 1586. Bryol. Brit. p. 243. W. On walls and waste ground. C. D. Common.

erythrocarpum, Schwægr. Suppl. tab. 70. B. sanguineum, Bridel., Bryol. Univ., 1, p. 971. Bryol. Brit., p. 243, tab. 50. D. Heaths and dry banks, Hill of Howth.

atropurpureum, Web. et Mohr. Ind. Musc. B. bicolor, Turn., Musc. Hib. Partly. W. Banks and waste places at Seven Churches. D. On the Hill of Howth.

julaceum, Smith. Fl. Brit., p. 1357. Eng. Bot., tab. 2270. W. Marshy places and wet rocks, Lough Bray and Powerscourt Waterfall.

argenteum, Linn. Sp. Pl., p. 1586. Eng. Bot., tab. 1602. W. and D. Banks and hardened ground. Common.

Aulacomnion. Schwægr.

palustre, Schwægr. Suppl., tab. 226. Minum palustre, Hedw. Sp. Musc., p. 188. Bryum palustre, Eng. Bot., t. 391. W. Wet heaths and marshy places, Lough Bray.

Leptobryum, Wilson.

pyriforme, Wilson. Bryol. Brit., p. 219, tab. 27. Bryum pyriforme, Rabenhor, Bryothec. Europ., No. 93. Hab. D. Shady, damp banks and rocks on the mountains. It also grows in great abundance on the mould of flower-pots in the Botanic Gardens, Glasnevin, both in conservatories and houses, which are seldom under 65° Fahr.

Minum, Linn.

undulatum, Hedw. Sp. Musc., p. 195. Bryum ligulatum, Eng. Bot., t. 1449. W. Woods, and damp, shady banks. C. D. C. Rare in fruit.

punctatum, Hedw. Sp. Musc., p. 193. Bryum punctatum, Eng. Bot., tab. 1183. W. Marshy places. C. D. Common.

hornum, Linn. Sp. Pl., p. 1576. Bryum hornum, Turn. i., or Fl. Hib., p. 128. W. Woods and shady banks. C. D. Common.

rostratum, Schwægr. Suppl., tab. 79. Bryum cuspidatum, Turner, Muscol. Hib., p. 131. Eng. Bot., tab. 1474. W. Moist, shady rocks, Dargle River.

Amblyodon, P. Beauvois'.

dealbatus, P. Beauv. Prodr., p. 41. Bryum dealbatum, Dickson, Pl. Crypt. Fasc., 2, tab. 5, f. 3. D. Among the sandhills between Malahide and Portrane.

Tribe 11.—Hookerieæ.

Daltonia, Hook. et Tayl.

splachnoides, Hook. and Tayl. Muscol. Brit., p. 139. Bryol. Brit., p. 418, tab. 22. Neckera splachnoides, Smith, Eng. Bot., tab. 2564. D. Moist, shady rocks, Secghane Mountain. Rare. Dr. Taylor.

Hookeria, Smith.

lucens, Dill. Musc., tab. 34, f. 10. Eng. Bot., tab. 1902. W. Damp banks by the sides of rivulets. C. D. Common.

Tribe 12.—Neckereæ.

Hedwigia, Ehrh.

ciliata, Hedw. St. Crypt., l. tab. 40. Bryol. Brit., p. 146, tab. 6. Anictangium ciliatum, Turn., Muscol. Hib., p. 11. W. On exposed rocks. C. D. In similar places. C. The varieties γ. viridis, of Wilson's "Bryologia Britannica," and δ. secunda, grow at Lough Bray and Luggelaw, Wicklow.

Hedwigidium, Br. et Schimp.

imberbe, Br. et Sch. Bryol. Europ., vol. 3, Monogr., p. 3, tab. 274. Anictangium imberbe, Hook. and Tayl., Muscol. Brit., p. 27. W. On the faces of moist rocks, at Lough Bray and Lugnaquilla.

Leucodon, Schwægr.

sciuroides, Schwægr. Supp., tab. 125, fig. 10. Bryol. Brit., p. 313, tab. 20. D. Near the Longford Bridge, Royal Canal. Rare. Abundant in parts of county Meath.

Antitrichia, Bridel.

curtipendula, Bridel. Br. Univ., 2, p. 222. Neckera curtipendula, Turn., Muscol. Hib., p. 102. Eng. Bot., tab. 1444. W. On the trunks of alder trees, Upper Lough Bray. Fruit.

Cryphæa, Bridel.
heteromalla, Bridel. Bryol. Univ., 2, p. 250. Neckera heteromalla, Eng. Bot., tab. 1180. W. Trunks of trees. C. D. C.

Fontinalis, Dillenius.
antipyretica, Linn. Sp. Plant., p. 1571. Bryol. Brit., p. 423, tab. 22. Hab. W. Attached to stones in rivulets. C. D. Common.
squamosa, Linn. Sp. Pl., 1591. Bryol. Brit., p. 424, tab. 22. W. Lakes and rivulets; frequent. D. In the mountain streams; frequent.

Neckera. Hedw.
pumila. Hudson. Fl. Angl., p. 468. Bryol. Brit., p. 413, tab. 22. W. On trunks of trees, Westaston and Powerscourt.

Homalia. Schimp.
complanata. Linn. Sp. Pl., p. 1588. Hypnum complanatum, Turn. Musc. Hib. p. 144. W. Trunks of trees, walls, and rocks frequent. D. In similar places frequent.
Trichomanoides. Dill. Musc., tab. 34, fig. 7. Omalia trichomanoides Bryol. Brit., p. 410, tab. 24. Hypnum trichomanoides Turn. Musc. Hib. p. 145. W. Trunks of trees and on rocks. C. D. Common.

TRIBE 13. STEREODONTEÆ.

Plagiothecium. Bryol. Europ.
undulatum. Linn. Bryol. Europ., vol. 5, Monogr. p. 17, tab. 506. Hypnum undulatum. Bryol. Brit., p. 405, tab. 24. W. Woods and banks frequent. D. Frequent.
sylvaticum. Linn. Bryol. Europ., vol. 5. Monogr., p. 14, tab. 503. Hypnum sylvaticum. Bryol. Brit., p. 406, tab. 24. W. Damp ground, Luggelaw Woods.
elegans. Hooker. Musc. Exot., tab. 9. Hypnum elegans. Wilson, Bryol., Brit., p. 408, tab. 59. W. Damp shady banks and rocks, at Powerscourt Waterfall.
denticulatum. Dill. Bryol. Europ., vol. 5, Monogr., p. 12, tab. 501–502. Hypnum denticulatum. Bryol. Brit., p. 407, tab. 24. W. Woods and banks frequent. D. Frequent.
pulchellum. Dicks. Bryol. Europ., vol. 5. Monogr., p. 9, tab. 497. Hypnum pulchellum, Bryol. Brit., p. 403, tab. 24. W. Wet banks among rocks, Powerscourt Waterfall, and Upper Loughbray.

Cylindrothecium. Br. et Schimp.
concinnum. De Notr. Mantiss. No. 18. C. Montagnei, Bryol. Europ., vol. 5. Monogr., p. 6, tab. 465, Bryol. Brit., p. 327, tab. 54. D. Banks and sand hills, near Sallygap, sandhills between Malahide and Portrane.

Tribe 14. Hypneæ.

Pterogonium. Schwartz.

gracile, Schwartz. Musc. Suec., p. 26. Bryol. Brit., p. 321, t. 14. W. Rocks and on large stones, Lough Bray and Luggelaw. D. Killakee Glen.

filiforme. Schwægr. Suppl. 1, p. 100, Bryol. Brit., p. 320, t. 14. W. Dry rocks in shaded woods. C. D. Common.

Isothecium, Bridel.

myurum, Dill. Musc., tab. 41, f. 50. Hypnum curvatum, Turner, Musc., Hib., p. 139. W. On trees and rocks. C. D. C.

Homalothecium, Schimp.

sericeum, Linn. Bryol. Europ., vol. 5. Monogr., p. 3, tab. 456. Hypnum sericeum. Turn., Musc. Hib. p. 138. Engl. Bot., tab. 1445. W. On trunks of trees, walls, and rocks. C. D. Common.

Thamnium, Schimp.

alopecurum, Linn. Bryol. Europ., vol. 5. Monogr., p. 4, tab. 518. Isothecium alopecurum, Bryol. Brit., p. 324, tab. 25. W. By the sides of rivulets, and in moist woods, frequent. D. Frequent.

Heterocladium, Schimp.

heteropteron, Br. et Schimp. Bryol. Europ., vol. 5. Monogr., p. 4, t. 480. Hypnum heteropteron, Bryol. Brit., p. 369, t. 26. W. Moist rocks, and broken ground frequent. D. Frequent.

Anomodon, Hook. et Tayl.

viticulosa, Hook. and Tayl. Muscol. Brit., Ed. 2, p. 138. Neckera viticulosa Turn. Musc. Hib. p. 103. W. Limestone rocks and on walls, frequent. D. Frequent.

Thuyidium, Schimp.

abietinum, Linn. Sp. Pl., p. 1591. Hypnum abietinum, Bryol. Brit., p. 377, tab. 25. D. On Portmarnock sand hills, also at Malahide and Portrane, rare.

tamariscinum, Hedw. Sp. Musc., p. 261, tab. 67, figs. 1–5. Hypnum tamariscinum, Bryol. Brit., p. 380, tab. 57. W. Woods and shady banks. C. D. Common.

Hypnum, Linn et Dillen.

Sect. Brachythecium, Bryol. Europ.

Lutescens, Hudson. De Notr., Briol. Ital., p. 113. W. Rocks and sand hills, near the sea. C. D. Common.

albicans, Dill. Bryol. Europ., vol. 6. Monogr., p. 19, t. 553. Hypnum albicans, Bryol. Brit., p. 337, t. 25. D. On sand hills near the sea. Common.

glareosum, Br. et Sch. Bryol. Europ., vol. 6, Monogr., p. 19, t. 552. W. On grassy banks, frequent. D. Frequent.

rivulare, Br. et Schimp. Bryol. Europ., vol. 6, Monogr., p. 13, t. 549. W. On dripping rocks, between Arklow and Woodenbridge. D. Ballinascorney Glen, and Kelly's Glen.

illecebrum, Schwaegr. De Notr., Briol. Ital., p. 113. Hypnum illecebrum, Bryol. Brit., p. 343, tab. 35. D. Banks and rocks, Ballinascorney Glen, Killiney, and on the Hill of Howth.

velutinum, Linn. Sp. Plant., p. 1595. Hypnum velutinum, Bryol. Brit., p. 342, tab. 26. W. On stones, old walls and banks. C. D. Common.

populeum, Hedw. Sp. Musc., tab. 70, figs. 1–6. Hypnum populeum Bryol. Brit., p. 341, tab. 24. W. On rocks, walls, and trees. C. D. Common.

plumosum, Swartz. Muscol. Suec., p. 66. Hypnum plumosum. Bryol. Brit., p. 240, tab. 25. W. Wet rocks and banks by the margins of the mountain streams. C. D. In similar places. C.

Mildeanum, Schimp. Rabehor, Bryothec, Europ., No. 772. Hypnum salebrosum, Bryol. Brit., p. 338, tab. 53 (in part). D. Grassy banks and sand hills, between Malahide and Portrane, rare.

rutabulum, Linn. Sp. Pl., p. 1590. Hypnum rutabulum, Bryol. Brit., p. 345, tab. 26. W. Trees, rocks, walls, and banks. C. D. Common.

Sect. Rhynchostegium, Bryol. Europ.

rusciforme, Weiss. Bryol. Europ., vol. 5, Monogr, p. 11, tab. 515–516. Hypnum ruscifolium, Bryol. Brit., p. 354, tab. 26. W. About waterfalls on rocks. C. D. Common.

confertum, Dicks. Crypt. Fasc. 4, tab. 11, fig. 4. Hypnum confertum Bryol. Brit., p. 355, t. 26. W. On trunks of trees and on stones, walls, &c. C. D. Common.

megapolitanum, Blandow. Bryol. Europ., vol. 5, Monogr, p. 8, tab. 511. Hypnum megapolitanum, De Notr. Mant., No. 22. D. Sand hills. Between Portrane and Malahide.

murale, Dill. Musc., tab. 41, f. 52. Hypnum murale Bryol. Brit., p. 356, tab. 24. D. On walls and stones, at St. Margaret's, Howth, and in the Botanic Garden, Glasnevin.

tenellum, Dicks. Crypt. Fasc., p. 4., tab. 11, f. 12. Hypnum tenellum, Bryol. Brit., p. 35, tab. 24. W. On rocks and old walls frequent. D. Frequent.

striatum, Schreb. Fl. Lips., p. 91. Bryol. Ital., p. 76. Hypnum striatum Bryol. Brit., p. 352, tab. 26. D. Grassy banks in the Botanic Gardens, Glasnevin.

striatulum, Spruce. Bryol. Ital., p. 78. Hypnum striatulum, Bryol. Brit., p. 352, tab. 55. W. In woods at the Devil's Glen.

myosuroides, Linn. Sp. Plant, p. 159. Hypnum myosuroides, Turner, Musc. Hib., p. 140. W. On shady rocks, trunks of trees, &c. C. D. Common.

strigosum, Hoffin. Deutsch, Flor. 2, p. 76. Hypnum strigosum, Bryol. Brit., p. 353, tab. 55. Hab. D. At the roots of trees and on banks near Sallygap, the only known locality.

piliferum, Schreb. Fl. Lips., p. 91, Hypnum piliferum, Bryol. Brit., p. 347, t. 25. W. Woods and shady banks. C. D. C.

praelongum, Dill. Musc., tab. 35 f. 15. A. Hypnum praelongum, Bryol. Brit., p. 348, tab. 25. W. Moist shady banks between Woodenbridge and Arklow. C. Var β at Lough Bray. D. Shady banks. Common.

Swartzii, Turner. Hypnum Swartzii, Musc. Hib., p. 151, tab. 14, fig. 1. D. Shady banks. C. But rare in fruit.

hians, Hedw. Sp. Musc., p. 272, tab. 70, figs. 11–14. Hab. D. On the rocky sides of streams, Ballinascorney Glen, and Hillbrook, very rare.

pumilum, Wilson. De Notr. Bryol. Ital. p. 87. Hypnum pumilum, Bryol. Brit., p. 35, tab. 55. D. About the roots of trees in the Botanic Garden, Glasnevin.

Sect. Amblystegium, Bryol. Europ.

serpens, Dill. Bryol. Europ., vol. 6. Monogr., p. 9, t. 564. Hypnum serpens, Bryol. Brit., p. 362, tab. 24. W. On walls, rocks, and among the roots of trees. C. D. Common.

riparium, Linn. Bryol. Europ., vol. 6. Monogr., p. 14, t. 570–571. Hypnum riparium, Bryol. Brit., p. 364, tab. 24. W. On wood, and stumps of trees by the sides of rivers. C. D. C.

Sect. Limnobium, Bryol. Europ.

palustre, Linn. Bryol. Europ., vol. 6. Monogr., p. 2, tab. 574–575. Hypnum palustre, Schimp. Synops. Muscor. p. 64. W. On rocks in streams frequent. D. In similar places frequent.

ochraceum, Turner. Bryol. Europ., vol. 6. Suppl. t. 580. Hypnum ochraceum, Turner in Herb. W. On stones by the sides of the mountain rivulets at Lough Bray. D. Side of the stream in Kelly's Glen, fruit, May.

Sect. Hypnum, Bryol. Europ.

cordifolium, Hedw. St. Crypt, p. 4, tab. 37, vol. 6. Monogr. p. 47, t. 617. W. Bogs and marshy places. C. D. Common.

stramineum, Dicks. Bryol. Europ., vol. 6. Monogr. p. 49, tab. 617. D. Marshy heaths and wet sandy places. Kelly's Glen, Fruit.

cuspidatum, Dill. Musc., tab. 39, fig. 34. Eng. Bot. tab. 2407. W. Marshy ground. C. D. Common.

nurum, Linn. Sp. Plant, p. 1594. Bryol. Brit. p. 376, tab. 24. W. Shady banks, among rocks and stones. C. D. Common.

Schreberi, Willd. Fl. Berol, p. 325. Bryol. Brit., p. 376, tab. 24. W. Heaths and banks. C. D. Common.

Lindbergii, Mitten. In Seeman's Journal of Botany, vol. 2, p. 122, 1864. H. arcuatum, Lindberg. In efversight of K. Vetenskaps Akad. Forhandlingar, 1861. W. Damp sandy ground, near Lough Bray and Lugnaquilla. (Barren).

scorpoides, Linn. Sp. Pl. 1592. Bryol. Brit. p. 400, tab. 27. W. Bogs and marshy places, frequent. D. Frequent.

lycopodioides, Necker. Bryol. Europ., vol. 6. Monogr. p. 45, tab. 613–614. W. Bogs and marshes frequent. D. Frequent.

vernicosum, Lindberg. Hypnum aduncum, Hedw., fide Wilson in "Naturalist," 15th June, 1865. W. Bogs and in marshes frequent. D. Frequent.

revolvens, Swartz. Bryol. Brit. p. 388, tab. 58. D. Marshes and bogs. Seecaun and Seefin Mountains.

uncinatum, Hedw. Bryol. Brit. p. 394, tab. 26, Eng. Bot. tab. 1600. W. On rocks and on the roots of trees at Luggelaw. D. Killake Glen.

exanulatum, Gumb. Hypnum aduncum Bryol. Brit., p. 389, tab. 26. D. Marshy places, Howth, and near Stepaside.

fluitans, Dill. Bryol. Brit. p. 387, tab. 58. W. Marshes and lakes among the mountains frequent. D. In similar places frequent.

Kneiffii, Schimp. Synops. Musc., p. 605. Bryol. Brit. p. 390, tab. 58. W. Swampy places near Arklow. Sand hills between Malahide and Portrane.

commutatum, Dill. Bryol. Europ., vol. 6. Monogr., p. 38, tab. 607–608. W. Boggy places. C. D. Common.

filicinum, Linn. Bryol. Europ., vol. 6, Monogr., p. 40, tab. 609. W. Wet rocks, and on the margins of streamlets. C. D. C.

molluscum, Hedw. St. Crypt., p. 4, tab. 22. Bryol. Brit. p. 396, tab. 27. W. Among damp limestone rocks. C. D. Common.

cupressiforme, Dill. Musci. Tab. 37, fig. 33. Bryol. Brit. p. 397, tab. 27. W. Rocks, trees, and on the ground. C. D. Common.

polygamum, Br. et Schimp. Wils. Bryol. Brit., p. 364, tab. 56.

polymorphum, Hook and Tayl. in Herb. Grev. D. Damp places among the sand hills at Portmarnock and Malahide. Variety β stagnatum. H. stagnatum (Wils. M.S. in marshy ground near Arklow, and other places on the coast of Wicklow.

stellatum, Dill. Musc. tab. 39, fig. 5. Bryol. Brit. p. 366, tab. 26. W. Bogs and marshy places, frequent. D. Frequent.

chrysophyllum, Bridel. Mant. Musc., p. 175. Bryol. Brit. p. 366, tab. 26. W. Sand hills near the sea, frequent. D. Frequent.

elodes, Spruce. London Journal of Botany, vol. 4, April, 1845. H. polymorphum Flor. Hib., p. 44. W. Marshy and boggy ground near Black Castle. D. In a bog near Killiney.

Sect. Hylocomium, Bryol. Europ.

splendens, Hedw. Sp. Musc., tab. 67, f. 49. W. Woods and banks. C. D. Common.

brevirostrum, Ehrh. Pl. Exsice, No. 85. Bryol. Brit., p. 383, tab. 57. W. In woods in the mountainous parts frequent. D. Frequent.

flagellare, Dicks. Crypt. Fasc, 2, p. 12. Hypnum flagellare, Bryol. Brit., p. 384, tab. 57. W. Rocks and stones by the sides of the mountain streams Lough Bray. D. Kelly's Glen.

triquetrum, Dill. Bryol. Europ., vol. 5. Monogr. p. 8, tab. 491. Hypnum triquetrum, Bryol. Brit. p. 385, tab. 26. W. Woods and bushy places. C. D. Common.

loreum, Dill. Musc., tab. 39, f. 38-40. Hypnum loreum. Bryol. Brit., p. 386, tab. 26. W. Woods and bushy places. C. D. Common.

squarrosum, Dill. Musc., tab. 39, f. 38 and 39. Hypnum squarrosum, Bryol. Brit. p. 386, tab. 26. Hab. W. Woods and heathy places. C. D. Common.

Tribe 15.—Skitophylleæ.

Fissidens. Hedw.

adiantoides, Hedw. St. Crypt. p. 3, tab. 26. Dicranum adiantoides. Turn. Musc. Hib. p. 57. W. On wet rocks, banks, and pastures. C. D. Common.

taxifolius, Hedw. Sp. Musc., tab. 39. Dicranum taxifolium. Swartz. Musc. Suec. p. 31. W. Moist shady banks. C. D. C.

tamarindifolius, Turner. Musc. Hib., p. 55. Bryol. Brit., p. 308, tab. 53. D. Moist bank near Cullen's Wood. Dr. W. Stokes. Rare.

viridulus, Linn. Wilson, Bryol. Brit., p. 303, tab. 53. Dicranum viridulum, Swartz. D. On shady, moist banks, Howth. Rare.

bryoides, Hedw. St. Crypt, p. 3, tab. 9. Bryol. Brit., p. 304, tab. 16. W. On moist, shady banks; frequent. D. Frequent.

Tribe 16.—Polytricheæ.

Catharinea, Ehrh.

undulata, Web. et Mohr. Bot. Taschenb., 216. Atrichum undulatum, P. Beauv., Rabenhor., Bryothec. Europ., No. 282. W. Damp, shady places. C. D. Common.

Oligotrichum, De Cand.

hercynicum, De Cand. Flor. Gallic. Bryol. Brit., p. 205, tab. 10. Atrichum hercynicum, P. Beauv. W. Banks where the soil is bare, Lugnaquilla Mountain, and between Woodenbridge and Arklow.

Pogonatum, Bridel.

alpinum, Rohl. Deutchl. Fl., Ed. 3, p. 59. Polytrichum alpinum, Linn., Sp. Pl., p. 1109. W. Fissures of rocks, on the ascent to Lugnaquilla Mountain.

urnigerum, Bridel. Bryol. Univ., 2, p. 124. Polytrichum urnigerum, Linn., Sp. Pl., p. 1109. W. Moist banks on the mountains. C. D. Common.

subrotundum, Lindberg, in Hartm. Skand. Fl., Ed. 2, p. 44. Polytrichum subrotundum, Huds. Fl. Angl., Ed. 1, p. 400. W. Ditch banks, Lough Bray. D. Hill of Howth.

nanum, Weiss. Pl. Crypt. Fl. Gott., p. 173. Polytrichum aloides, Hedw., St. Crypt., 1, p. 37. Hab. W. Damp banks and rocky places in the mountainous parts. C. D. In similar places. Common.

Polytrichum, Bridel.

commune, Linn. Sp. Pl., 1, p. 1100. Bryol. Brit., p. 211, tab. 10. Hab. W. Marshy woods, moors, &c. C. D. Common.

juniperinum, Willd. Fl. Berol. Prodr., p. 305. Bryol. Brit., p. 213, tab. 10, fig. f. Hab. W. Heathy places, tops of turf, walls, &c. C. D. C. The variety β. strictum, P. strictum, Menzies, in Linn. Soc. Trans., vol. 4, tab. 5, fig. 7, and the var. γ. alpestre, P. alpestre, Schwægr., Suppl., tab. 97, occur occasionally in both counties.

piliferum, Schreb. Spicil. Fl. Lips., p. 74. Bryol. Brit., p. 213, tab. 10. W. Tops of turf, walls, dry heaths, &c. C. D. C.

gracile, Dicks. Eng. Bot., tab. 1827. W. Turf bogs, &c. C. D. C.

attenuatum, Menzies, in Linn. Soc. Trans., vol. 4, p. 72. Hab. W. Damp, shady banks, at Powerscourt Waterfall.

TRIBE 18.—SPHAGNEÆ.

Sphagnum, Dillenius.

cymbifolium, Ehrhart. S. latifolia, Turner, Musc. Hib., p. 5. W. On bogs and marshes; frequent. D. Frequent.

fimbriatum, Wilson. Bryol. Brit., p. 21, tab. 60. Pire, 1, c., No. 3. Hab. W. Marshes and bogs, at Lough Bray. Rare.

rubellum, Wilson. Bryol. Brit., p. 19, tab. 60. Hab. W. Wet banks; frequent. D. Frequent.

squarrosum, Persoon. Wils. Bryol. Brit., p. 23, tab. 4. W. Bogs and marshes. C. D. Common.

subsecundum, Nees Von Esenbeck. Sturm. Deutschl. Flor. Crypt., Fasc. 17, 1820. S. contortum, var. β. secundum, Wilson, Bryol. Brit., p. 22, tab. 60. W. On wet banks and turf bogs, Lough Bray. D. Hill of Howth.

Var. β. contortum, S. contortum, Schultz-Wilson, Bryol. Brit., p. 22, tab. 60, has been collected at Lough Bray, Wicklow, and on the Hill of Howth, Dublin.

acutifolium, Ehrhart. Wilson, Bryol. Brit., p. 20, tab. 4. W. Wet bogs. C. D. Common.

tenellum, Ehrhart. Bridel, Bryol. Univ. 1, p. 4. W. Wet woods and damp heaths, at Glenmalur. Rare.

TRIBE 19.—ANDREÆACEÆ.

Andreæa, Ehrhart.

alpina, Dill. Wils., Bryol. Brit., p. 11, tab. 8. Hab. W. On mountain rocks, at Upper Lough Bray and Glenmalur. D. Killakee Glen and Killiney.

petrophila, Ehrhart. Br. et Schimp., Bryol. Europ., vol. 2, Monogr., p. 13, tab. 623, 625. W. On rocks, Lugnaquilla Mountain.

rupestris, Turner. Muscol. Hib. p. 14. A. Rothii, Bryol. Brit., p. 12, tab. 8. W. On the mountain rocks. C. D. Common.

crassinervia, Bruch. Braithwaite, in Seeman's "Journal of Botany," vol. 8, p. 95, 1870. Hab. W. Mountain rocks, at Upper Lough Bray.

LIST OF HEPATICÆ WHICH ARE FOUND IN THE COUNTIES OF DUBLIN AND WICKLOW, WITH THEIR PRINCIPAL LOCALITIES,

BY

DAVID MOORE PH.D., F.L.S.

[Read March 18, 1878.]

The other Irish species which are not included in the Dublin and Wicklow List will be found described in the "Report on Irish Hepaticæ," by D. Moore. Royal Irish Academy Proceedings, vol. ii., Series 2, p. 591.

SECTION 1.—MARCHANTIACEÆ.

Family 1.—*Marchantieæ.*

Marchantia, Linn.

polymorpha, Linn. In moist situations, and sometimes in dry places. W. Frequent. D. Especially abundant on the surface mould of pots in the Botanic Gardens, where it is frequently subjected to high temperatures, under which treatment both ♂ and ♀ receptacles are abundantly produced.

Conocephalus, Neck. Dumort.

conicus, Neck. Dumort. Fegatella conica. G. L. et N. Synop. Hepat., p. 546. Marchantia conica, Eng. Bot., tab. 504. W. Damp, shady places. D. Common.

Preissia. Nees.

commutata, Nees. Marchantia commutata, Lindenb. Hep. Europ., p. 101. D. On damp sandy ground near the sea, at the North Bull. Rare.

Dumortiera. Nees.

irrigua, Nees. Marchantia irrigua, Wilson, in Hook Engl. Fl., 5, 1, p. 106. Hygrophila irrigua, Taylor in Fl. Hib., p. 54. W. Sheltered, rocky recesses, where water is constantly trickling over, at Altadore glen, near Delgany; also at a small waterfall near Luggelaw.

Asterella. Beauv.

hemisphaerica, Beauv. Marchantia hemisphærica, Linn., Sp. Pl. 1604. D. On damp, sandy ground, at the North Bull, near the sea.

Lunularia. Micheli.

cruciata, Linn. Dumort; Lunularia vulgaris, Micheli, Nov. Gen. 4, tab. 4; Marchantia cruciata, Linn., Sp. Pl. 1604. W. Damp ground at Altadore glen, near Delgany.

Family 2.—Ricciæ. Mich.

Riccia. L.

glauca, Linn. Sp. Pl. 1605. W. On damp ground. D. Common.

SECTION II.—JUNGERMANNIACEÆ.

Sub-Tribe 1.—Frullanieæ.

Frullania. Raddi.

dilatata, Linn., Dumort. Jungermannia dilatata. Linn., Sp. Pl., p. 1600. Frullania minor, Raddi, Jung, in Mem. Modena, 18, p. 21, t. 2, fig. 3. W. On the trunks of trees. D. Common.

tamarisci, Mich. L., Dumort. Jungermannia tamarisci L., Sp. Pl. 1. ed 2, p. 1134. Frullania major, Raddi, in Att. Soc. Sc. Modena, 18, p. 20. W. On the trunks of trees. D. Common.

germana, Taylor. Jungermannia germana Tayl., in Trans. Bot. Soc. Edin, vol. 2, p. 43. F. tamarisci, var. ε. germana. Carring. Irish Hepat., p. 457. W. On rocks, and on trees, Lough Bray.

Lejeunea, Libert.

hamatifolia, Hook. Dumort. Jungermannia hamatifolia, Hook. Brit. Jung., t. 51. W. On the trunks of trees and on bare rocks, near Powerscourt. D. At Woodlands, near Clonsilla.

echinata, Hooker. Taylor. Jungermannia hamatifolia, var. β. echinata, Hook., Brit. Jung., 51. Lejeunea calcarea, Libert., Ann. Gen. Sc. Phys., 6, p. 373, t. 96, fig. 1. D. On limestone rocks, and parasitic on the larger mosses, especially the genus Thamnium, at Woodlands, near Clonsilla.

minutissima, Smith. Dumortier. Jungermannia minutissima, Smith, Engl. Bot., t. 1633. Jungermannia ulicina, Taylor, in Trans. Bot. Soc., Ed. 1, p. 115. W. On the stems of trees and on mosses, at Luggelaw and Powerscourt. D. Near Woodlands.

serpyllifolia, Mich., Dicks. Libert. Jungermannia serpyllifolia, Dicks., Pl. Crypt. Brit., 4, p. 19. W. On the trunks of trees and damp banks. D. Common.

Mackaii, Hooker. Jungermannia Mackaii, Hook., Brit. Jung, t. 53. Phragmicoma Mackaii, Dumort., Comm. Bot., p. 112. D. Near Woodlands.

Radula, Dumortier.

complanata, Linn. Dumortier. Jungermannia complanata, Linn., Sp. Pl.; Hook. Brit. Jung., t. 81. W. On trees and rocks. D. Common.

Porella, Dillenius.

lævigata, Rupp., Schrad. Lindberg. Jungermannia lævigata, Hook., Brit. Jung, t. 35. Madotheca lævigata, Dumort., Comm. Bot., p. 111. W. Damp rocks, Lough Bray.

platyphylla, Linn. Lindberg. Jungermannia platyphylla, L., Sp. Pl., 1 ed., p. 1134. Madotheca platyphylla, Dumort., Comm. Bot., p. 111. W. On rocks, trunks of trees, and moss-covered banks. D. Common.

Thuja, Dicks. Jungermannia Thuja, Dicks., Pl. Crypt., 4, p. 19. W. On rocks and stones.

SUB-TRIBE 2.—PLEUROZIEÆ.

Pleurozia, Dumortier.
cochleariformis, Dumortier. Jungermannia cochleariformis, Weiss., Pl. Crypt., p. 123. Physiotium cochleariformis, Nees., Europ. Leberm., 3, p. 79. W. On wet, boggy places, about Upper Lough Bray. D. Moors about the mountains.

SUB-TRIBE 3.—LEPIDOZIEÆ.

Lepidozia, Linn. Dumortier.
reptans, Linn. Sp. Pl., 1599. Hook., Brit. Jung., t. 75. Mastigophora reptans, Nees., Leber. Europ., 3, p. 31. W. Woods and bushy banks. D. Common.
cupressina, Sw. Dum. Jungermannia reptans, β. pinnata, Hook., Brit. Jung., t. 75. L. tumidula, Tayl., in G. L. et N. Synop. Hepat., p. 206. W. Damp rocks and banks, at Lough Bray.

Bazzania. Bennett Gray.
trilobata, Mich., L. B. Gr. Jungermannia trilobata, Linn, Sp. Pl. 1599. Mastigobryum trilobatum, G. L. et N. Synop. Hepat., p. 230. Jungermannia radicans, Hoff. Germ. 2, p. 87. W. Mountain woods, Upper Lough Bray, and Seven Churches. D. Killakee Glen.

Odontochisma. Dumortier.
sphagni, Dicks. Dumortier. Jungermannia sphagni, Dicks. Fasc. Pl. Crypt. Brit. 1, p. 6. Sphagnocetis communis, Nees, in G. L. et N. Synop. Hepat., p. 148. W. In bogs, among Sphagnum. Frequent. D. Killakee Glen, and other boggy places.

Cephalozia. Dumortier.
elachista, Jack. Jungermannia elachista Jack, in Gottsche et Rabenhor. Hepat. Europ., exsic. No. 574. W. On moist banks at Lough Bray. Very rare. S. O. Lindberg.
byssacea, Roth, Dumort. Jungermannia byssacea, Roth. Fl. Germ. 3, p. 387. Hook. Brit. Jung., t. 12. W. On paths in woods, and on bare crags. D. C.
bicuspidata, Linn, Dumort. Jungermannia bicuspidata Linn, Sp. Pl. 158. Hook. Brit. Jung., t. 11. W. On heaths and banks. D. Common.
uliginosa, Spruce. W. Moist banks, Lough Bray. D. Killakee Glen. (New to Ireland—" not previously published as Irish.")
connivens, Dicks. Jungermannia connivens, Dicks, Pl. Crypt. fasc. 4, p. 19, tab. 2, fig. 15. Hook. Brit. Jung., tab. 15. Blepharostoma connivens, Dumort, Rev. Jung., p. 18. W. Wet banks, among mosses. D. Wet places. C.
Var. *a.* conferta minor. On rotten wood. Frequent in both counties.

Cephalozia. Dumortier.

Var. β. sphagnorum, Hook. Brit. Jung, t. 15, 3. Frequent among Sphagnum, about Lough Bray. W.

catenulata, Huebener, Lindb. Jungermannia catenulata, Huebener. Hepat Germ., p. 169. Jungermannia reclusa, Taylor in Trans. Bot. Soc. Edin. 11, p. 44. W. On shady, damp banks, about Lough Bray, and elsewhere. D. Killakee Glen, and elsewhere. Common.

Lophocolea. Dumortier.

bidentata, Linn., Dumort. Jungermannia bidentata Sm. Eng. Bot., t. 606. Hook. Brit. Jung., t. 30. W. D. C.

spicata, Taylor in G. L. et N. Synop. Hepat., p. 167. Cook. Brit. Hepat., p. 15, n. 75, fig. 113. W. On shady, damp rocks; among mosses at Altadore Glen, near Delgany.

Chiloscyphus. Corda.

polyanthos, Corda. Jungermannia polyanthos Linn. Sp. Pl. 1,597. Marsupella polyanthos, Dumort. Comm. Bot., p. 114. W. On wet rocks, &c. D. Common.

Harpanthus. Nees.

scutatus, Spruce. Jungermannia scutata, Weber et Mohr. Deutschl. Crypt., p. 408. Jungermannia stipulacea. Hook. Brit. Jung., t. 41. W. Moist banks, and on rocks among the larger mosses, &c., at Upper Lough Bray.

Sub-Tribe 4.—Saccogyneæ, Dumortier.

Kantia. Bennett Gray.

trichomanis, Dicks, B. Gr. Jungermannia trichomanis. Hook. Brit. Jung., tab. 79. On wet, shady banks, and woods. W. D. Common.

arguta, N. M., Lindb. Calypogeia arguta, N. M., Lindb. Eng. Bot. tab., 1875. W. On wet banks, and on the larger Hepaticæ, at Luggelaw. Very rare.

Saccogyna. Dumortier.

viticulosa, Mich, Dumort. Jungermannia viticulosa, Linn. Sp. Pl. 1597. W. On damp ground, among mosses, &c. Very fine at Lough Bray. D. Killakee Glen.

Sub-Tribe 5.—Blepharozieæ.

Tricocholea. Dumortier.

tomentella, Ehrhart, Dumort. Jungermannia tomentella, Ehrh. Beitr. 2, p. 150. Hook. Brit. Jung., t. 36. W. Mossy banks in woods and rocky places. D. Common.

Herberta. Bennett Gray.

adunca, Dicks, B. Gr. Jungermannia adunca, Dicks. Fasc. Pl. Crypt. Brit. 3, p. 12, tab. 8, f. 8. Sendtnera juniperina, var. β, Nees, in G. L. et N. Synop. Hepat., p. 239. W. Bogs and wet rocky places, at Upper Lough Bray.

Blepharostoma. Dumortier.

trichophylla, Linn., Dumort. Jungermannia trichophylla, Linn. Sp. Pl., p 1601. Hook. Brit. Jung., t. 7. W. On turfy heaths, and among Sphagnum, at Lough Bray.

setacea, Web., Mitt. Jungermannia setacea, Weber, Spicil. Fl. Gott, p. 143. Hook. Brit. Jung., t. 8. W. Bogs, and moist shady banks in woods, &c., at Lough Bray.

SUB-TRIBE 6.—JUNGERMANNIEÆ.

Scapania. Dumortier.

subalpina, Dumortier. Var. β undulifolia. Jungermannia subalpina, Nees. apud Lindenb. Hep., p. 55. W. Margins of the mountain streams, where the water is constantly trickling over. Lugnaquilla .mountain, also at Lough Bray. D. At Kelly's Glen, in similar places.

undulata, Linn., Dill. Dumort, Jungermannia undulata, Linn, Sp. Pl., 1598. Hook. Brit. Jung., tab. 22. Radula undulata. Dumort. Comm. Bot., p. 112. W. Streams among the hills. D. Common.

var. ε. speciosa, Rabenhor. Hep. Eur., exsicc. n., 442. Was collected near Lugnaquilla. W.

irrigua, Nees. Dumort. Jungermannia irrigua, Nees Europ. Leber., 1, p. 193. W. Wet places among the hills, at Lough Bray.

resupinata, Dumort. Non : Hook. Jungermannia resupinata, Linn. Sp. Pl., 1599. Martinellia gracilis. Lindb. in Hort. Soc. T. Fl. Fenn. 13, p. 365 (1874.) Acta Societatis Scientiarum Fenicæ, X., p. 520 (1875.) W. Open heathy places, Lough Bray. D. Kelly's Glen.

umbrosa, Schrader. Dumort, Jungermannia umbrosa, Hooker. Brit. Jung., t. 24, suppl. 3. Engl. Bot., t. 2527. W. On moist rocks and banks, Lough Bray. D. Killakee Glen.

curta, Dumort. Jungermannia nemorosa. Var. δ. denudata, Hook., Brit. Jung., t. 21. Jung. curta, Mart. Fl. Crypt. Erlang., p. 148. Hab. W. Moist shady banks, among the larger Hepaticæ, at Upper Lough Bray.

Diplophyllum. Dumortier.

albicans, Linn. Dumort. Jungermannia albicans, Linn., Sp. Pl., p. 1599. Hook., Brit. Jung., t. 23. W, On moist banks, &c. D. Common.

Plagiochila. Dumortier.

asplenioides, Linn. Dumort. Jungermannia asplenioides, Linn., Sp. Pl., p. 1597. Eng. Bot., 1061. Hook. Brit. Jung., t. 13. Hab. W. Banks among moss, and in woods. D. Common.

spinulosa, Dicks. Dumort. Jungermannia spinulosa, Dicks. Crypt. fasc. 2, p. 14. Hook., Brit. Jung., t. 14. Eng. Bot., t. 2228. Tayl. Fl. Hib. 2, p. 58. Hab. W. Woods and moist banks. D. C.

Plagiochila. Dumortier.

punctata, Taylor. In London Journal of Bot. 1844, p. 371 (sub. n. 10) et 1846, p. 261. Plagiochila spinulosa, β punctata, Carring. Irish Crypt., p. 19, t. 2, fig. 3 (1863) et Brit. Hepat. part 3, p. 60. W. Shady woods, and damp banks, Altadore Glen, near Delgany. Also at Seven Churches.

Mylia. Bennett Gray.

Taylori, Hook., B. Gray. Jungermannia Taylori, Hook., Brit. Junger., t. 34. Eng. Bot., t. 2318. Coleochila Taylori. Dumort. Hepat. Europ., p. 107. W. On wet banks, Lough Bray.

Jungermannia. Linnæus.

§ *A.—Aplozia.*

crenulata, Smith (Dumort.) Jungermannia crenulata, Sm., Eng. Bot., t. 1463. Hook. Brit. Jung., t. 37. Aplozia crenulata, Dumort. Hepat. Europ., p. 57 (1874.) W. On moist clay banks. D. Common.

Var β gracillima. Jungermannia gracillima, Sm. Eng. Bot, t. 2238. Hook. Brit. Jung., at descript. n. 37. J. genthiana, Hueben. Hepat. Germ., p. 107. W. In similar places as that of the larger state of the plant, at Westaston.

pumila, With., Dumort. Jungermannia pumila, Wither. Bot. An., ed. 3, p. 866. Hook. Brit. Jung., t. 17. W. On rocks, by the margins of streams, at Lough Bray.

sphærocarpa, Hook, Dumort. Jungermannia sphærocarpa. Hook. Brit. Jung., t. 74. Aplozia sphærocarpa. Dumort. Hep. Eur., p. 61. W. On stones, by sides of rivulets, Upper Lough Bray. D. Kelly's Glen.

riparia, Taylor, Dumort. Jungermannia riparia. Tayl. in Trans. Bot. Soc. Edin., p. 43. Cooke's Brit. Jung., p. 9, fig. 69. W. Sides of streams and pools, Lough Bray, and near Wooden Bridge.

nana, Nees. Hep. Europ., 1 p. p. 317, 278 ; 2 p. 466 ; 3 p. 533 ; 4 p. 41. Jungermannia lurida. Dumort. Hepat. Europ., p. 60 (1874.) W. On wet banks, by the sides of streams, at Seven Churches. D. Kelly's Glen.

§ *B.—Sphenolobum.*

Dicksoni, Hook. Brit. Jung., t. 48. Eng. Bot., 2591. Diplophyllum Dicksoni. Dumort. Rev. Jung., p. 16, et Hepat. Europ., p. 49 (1875.) W. On rocks and moist banks, in subalpine parts, at Lough Bray. D. In similar places. Very rare. Dr. Taylor.

minuta, Crantz. Hist. Græn., p. 288. Hook. Brit. Jung., t. 44. Diplophyllum minutum. Dumort. Rev. Jung., p. 16, et Hepat. Europ., p. 49. W. Heathy and rocky banks, Lough Bray, and Seven Churches.

§ *C.—Lophozia, Dumortier.*

Hornschuchiana, Nees. Europ. Leberm. 2, p. 153. G. L. et N. Synop. Hepat., p. 101. W. Wet places, near Woodenbridge.

barbata, Schreber. Spicil. Lips., p. 107. J. quinquidentata, Huds. Angl. Fl., p. 511. Lophozia barbata. Dum. Rev. Jung., p. 17. W. Among rocks and on heathy banks. Frequent. D. In similar places. Frequent.

Lyoni, Taylor in Trans. Bot., Soc. Edinb., 1 p. 116, t. 7. J. Socia. var., G. γ., et N. Synop. Hepat, p. 112. I. barbata Var. G. L. et N., l. c. p. 678. W. On rocky banks among mosses, at Glenmalur. Rare.

ventricosa, Dicks. Pl. Crypt, 2, p. 14. Hook. Brit. Jung. t. 28. Eng. Bot. t. 2568. Tayl in Fl. Hib. 2, p. 60. W. Banks and rocks in mountain situations, Lough Bray, &c., frequent. D. In similar situations, frequent.

excisa, Dicks. Pl. Crypt. 3, p. 11, t. 8, fig. 7. Hook, Brit. Jung., p. 11. Lophozia excisa, Dumort. Rev. Jung., p. 17. Woods and heathy banks. D. On the mountains. (Taylor) Rare.

bicrenata, Lindenb. Synop. Hepat. p. 82. Jungermannia excisa Sm. Engl. Bot. t. 2497. W. On damp shady banks, Lough Bray.

§ *D.—Gymnocolea, Dumortier.*

laxifolia, Hook. Dumort Hook. Brit. Jung. t. 59. Eng. Bot. t. 2677. Gymnocolea laxifolia, Dumort. Rev. Jung. p. 17. et Hepat. Eur. p. 64. D. On rocks by the sides of rivulets, Castle Kelly Mountain, Dr. Taylor.

inflata, Huds. Dumort. Jungermannia inflata, Huds, Flor, Ang. p. 511. Gymnocolea inflata, Dumort, Rev. Jung. p. 17. et Hepat. Europ. p. 63. Hab. W. On wet rocks and banks, Lough Bray. D. Near Finglas.

var, α compacta, Carrington. D. On the top of Howth Hill.

affinis, Wilson. Dumort. Jungermannia turbinata. Wils. in Eng. Bot. suppl. t. 2744. J. Wilsoniana, Nees. Europ. Leberm. 3, p. 548. Cooke, Brit. Jung. p. 10. f. 74. D. On the grey limestone, Woodlands, near Clonsilla, and the Finglas quarries.

Nardia. Bennett Gray.

§ *A.—Marsupella (Dum) Lindberg.*

emarginata, Ehrh. B. Gr. Jungermannia emarginata, Ehrh. Beitr. 3, p. 80. Sm. Eng. Bot. t. 1022. Hook. Brit. Jung. t. 27. Sarcoscyphus Ehrharti. Corda in Opiz. Natural., p. 652. W. Wet rocks and sides of mountain rivulets. D. In similar situations. Common.

sphacelata, Giesecke. Jungermannia sphacelata, Giesecke in Lindenb. Synop. Hep. p. 76. Sarcoscyphus sphacelatus, Nees, Europ. Leber, p. 129. W. Wet rocks by the margins of the mountain rivulets at Upper Lough Bray. Very rare. S. O. Lindberg.

revoluta, Nees. Lindb. Sarcoscyphus revolutus. Nees Leberm, Eur. 2, p. 419. W. On rocks at Luggelaw. Very rare, D. Orr.

§ *B.—Mesophylla, Dumort'er.*

scalaris, Schrader. B. Gr. Jungermannia scalaris, Schrad. Samml. 2, p. 4. Hook. Brit. Jung. t. 61. Alicularia scalaris corda, in Opiz. Natural, p. 653. W. On moist clay banks. D. Common.

compressa, B. Gr. Carrington. Jungermannia compressa. Hook. Brit. Jung. t. 58, Alicularia compressa, G. L. et N, Syn. Hepat. p. 12. W. Sides of rivulets and moist rocky places, at Upper Lough Bray; also at Luggelaw and Seven Churches. D. In similar places in Kelly's Glen.

Var β. rigida, Lindb. W. In wet boggy places at Upper Lough Bray and Seven Churches.

§ *C.—Southbya, Spruce.*

obovata, Nees. Carrington. Jungermannia obovata, Nees, Europ. Leberm. 1, p. 332; 2, p. 474. Cooke. Brit. Jung. p. 8, fig. 62. Jungermannia tersa. Nees. Europ. Leberm, p. 471. W. Moist rocks, and by the sides of rivulets at Upper Lough Bray.

hyalina, Lyell. Carrington. Jungermannia hyalina, Lyell, in Hook. Brit. Jung, t. 65. Cook, Brit. Jung. p. 8, fig. 61. W. Moist banks and damp rocky recesses at Luggelaw, and Seven Churches. D. In similar places on Seefing mountain. Dr. Taylor.

Sub-tribe 7.—Fossombromeæ.

Pallavicinia. Bennett Gray.

Hibernica, Hook. B. Gray. Jungermannia Hibernica Hook. Brit. Jung. t. 78. Blyttia Lyell, var γ. Hibernica. G. L. et N. Synop. Hep. p. 475. Moerckia Hibernica, Gottsche, in Rabenh. Hep. Europ. exsic. n. 295,334, et 335. D. On damp sandy ground, among the sand-hills near the sea where water has stood during the winter at the North Bull, and between Malahide and Portrane, very rare and local.

Lyellii, Hook. B. Gr. Jungermannia Lyellii, Hook. Brit. Jung. t. 77. Dilæna Lyellii Dumort. Comm. Bot. p. 114 (1822). Blyttia Lyellii, G. L. et N. Synop. Hep. p. 475. W. Boggy places among Sphagnum, at Upper Lough Bray.

Petalophyllum. Gottsche.

Ralfsii, Gottsche, Wilson. Jungermannia Ralfsii Wilson, in suppl. to Eng. Bot., t. 2,874. Petalophyllum lamellatum. Lindberg, Manipulus, Musc. Secund., p. 396. D. On damp sandy ground near the sea, Malahide sands, and at North Bull sands. Not hitherto observed elsewhere in Ireland.

Blasia. Micheli.

pusilla. Linn. Sp. Pl., 1,605. Jungermannia Blasia. Hook, Brit. Jung., t. 82–84. Tayl., in Fl. Hib., p. 56. W. On sandy moist banks, near Woodenbridge. D. Castle Kelly Glen fruiting in March.

Pellia. Raddi.

epiphylla, Dill. L. Raddi. Jungermannia epiphylla, Linn. Sp. Pl. 1, ed. 2, p. 1,135. Hook, Brit. Jung., t. 47, figs. 1, 4, 8, 1, 17. Tayl. in Fl. Hib., p. 56. W. On moist clay banks. D. In similar places. Common.

calycina, Nees. Tayl. Jungermannia epiphylla, Var γ. furcigera. Hook, Brit. Jung., t. 47, fig. 18, et. 2, 3, 9, 10–12. Jungermannia calycina. Tayl., in Fl. Hib., 2, p. 55. Pellia endivifolia, Pluk., Dicks. W. Shady moist places, sometimes quite immersed in water, at Altadore Glen, and Lough Bray.

Sub-tribe 8.—*Metzgerieæ.*

Metzgeria. Raddi.

furcata, Linn. Dumort. Jungermannia furcata, Linn. Sp. Pl., 1,602. Hook, Brit. Jung., t. 55, et. 56. Eng. Bot., t. 1,632. Metzgeria glabra, Raddi. Jung., Etr. in Mem. Modena. 18, p. 43, t. 7, fig. 1. W. On trunks of trees, and also on moist banks and rocks. D. In similar situations. Common.

Var. δ. æruginosa. W. On trunks of trees, frequent. D. Frequent in similar situations.

Riccardia. Bennett Gray.

multifida, Dill., Linn., Gr. Jungermannia multifida, Linn, Sp. Pl., p. 1,602. Eng. Bot., t. 186. Hook, Brit. jung., t. 45. excl. Var. β. Aneura multifida, Dumort. Comm. Bot., p. 115. W. On wet places where water has stood during winter. D. In similar places. Common.

Var. pinnatifida Dumort, Syll. Jung.—Aneura pinnatifida, Dumort. Rev. Jung, p. 26, are found at Luggielaw and Lough Bray. W.

palmata, Hedw. Carruth., Lindb. Jungermannia palmata Hedw. Theor. Gen. 1 ed., p. 87, t. 18, figs. 93, 95; et tab. 19, figs. 96–98. Aneura palmata, Dumort. Comm. Bot., p. 115. W. On the decaying trunks of old trees at Altadore Glen, near Delgany.

pinguis, Linn., B. Gr. Jungermannia pinguis, Linn. Sp. Pl. p. 1,602. Hook, Brit. jung., t. 46. Eng. Bot., t. 185. Aneura pinguis, Dum. Comm. Bot., p. 115. Cooke, Brit. Jung., p. 23, fig. 174. W. Damp ravines, and margins of rivulets at Lough Bray. D. On wet sand at Malahide.

SECTION III.—ANTHOCEROTACEÆ.

Tribe 2.—*Anthoceroteæ.*

Anthoceros. Micheli.

punctatus, Linn. Sp. Pl. 1,606. Sm. Eng. Bot., t. 1,537. W. Wet places by the sides of streams. Sugar Loaf Mountain. D, At Kelly's Glen.

LIST OF DIATOMACEÆ FOUND IN THE COUNTIES OF DUBLIN AND WICKLOW.

BY

REV. EUGENE O'MEARA, A.M.

[Read March 18, 1878.]

Achanthes. Bory.

„ longipes. Agardh,	Sea-weeds near town of Wicklow.
„ brevipes. Agardh,	Malahide, Portmarnock, Salt Hill.
„ subsessilis. Kütz.	Malahide, co. Dublin.
„ exilis. Kütz.	Grand Canal, Hazlehatch, co. Dublin.
„ parvula. Kütz.	Clontarf, Portmarnock, co. Dublin.

Achnanthidium. Kütz.

„ lanceolatum. Bréb.	Ditch near town of Wicklow.
„ coarctatum. Bréb.	Dollymount, co. Dublin.
„ microcephalum. Kütz,	Dundrum, co. Dublin.
„ lineare. Wm. Sm.,	Dundrum, co. Dublin.

Actinocyclus. Ehr.

„ Ralfsii. Wm. Sm.,	Dalkey, co. Dublin.
„ moniliformis. Ralfs,	Ballybrack, co. Dublin.
„ crassus. Wm. Sm.,	Dalkey, Malahide, Howth, co. Dublin.
„ fulvus. Wm. Sm.,	Dalkey, co. Dublin.

Actinoptychus. Ehr.

„ senarius. Ehr.	Dalkey, Dollymount, Portmarnock.

Amphipleura. Kütz.

„ pellucida. Kütz.	Marl-pit near Arklow, co. Wicklow.

Amphiprora. Ehr.

„ alata. Kütz.	Portmarnock, Malahide, co. Dublin. Seaweeds near Wicklow.
„ didyma. Wm. Sm.	Malahide, co. Dublin.
„ vitrea. Wm. Sm.	Howth, co. Dublin. Salt marsh near town of Wicklow.
„ constricta. Ehr.	Salt Hill, Malahide, co. Dublin.
„ duplex. Donkin,	Salt Hill, Howth, co. Dublin. Bray, co. Wicklow.
„ lepidoptera. Greg.	Malahide, Ireland's Eye, co. Dublin. Breaches, co. Wicklow.
„ maxima. Greg.	Malahide, co. Dublin.
„ pusilla. Greg.	Malahide, co. Dublin. Breaches, co. Wicklow.

Amphitetras. Ehr.

„ antediluviana. Ehr.	Howth, Malahide, Rush, co. Dublin.

Amphora. Ehr.	
„ sulcata. Bréb.	North Strand, co. Dublin.
„ ovalis. Kütz.	Killakee, co. Dublin.
„ affinis. Kütz.	Portmarnock, co. Dublin.
„ hyalina. Kütz.	Malahide, co. Dublin.
„ salina. Wm. Sm.	Dollymount, Malahide, co. Dublin. Kilcool, co. Wicklow.
„ membranacea. Wm. Sm.	Malahide, co. Dublin.
„ minutissima. Wm. Sm.	Killakee, Friarstown, Lucan, co. Dublin.
„ lævis. Greg.	Howth, co. Dublin.
„ pellucida. Greg.	Howth, co. Dublin.
„ robusta. Greg.	Ireland's Eye, co. Dublin.
„ cymbifera. Greg.	Ireland's Eye, co. Dublin. Kilcool, co. Wicklow.
„ crassa. Greg.	Malahide, Ireland's Eye, co. Dublin.
„ dubia. Greg.	Malahide, co. Dublin.
„ ventricosa. Greg.	Salt ditch near town of Wicklow.
„ arenaria. Donkin,	Malahide, co. Dublin.
„ granulata. Greg.	Malahide, co. Dublin.
„ lævissima. Greg.	Portmarnock, co. Dublin.
„ lyrata. Greg.	Malahide, Baldoyle, co. Dublin.
„ nana. Greg.	Malahide, Baldoyle, co. Dublin.
„ elongata. Greg.	Malahide, co. Dublin.
„ ocellata. Donkin,	Baldoyle, co. Dublin.
Arachnodiscus. Ehr.	
„ Ehrenbergii. Bailey,	Malahide, co. Dublin.
Asterionella. Hassall.	
„ formosa. Hassall,	R. Dodder. Grand Canal, co. Dublin.
„ Ralfsii. Wm. Sm.	Tinahely, co. Wicklow.
„ gracillima. Heiberg,	Dollymount, co. Dublin.
„ Bleakleyii. Wm. Sm.	Dalkey, Portmarnock, Howth, co. Dublin.
Auliscus. Ehr.	
„ sculptus. Wm. Sm.	Malahide, Dollymount, co. Dublin.
Bacillaria. Gmel.	
„ paradoxa. Gmel.	Clontarf, co. Dublin. Salt ditch near town of Wicklow.
Berkeleya. Greville,	
„ fragilis. Greville,	Salt Hill, co. Dublin.
Biddulphia. Gray,	
„ turgida. Ehr.	Malahide, co. Dublin.
„ aurita. Lyngb.	Ballybrack, Malahide, Dollymount, Howth, co. Dublin.
„ rhombus. Ehr.	Malahide, Baldoyle, Ballybrack, Dollymount, co. Dublin.
„ pulchella. Gray,	Malahide, Baldoyle, co. Dublin.
Campylodiscus. Ehr.	
„ costatus. Wm. Sm.	R. Dodder, Bohernabreena, co. Dublin.

Campylodiscus. Ehr.		
,,	Hodgsonii. Wm. Sm. .	Malahide, co. Dublin. Bray, co. Wicklow.
,,	spiralis. Wm. Sm. .	Glencree. Bray, co. Wicklow.
,,	cribrosus. Wm. Sm. .	Dublin Bay. Breaches, co. Wicklow.
,,	parvulus. Wm. Sm. .	Malahide, Baldoyle, co. Dublin.
,,	Ralfsii. Wm. Sm. .	Malahide, Sutton, co. Dublin.
,,	simulans. Greg. .	Portmarnock, co. Dublin.
,,	bicostatus. Wm. Sm.	Portmarnock, co. Dublin.
Cocconeis. Ehr.		
,,	pediculus. Ehr. .	Everywhere in fresh water.
,,	Thwaitesii. Wm. Sm.	Blackcastle, co. Wicklow.
,,	scutellum. Ehr. .	Malahide, Portmarnock, co. Dublin. Sea-weeds near Wicklow.
,,	diaphana. Wm. Sm.	Dalkey, co. Dublin.
,,	arraniensis. Grev. .	Malahide, co. Dublin.
,,	lamprosticta. Greg. .	Malahide, Portmarnock, co. Dublin.
,,	Grantiana. Grev. .	Portmarnock, co. Dublin.
,,	granulifera. Grev. .	Portmarnock, co. Dublin.
,,	binotata. Grunow, .	Malahide, co. Dublin.
,,	punctatissima. Grev.	Stomachs of ascidians. Dublin Bay.
Cocconema. Ehr.		
,,	lanceolatum. Ehr. .	Newcastle Lyons, co. Dublin. Powers court, co. Wicklow.
,,	cymbiforme. Ehr. .	Clontarf, R. Dodder, Newcastle Lyons, co. Dublin.
,,	cistula. Ehr. .	Clontarf, Botanic Gardens, Glasnevin, co. Dublin.
,,	parvum. Wm. Sm. .	Portobello, Dundrum, co. Dublin. Slate quarry, Glenmore, co. Wicklow.
,,	cornutum. Ehr. .	Dundrum, co. Dublin.
Colletonema. Bréb.		
,,	vulgare. Thwaites .	Carrickmacrilly, co. Wicklow.
,,	neglectum. Thwaites.	Grand Canal, co. Dublin.
Coscinodiscus. Ehr.		
,,	oculus iridis. Ehr. .	Monkstown, Ballybrack, Dalkey, co. Dublin.
,,	omphalanthus. Ehr. .	Dublin Bay.
,,	centralis. Ehr. .	Ballybrack, Dalkey, co. Dublin.
,,	stellaris. Roper, .	Dublin Bay.
,,	concinnus. Wm. Sm.	Ballybrack. Dublin Bay.
,,	perforatus. Ehr. .	Oyster beds, Howth, Monkstown, Dalkey, Ballybrack, co. Dublin.
,,	radiatus. Ehr. .	Dollymount, Ballybrack, Malahide, Dalkey, co. Dublin.
,,	radiolatus. Ehr. .	Dalkey. Dublin Bay.
,,	nitidus. Greg. .	Malahide, co. Dublin.

Coscinodiscus. Ehr.	
„ lineatus. Ehr.	Malahide, Monkstown, co. Dublin. Seaweeds, Wicklow. Breaches, co. Wicklow.
„ Ehrenbergii. O'M.	Malahide, Dollymount, co. Dublin.
„ minor. Ehr.	Tide-pool, Dalkey, co. Dublin.
„ punctulatus. Greg.	On Fucus serratus, Ballybrack, co. Dublin.
„ eccentricus. Ehr.	Dublin Bay.
Creswellia. Grev.	
„ turris. Grev.	Dublin Bay.
Cyclotella. Kütz.	
„ Kützingiana. Thwaites.	R. Liffey, co. Dublin. Kilcool, co. Wicklow.
„ Meneghiniana. Kütz.	Feather-bed mountain, Lucan, co. Dublin. Kilcool, co. Wicklow.
„ operculata. Kütz.	Glencree, co. Wicklow.
„ var. O'M.	Ballymore Eustace, co. Wicklow.
„ rotula. Kütz.	Lucan, Feather-bed mountain, Grand Canal, co. Dublin.
Cymatopleura. Wm. Sm.	
„ solea. Wm. Sm.,	Newcastle Lyons, co. Dublin ; Powerscourt, co. Wicklow.
„ apiculata. Wm. Sm.	Killakee, R. Dodder, co. Dublin ; Powerscourt, co. Wicklow.
„ parallela. Wm. Sm.	R. Dodder, co. Dublin.
„ elliptica. Wm. Sm.	Lucan, Grand Canal, Portobello, co. Dublin.
Cymbella. Agardh.	
„ cuspidata. Kütz.	Bohernabreena, Dundrum, Howth, co. Dublin.
„ affinis. Kütz.	Piperstown, co. Dublin.
„ maculata. Kütz.	Newcastle Lyons, co. Dublin ; Kilcool, co. Wicklow.
„ helvetica. Kütz.	Kilcool, co. Wicklow.
„ ventricosa. Agardh,	Lucan, R. Dodder, co. Dublin.
„ lunata. Rab.,	Howth, co. Dublin.
„ porrecta. Rab.,	Howth, co. Dublin.
Denticula. Kütz.	
„ obtusa. Kütz.	R. Dodder, Grand Canal, co. Dublin.
„ mutabilis. Wm. Sm	Lucan, Bohernabreena, co. Dublin ; Black Castle, co. Wicklow.
„ ocellata. Wm. Sm.	North Wall, co. Dublin.
Diatoma. De Candolle.	
„ vulgare. Bory,	R. Dodder, Grand Canal, Portobello, co. Dublin.
„ grande. Wm. Sm.	Killakee, R. Liffey, co. Dublin.

Diatoma. De Candolle.	
„ elongatum. Agardh .	Dundrum, co. Dublin; Newcastle, co. Wicklow.
„ tenue. Kütz. .	Howth, co. Dublin.
Dickieia. Berkeley.	
„ ulvoides. Berkeley, .	Greystones, co. Wicklow.
„ pinnata. Ralfs, .	Dollymount, Clontarf, Malahide, Ballybrack, co. Dublin.
Dimerogramma. Ralfs.	
„ minus. Greg. .	Dollymount, Ireland's Eye, co. Dublin.
Donkinia. Ralfs,	
„ carinata. Donkin, .	Malahide, co. Dublin.
„ recta. Donkin, .	Malahide, Ireland's Eye, co. Dublin.
„ angusta. Donkin, .	Howth, co. Dublin.
„ minuta. Donkin, .	Salthill, co. Dublin.
Encyonema. Kütz.	
„ prostratum. Ralfs, .	R. Dodder, co. Dublin.
„ cæspitosum. Kütz, .	Dundrum, R. Dodder, co. Dublin.
Epithemia. Kütz.	
„ turgida. Wm. Sm., .	Powerscourt, Glencree, Arklow, co. Wicklow.
„ granulata. Kütz. .	Powerscourt, co. Wicklow.
„ zebra. Kutz. .	Arklow, co. Wicklow.
„ longicornis. Ehr., .	Glencree, co. Wicklow.
„ alpestris. Wm. Sm .	R. Dodder, co. Dublin; Glencree, Newcastle, Co. Wicklow.
„ sorex. Kütz. .	Greystones, co. Wicklow.
„ musculus. Kütz. .	Malahide, Dollymount, co Dublin.
„ rupestris. Wm. Sm .	Killakee, R. Dodder, co. Dublin; Glencree, co. Wicklow.
„ constricta. Wm.Sm .	Portmarnock, co. Dublin; Kilcool, co. Wicklow.
„ gibba. Kütz. .	R. Dodder, co. Dublin; Powerscourt, co. Wicklow.
„ ventricosa. Kütz. .	Killakee, R. Dodder, co. Dublin.
„ marina. Donkin, .	Sea-weeds, near town of Wicklow.
„ globigera. Heiberg, .	Marl-pit, Arklow, co. Wicklow.
Eunotia. Ehr.	
„ arcus. Wm. Sm., .	R. Dodder, co. Dublin; Powerscourt, co. Wicklow.
„ gracilis. Wm. Sm., .	Piperstown, co. Dublin; Rathdrum, Powerscourt, co. Wicklow.
„ diodon. Ehr. .	Killakee, co. Dublin.
„ tetraodon. Ehr., .	Killakee, Feather Bed Mountain, co. Dublin.
„ camelus. Ehr., .	Feather Bed Mountain, co. Dublin.
Eupodiscus. Ehr.	
„ argus. Ehr., .	Dublin Bay.

Fragillaria. Lyng.	
„ capucina. Desmar.	Everywhere in fresh water.
„ virescens. Ralfs,	Friarstown, Piperstown, Killakee, co. Dublin; Glencree, Greenane, co. Wicklow.
„ æqualis. Heiberg,	Oyster Beds, Malahide, Co. Dublin.
„ maxima. O'Meara,	Aghold, co. Wicklow.
„ crotonensis. Kitton	Newcastle Lyons, co. Dublin; Greenane, co. Wicklow.
„ tenuicollis. Heiberg.	Malahide, co. Dublin; Greenane, co. Wicklow.
„ striatula. Lyng.	Ballybrack, Monkstown, Kingstown, co. Dublin; Arklow, co. Wicklow.
„ construens. Ehr.,	Piperstown, Killakee, co. Dublin.
„ undata. Wm. Sm.,	Bohernabreena, Killakee, co. Dublin.
„ mesolepta. Rab.,	Malahide, Ringsend, co. Dublin.
Gomphonema. Agardh.	
„ geminatum. Agardh.	R. Dodder, Bohernabreena, co. Dublin.
„ constrictum. Ehr.,	Lucan, Friarstown, Malahide, co. Dublin; Arklow, co. Wicklow.
„ acuminatum. Ehr.,	Friarstown, R. Dodder, co. Dublin; Powerscourt, Arklow, co. Wicklow.
„ dichotomum. Kütz.	Powerscourt, co. Wicklow.
„ tenellum. Wm. Sm.	Lucan, Malahide, co. Dublin; Arklow, co. Wicklow.
„ capitatum. Ehr.,	Newcastle Lyons, co. Dublin.
„ olivaceum. Ehr.,	Very common.
„ intricatum. Kutz,	Powerscourt, Arklow, co. Wicklow.
„ vibrio. Ehr.,	Malahide, co. Dublin; Arklow, co. Wicklow.
„ elongatum. Wm. Sm.	Arklow, co. Wicklow.
„ insigne. Greg.	Friarstown, Boat Harbour, Dolphin's Barn, co. Dublin; Powerscourt, Glencree, co. Wicklow.
„ hebridense. Greg.	Killakee, co. Dublin.
„ rostratum. Wm. Sm.	Pond in Trinity College Botanic Gardens, co. Dublin; Arklow, co. Wicklow.
„ minutissimum. Greg.	Friarstown. R. Dodder, co. Dublin.
„ sarcophagus. Greg.	R. Dodder, co. Dublin.
Himantidium. Ehr.	
„ pectinale. Kutz.	Carrickmacrilly, Powerscourt, co. Wicklow.
„ undulatum. Wm. Sm.	Rathdrum, Powerscourt, co. Wicklow.
„ Soleirolii. Kütz.	Piperstown, Feather Bed Mountain, R. Dodder, co. Dublin; Powerscourt, co. Wicklow.
„ arcus. Wm. Sm.,	Glencree, Powerscourt. Rathdrum, co. Wicklow.

Himantidium. Ehr.	
„ bidens. Ehr.,	Killakee, co. Dublin.
„ gracile. Ehr.,	Powerscourt, co. Wicklow.
„ majus. Wm. Sm.	Rathdrum, Lugnaquilla, co. Wicklow.
„ nodosum. Ehr.,	Powerscourt, co. Wicklow.
Homeocladia. Agardh.	
„ Martiana. Agardh,	Monkstown, co. Dublin.
„ filiformis. Wm. Sm.	Howth, co. Dublin.
„ sigmoidea. Wm. Sm.	North Wall, co. Dublin.
Isthmia. Agardh.	
„ nervosa. Kütz,	Malahide, co. Dublin.
„ enervis. Ehr.,	Malahide, co. Dublin.
Lichmophora. Agardh.	
„ flabellata. Agardh,	Malahide, Howth, co. Dublin.
„ splendida. Grev.	Sutton, Ballybrack, co. Dublin.
Lysigonium. Link.	
„ nummuloides. Wm. Sm.	Malahide, Dollymount, co. Dublin; Salt Ditch near Wicklow.
„ Westii. Wm. Sm.,	Dollymount, Oyster Beds, Howth, co. Dublin; Salt ditch near Wicklow.
Mastogloia. Thwaites & Wm. Sm.	
„ lanceolata. Thwaites.	Dollymount, co. Dublin; Kilcool, co. Wicklow.
„ Danseii. Thwaites,	Kilcool, co. Wicklow.
„ apiculata. Wm. Sm.	Dollymount, co. Dublin.
„ Smithii. Thwaites,	Kilcool, Greystones, co. Wicklow.
„ Grevillii. Wm. Sm.	Kilcool, co. Wicklow.
Melosira. Agardh.	
„ Borreri. Greville,	Malahide, Dollymount, Howth, co. Dublin; Salt ditch near Wicklow.
„ subflexilis. Kütz,	Greystones, co. Wicklow.
„ varians. Agardh,	Common in fresh water.
„ distans. Kütz.	Killakee, Dundrum, co. Dublin; Kilcool, co. Wicklow.
Meridion. Agardh.	
„ circulare. Agardh,	Friarstown, Killiney, co. Dublin; Glencree, co. Wicklow.
Navicula. Bory.	
„ nobilis. Ehr.,	Feather Bed Mountain, co. Dublin; Lugnaquilla, co. Wicklow.
„ major. Kütz.	Killakee, Feather Bed Mountain, co. Dublin; Arklow, Greenane, co. Wicklow.
„ viridis. Nitzsch,	Friarstown, Feather Bed Mountain, co. Dublin; Greenane, Lugnaquilla, co. Wicklow.

Navicula. Bory.

„	alpina. Wm. Sm., .	Killakee, Feather Bed Mountain, co. Dublin.
„	pachyptera. Ehr., .	R. Dodder, Feather Bed Mountain, co. Dublin; Glencree, co. Wicklow.
„	distans. Wm. Sm., .	Malahide, Dalkey, Howth, Dollymount, co. Dublin.
„	Trevelyana. Donkin, .	Malahide, co. Dublin.
„	oblonga. Kütz. .	Newcastle Lyons, co. Dublin; Kilcool, Powerscourt, co. Wicklow.
„	divergens. Wm. Sm.,	Featherbed Mountain, Killakee, co. Dublin.
„	borealis. Ehr., .	Featherbed Mountain, co. Dublin; Glencree, co. Wicklow.
„	tabellaria. Ehr., .	Friarstown, Piperstown, Killakee, co. Dublin; Glencree, Lugnaquilla, co. Wicklow.
„	var. acrosphæria. Bréb,	Carnew, Greenane, co. Wicklow.
„	clepsydra. Donkin, .	Ireland's Eye, co. Dublin.
„	gibba. Ehr., .	Featherbed Mountain, co. Dublin; Rathdrum, Carrickmacrilly, Lugnaquilla, co. Wicklow.
„	hemiptera. Kütz. .	Lucan, Featherbed Mountain, Friarstown, co. Dublin; Rathdrum, co. Wicklow.
„	apiculata. Bréb. .	Malahide, Ireland's Eye, co. Dublin.
„	Brebissonii. Kütz. .	Featherbed Mountain, Killakee, co. Dublin; Rathdrum, co. Wicklow.
„	icostauron. Ehr., .	Featherbed Mountain, co. Dublin.
„	isocephala. Ehr., .	Friarstown, co. Dublin.
„	nodosa. Ehr., .	Friarstown, Featherbed Mountain, co. Dublin; Kilcool, Lugnaquilla, co. Wicklow.
„	bicapitata. O'Meara,	Kilcool, co. Wicklow.
„	var. crucifera. Pinnularia interrupta. Wm. Sm., .	Glencree, co. Wicklow.
„	var constricta. Grunow,	Featherbed Mountain, co. Dublin.
„	termes. Ehr., .	Featherbed Mountain, co. Dublin.
„	microstauron. Ehr.,	Featherbed Mountain, co. Dublin.
„	pinnularia. Cleve., .	Portmarnock, co. Dublin.
„	cuneata. O'Meara, .	Featherbed Mountain, co. Dublin.
„	acuminata. Wm. Sm.	Featherbed Mountain, Killakee, co. Dublin; Kilcool, co. Wicklow.
„	retusa. Bréb., .	Malahide, co. Dublin.
„	integra. Wm. Sm., .	Powerscourt, co. Wicklow.
„	pachycephala. Rab., .	Featherbed Mountain, Ballybrack, co. Dublin.
„	subcapitata. Greg. .	Friarstown, Featherbed Mountain, Killakee, co. Dublin.

Navicula. Bory.		
„	gracillima. Greg. .	Friarstown, Piperstown, co. Dublin; Rathdrum, Lugnaquilla, co. Wicklow.
„	cuspidata. Wm. Sm.,	River Dodder, co. Dublin; Powerscourt, co. Wicklow.
„	rhombica. Greg. .	Malahide, co. Dublin; Newcastle, co. Wicklow.
„	tumens. Wm. Sm. .	Salt Hill, co. Dublin; Newcastle, co. Wicklow.
„	rostrata. Ehr., .	Salt Hill, co. Dublin; Newcastle, co. Wicklow.
„	ovulum. Grunow, .	Malahide, co. Dublin.
„	latiuscula. Kütz. .	Newcastle, co. Wicklow.
„	Barkeriana. O'Meara,	Dalkey, co. Dublin; Newcastle, co. Wicklow.
„	amphisbæna. Bory. .	River Dodder, Dundrum, Blackrock, Malahide, co. Dublin; Newcastle, co. Wicklow.
„	subsalina. Ehr. .	Malahide, co. Dublin; Newcastle, co. Wicklow.
„	elegans. Wm. Sm. .	Blackrock, co. Dublin; Newcastle, co. Wicklow.
„	angulosa. Greg. .	Malahide, co. Dublin; Newcastle, co. Wicklow.
„	semiplena. Greg. .	Malahide, co. Dublin.
„	liber. Wm. Sm. .	Dollymount, co. Dublin; Newcastle, co. Wicklow.
„	iridis. Ehr. .	Kilcool, Glenmalure, co. Wicklow.
„	var. amphigomphus . Ehr. .	Piperstown, co. Dublin; Kilcool, co. Wicklow.
„	var. affinis. Ehr. .	Killakee, co. Dublin; Newcastle, Kilcool, Lugnaquilla, co. Wicklow.
„	dubia. Ehr. .	Pond, Trinity College Botanic Garden, co. Dublin; Kilcool, co. Wicklow.
„	limosa. Kütz. .	Pond, Trinity College Botanic Garden, co. Dublin; Powerscourt, co. Wicklow.
„	var. gibberula. Kütz.	Powerscourt, co. Wicklow.
„	var. truncata. Kutz.	Friarstown, River Dodder, co. Dublin.
„	producta. Wm. Sm. .	Pond, Trinity College Botanic Garden, co. Dublin.
„	maxima. Greg. .	Portmarnock, Ireland's Eye, co. Dublin; Newcastle, co. Wicklow.
„	subula. Kütz, .	Malahide, co. Dublin.
„	veneta. Kutz. .	Dollymount, co. Dublin; Bray River, co. Wicklow.
„	Johnsonii. Wm. Sm.	Malahide, Portmarnock, co. Dublin.
„	simulans. Donkin, .	Malahide, co. Dublin.

Navicula. Bory.

,,	delginensis. O'Meara,	Dalkey Island, Malahide, co. Dublin.
,,	rhomboides. Ehr. .	Friarstown, Piperstown, co. Dublin Rathdrum, Glencree, co. Wicklow.
,,	serians. Bréb, .	Piperstown, co. Dublin; Glencree, co. Wicklow.
,,	crassinervia. Bréb, .	Friarstown, Piperstown, Featherbed Mountain, co. Dublin; Rathdrum, Glencree, co. Wicklow.
,,	dirhynchus. Ehr. .	Featherbed Mountain, co. Dublin.
,,	rostellum. Wm. Sm.	Killakee, co. Dublin.
,,	lævissima. Kütz. .	Pond, Trinity College Botanic Garden, co. Dublin.
,,	oblongella. Naegelli,	Killakee, co. Dublin.
,,	incurva. Greg. .	Portmarnock, co. Dublin.
,,	punctulata. Wm. Sm.	Portmarnock, co. Dublin.
,,	humerosa. Bréb, .	Portmarnock, Malahide, co. Dublin; Kilcool, co. Wicklow.
,,	maculosa. Donkin, .	Dollymount, co. Dublin.
,,	pusilla. Wm. Sm. .	Newcastle, co. Wicklow.
,,	var. lanceolata. Grunow	Portmarnock, co. Dublin; Newcastle, co. Wicklow.
,,	tumida. Wm. Sm. .	Kilcool, Powerscourt, co. Wicklow.
,,	Smithii. Bréb. .	Kilcool, co. Wicklow.
,,	Collisiana. O'Meara, .	Kilcool, co. Wicklow.
,,	elliptica. Kütz. .	Lucan, Killakee, Bohernabreena, co. Dublin; Glencree, Powerscourt, co. Wicklow.
,,	var. costata. O'Meara,	Newcastle, co. Wicklow.
,,	lyra. Ehr. .	Malahide, Portmarnock, co. Dublin; Kilcool, co. Wicklow.
,,	var. forcipata. Greville.	Malahide, Portmarnock, Dollymount, Dalkey, co. Dublin.
,,	pygmæa. Kütz. .	Malahide, Portmarnock, Dollymount, co. Dublin.
,,	musca. Greg. .	Dollymount, co. Dublin.
,,	bombus. do. .	Malahide, Portmarnock, co. Dublin.
,,	didyma. Ehr. .	Malahide, Portmarnock, Dollymount, co. Dublin.
,,	apis. Kütz. .	Malahide, co. Dublin.
,,	directa. Wm. Sm. .	Malahide, co. Dublin.
,,	lanceolata. Kütz. .	Kilcool, co. Wicklow.
,,	radiosa. do. .	River Dodder, Bohernabreena, Glennasmole, Killakee, co. Dublin.
,,	gracilis. Ehr. .	Killiney, Ballybrack, co. Dublin.
,,	acuta. Wm. Sm. .	River Dodder, pond, Trinity College Botanic Garden, co. Dublin; Kilcool, co. Wicklow.
,,	peregrina. Ehr. .	Howth, co. Dublin; Newcastle, co. Wicklow.

Navicula. Bory.		
,,	digito-radiata. Greg. .	Kilcool, co. Wicklow.
,,	Ergadensis. Greg. .	Portmarnock, Malahide, co. Dublin.
,,	cyprinus. Ehr. .	Malahide, Portmarnock, Dalkey, co. Dublin; sea-weeds near Wicklow town.
,,	solaris. Greg. .	Malahide, co. Dublin.
,,	veneta. Kütz. .	Killakee, Clontarf, co. Dublin.
,,	Heufleri. Grunow, .	Powerscourt, co. Wicklow.
,,	fortis. Greg. .	Malahide, co. Dublin.
,,	arenaria. Donkin, .	Portmarnock, co. Dublin.
,,	inflexa. Greg. .	Malahide, co. Dublin.
,,	carassius. Ehr. .	Dundrum, co. Dublin; Glencree, Kilcool, co. Wicklow.
,,	mutica. Kütz. .	Killakee, co. Dublin; Glencree, co. Wicklow.
,,	inflata. do. .	River Dodder, Killakee, co. Dublin; Glencree, Kilcool, co. Wicklow.
,,	mesolepta. Ehr. .	Common in elevated districts.
,,	anglica. Ralfs. .	Killakee, pond, Trinity College Botanic Garden, co. Dublin.
,,	var. sublinearis. Donk.	Killakee, co. Dublin.
,,	angustata. Wm. Sm.	Malahide, co. Dublin; Black Castle, co. Wicklow.
,,	binodis. Ehr. .	Powerscourt, co. Wicklow.
,,	dicephala. do. .	Friarstown, Lucan, Killakee, co. Dublin; Powerscourt, co. Wicklow.
,,	rhynchocephala. Kütz.	River Dodder, Dundrum, co. Dublin; Kilcool, co. Wicklow.
,,	rostellifera. Greg. .	Portmarnock, co. Dublin.
,,	cancellata. Donkin. .	Malahide, Potmarnock, co. Dublin.
,,	minor. Greg. .	Dollymount, co. Dublin.
,,	incurvata. Greg. .	Dollymount, co. Dublin.
Nitzschia. Hassall.		
,,	sigmoidea. Wm. Sm. .	Lucan, Newcastle Lyons, Dundrum, co. Dublin.
,,	Brebissonii. Wm. Sm.	Friarstown, R. Dodder, Bohernabreena, co. Dublin.
,,	sigma. Wm. Sm. .	Malahide, Portmarnock, co. Dublin; Kilcool, co. Wicklow.
,,	linearis. Wm. Sm. .	Friarstown, R. Dodder, co. Dublin; Powerscourt, co. Wicklow.
,,	spathulata. Wm. Sm.	Malahide, co. Dublin.
,,	angularis. Wm. Sm. .	Malahide, co. Dublin.
,,	lanceolata. Wm. Sm.	Salt Hill, co. Dublin.
,,	amphioxus. Wm. Sm.	Lucan, R. Dodder, Dundrum, co. Dublin; Kilcool, co. Wicklow.
,,	vivax. Wm. Sm. .	Glenmalure, co. Wicklow.
,,	dubia. Wm. Sm. .	Malahide, Salt Hill, co. Dublin.

Nitzschia. Hassall.	
,, bilobata. Wm. Sm.	Newcastle, co. Wicklow.
,, plana. Wm. Sm.	Newcastle, co. Wicklow.
,, birostrata. Wm. Sm.	Salt Hill, co. Dublin.
,, closterium. Wm. Sm.	Salt Hill, co. Dublin.
,, curvula. Wm. Sm.	Lucan, R. Dodder, co. Dublin.
,, panduriformis. Greg.	Portmarnock, salt ditch near town of Wicklow.
,, virgata. Roper,	Malahide, Portmarnock, co. Dublin.
,, hyalina. Greg.	Malahide, co. Dublin.
,, palea. Wm. Sm.	Kilcool, co. Wicklow.
,, insignis. Greg.	Dalkey, co. Dublin; Newcastle, co. Wicklow.
,, thermalis. Grunow,	Killakee, Blackrock, co. Dublin; Kilcool, Powerscourt, co. Wicklow.
,, Hungarica. Grunow,	Kingstown, co. Dublin.
,, minutissima. Wm. Sm.	North Wall, co. Dublin.
Odontidium. Kütz.	
,, sinuatum. Wm. Sm.	R. Dodder, co. Dublin; Slate Quarry, Glenmore, co. Wicklow.
,, hyemale. Lyngb.	Black Castle, co. Wicklow.
,, mesodon. Ehr.	Friarstown, Piperstown, co. Dublin; Glencree, Powerscourt, co. Wicklow.
,, anomalum. Wm. Sm.	Newcastle, co. Wicklow.
,, tenue. Kütz.	Powerscourt, co. Wicklow.
,, elegans. Kütz.	Powerscourt, Rathdrum, Black Castle, co. Wicklow.
Odontodiscus. Ehr.	
,, excentricus. Ehr.	Dollymount, Malahide, Dalkey, Ballybrack, co. Dublin.
Orthosira. Thwaites.	
,, arenaria. D. Moore,	Killakee, co. Dublin; Kilcool, co. Wicklow.
,, sulcata. Ehr.	Malahide, Dalkey, co. Dublin; near town of Wicklow.
,, orichalcea. Wm. Sm.	Killakee, co. Dublin; Glencree, co. Wicklow.
,, roseana. Rab.	Killakee, co. Dublin.
Plagiogramma. Greville,	
,, staurophorum. Greg.	Dollymount Oyster Beds, Malahide, co. Dublin.
Pleurosigma. Wm. Sm.	
,, formosum. Wm. Sm.	Howth, Malahide, co. Dublin.
,, decorum. Wm. Sm.	Salt Hill, co. Dublin.
,, speciosum. Wm. Sm.	Salt Hill, co. Dublin.
,, elongatum. Wm. Sm.	Bray, Newcastle, co. Wicklow.
,, nubecula. Wm. Sm.	Malahide, co. Dublin; Kilcool, co. Wicklow.

Pleurosigma. Wm. Sm.	
„ delicatulum. Wm. Sm.	Malahide, co. Dublin; Salt Marsh, near town of Wicklow.
„ strigosum. Wm. Sm.	Dalkey, Howth, Malahide, co. Dublin.
„ quadratum. Wm. Sm.	Portmarnock, Malahide, co. Dublin; Salt Marsh, near town of Wicklow.
„ angulatum. Wm. Sm.	Malahide, co. Dublin; Salt Marsh, near town of Wicklow.
„ æstuarii. Wm. Sm. .	Malahide, co. Dublin.
„ balticum. Wm. Sm.	Dalkey, Portmarnock, co. Dublin; Salt Marsh, near town of Wicklow.
„ acuminatum. Wm. Sm.	Salt Hill, Portmarnock, co. Dublin.
„ distortum. Wm. Sm.	Portmarnock, Malahide, co. Dublin.
„ fasciola. Wm. Sm. .	Malahide, co. Dublin; Salt Marsh near town of Wicklow.
„ macrum. Wm. Sm. .	Ireland's Eye, co. Dublin.
„ prolongatum. Wm. Sm.	Malahide, co. Dublin; Salt Marsh, near town of Wicklow.
„ tenuissimum. Wm. Sm.	Malahide, co. Dublin.
„ littorale. Wm. Sm. .	Salt Marsh, near town of Wicklow.
„ hippocampus. Wm. Sm.	Portmarnock, co. Dublin; Newcastle, co. Wicklow.
„ attenuatum. Wm. Sm.	Grand Canal Portobello, Bohernabreena, co. Dublin; Kilcool, co. Wicklow.
„ lacustre. Wm. Sm. .	Grand Canal, Ditch, Phœnix Park, co. Dublin.
„ Spencerii. Wm. Sm.	Lucan, R. Dodder, Dundrum, co. Dublin; Dunlavin, co. Wicklow.
„ marinum. Donkin, .	Malahide, Kingstown, co. Dublin.
„ lanceolatum. Donkin.	Malahide, co. Dublin.
„ Wansbeckii. Donkin.	Newcastle, co. Wicklow.
„ Normanii. Ralfs. .	Dalkey, co. Dublin.
„ naviculaceum. Bréb.	Dublin Bay.
„ intermedium. Wm. Sm.	Portmarnock, co. Dublin.
Podocystis. Kütz.	
„ adriatica. Kütz. .	Dalkey, Sutton, co. Dublin.
Podosira. Ehr.	
„ maculata. Wm. Sm.	R. Liffey, Dublin.
Podosphenia. Ehr.	
„ Ehrenbergii. Kütz. .	Portmarnock, co. Dublin.
„ Lyngbyei. Kütz. .	Malahide, co. Dublin.
„ Jurgensii. Kütz. .	Malahide, co. Dublin.
Ralfsia. O'Meara.	
„ hyalina. Kütz. .	Newcastle, co. Wicklow.

Rhaphoneis. Ehr.	
„ rhombus. Ehr.	Dollymount, co. Dublin.
„ Lorenziana. Grunow.	Dollymount, co. Dublin.
„ Harrisonii. Wm. Sm.	Friarstown, R. Dodder, Bohernabreena co. Dublin.
Rhabdonema. Kütz.	
„ arcuatum. Lyngb.	Malahide, Ballybrack, co. Dublin.
„ minutum. Kutz.	Malahide, Ballybrack, Salt Hill, Dollymount, co. Dublin.
„ adriaticum. Kütz.	Malahide, co. Dublin.
Rhipidophora. Kütz.	
„ elongata. Kütz.	Malahide, co. Dublin.
„ paradoxa. Kütz.	Ballybrack, co. Dublin.
Rhizosolenia. Ehr.	
„ styliformis. Brightwell	Dalkey, co. Dublin.
„ setigera. Brightwell.	Dalkey, co. Dublin.
„ calcar-avis. Schultze.	Malahide, co. Dublin.
Rhoicosphenia. Grunow.	
„ curvata. Kütz.	R. Dodder, co. Dublin.
„ marina. Wm. Sm.	Kingstown, Malahide, co. Dublin.
Sceptroneis. Ehr.	
„ caduceus. Ehr.	Monkstown, co. Dublin.
Schizonema. Agardh.	
„ crucigerum. Wm. Sm.	Malahide, Portmarnock, Salt Hill, co. Dublin.
„ Smithii. Agardh.	Howth, Salt Hill, Malahide, co. Dublin.
„ divergens. Wm. Sm.	Malahide, Salt Hill, co. Dublin.
„ mucosum. Kütz.	Malahide, Howth, co. Dublin.
„ Grevillii. Agardh.	Malahide, Merrion, co. Dublin.
„ helmintosum. Chauvin	Howth, Malahide, co. Dublin.
„ comoides. Agardh.	Howth, Malahide, co. Dublin.
„ parasiticum. Harvey.	Malahide, Salt Hill, co. Dublin.
„ obtusum. Grev.	Merrion, Malahide, co. Dublin.
„ Dillwynii. Agardh.	Merrion, co. Dublin.
Scoliopleura. Grunow.	
„ Jennerii. Wm. Sm.	Portmarnock, Malahide, co. Dublin.
„ Westii. Wm. Sm.	Portmarnock, Malahide, co. Dublin.
„ convexa. Wm. Sm.	Portmarnock, Malahide, co. Dublin.
Striatella. Agardh.	
„ unipunctata. Lyngb.	Howth, Salt Hill, co. Dublin; Bray, co. Wicklow.
Stauroneis. Ehr.	
„ Phœnicenteron. Ehr.	Killakee, co. Dublin; Kilcool, Glenmalure, co. Wicklow.
„ gracilis. Ehr.	Friarstown, Killakee, co. Dublin; Powerscourt, co. Wicklow.

Stauroneis. Ehr.		
,,	salina. Wm. Sm. .	Newcastle, co. Wicklow.
,,	crucicula. Wm. Sm.	Newcastle, co. Wicklow.
,,	anceps. Ehr. .	Friarstown, Lucan, Killakee, co. Dublin.
,,	linearis. Ehr. .	Lucan, Blackrock, co. Dublin ; Glencree, co. Wicklow.
,,	aspera. Kütz. .	Portmarnock, Malahide, Dalkey, co. Dublin.
,,	amphicephala. Kütz. .	Killakee, co. Dublin. Glenchree, co. Wicklow.
,,	amphioxus. Greg. .	Malahide, co. Dublin.
,,	exilis. Kütz. .	Killakee, co. Dublin.
,,	Mackintoshii. O'Meara	Stomachs of ascidians. Monkstown, co. Dublin.
Surirella. Turpin.		
,,	biseriata. Bréb. .	Feather-bed mountain, co. Dublin. Powerscourt, co. Wicklow.
,,	linearis. Wm. Sm. .	Killakee, co. Dublin. Rathdrum, Lugnaquilla, co. Wicklow.
,,	constricta. Wm. Sm.	Newcastle, co. Wicklow.
,,	splendida. Kütz. .	Featherbed mountain, co. Dublin.
,,	nobilis. Wm. Sm. .	Featherbed mountain, co. Dublin.
,,	striatula. Turpin, .	Malahide, co. Dublin. Bray, co. Wicklow.
,,	gemma. Ehr. .	Howth, Portmarnock, Dollymount, co. Dublin. Bray, co. Wicklow.
,,	fastuosa. Ehr. .	Howth, Dalkey, Malahide, co. Dublin. Kilcool, co. Wicklow.
,,	craticula. Ehr. .	Marsh near town of Wicklow.
,,	ovalis. Bréb .	Portmarnock, co. Dublin.
,,	panduriformis. Wm. Sm.	R. Dodder, co. Dublin.
,,	Brightwellii. Wm. Sm.	Newcastle, co. Wicklow.
,,	ovata. Kütz. .	Lucan, co. Dublin.
,,	salina. Wm. Sm. .	Malahide, Clontarf, co. Dublin.
,,	angusta. Kütz. .	R. Dodder, Dundrum, co. Dublin. Powerscourt, co. Wicklow.
,,	minuta. Bréb. .	Friarstown, R. Dodder, Dundrum, co. Dublin. Blackcastle, Powerscourt, co. Wicklow.
,,	elegans. Ehr. .	Killakee, co. Dublin.
,,	crumena. Bréb. .	Newcastle, co. Wicklow.
,,	apiculata. Wm. Sm. .	Killakee, co. Dublin. Powerscourt, co. Wicklow.
Syndendrium. Ehr.		
,,	diadema. Ehr. .	Kingstown, co. Dublin.

Synedra. Ehr.		
„	crystallina. Lyngb.	Salt Hill, co. Dublin.
„	fulgens. Grev.	Malahide, Dublin Bay.
„	superba. Kütz.	Malahide, co. Dublin.
„	amphicephala. Kütz.	Kilcool, Powerscourt, co. Wicklow.
„	investiens. Wm. Sm.	Malahide, Kingstown Harbour, Salt Hill, co. Dublin.
„	acuta. Kütz.	Friarstown, Malahide, St. Fenton's Well, Sutton, co. Dublin.
„	tenuissima. Kütz.	Bohernabreena, Dundrum, St. Fenton's Well, Sutton, co. Dublin.
„	gracilis. Kütz.	Salt Hill, co. Dublin.
„	lunaris. Ehr.	Lucan, co. Dublin. Glencree, Glenmalure, co. Wicklow.
„	biceps. Kütz.	Killakee, co. Dublin. Carrickmacreilly, co. Wicklow.
„	pulchella. Kütz.	Kilcool, co. Wicklow.
„	var. gracilis. Wm. Sm.	Blackcastle, Newcastle, co. Wicklow.
„	var. acicularis. Wm. Sm.	Kilcool, Blackcastle, co. Wicklow.
„	var. lanceolata. Wm. Sm.	Howth, co. Dublin. Kilcool, Blackcastle, co. Wicklow.
„	var. linearis. Wm. Sm.	Malahide, co. Dublin. Blackcastle, co. Wicklow.
„	capitata. Ehr.	Lucan, Dundrum, co. Dublin. Kilcool, co. Wicklow.
„	ulna Ehr.	R. Dodder, co. Dublin. Ditch near town of Wicklow.
„	var. oxyrhynchus. Kütz	R. Dodder, co. Dublin.
„	var. amphirhynchus. Ehr.	Bohernabreena, R. Dodder, co. Dublin. Greenane, Powerscourt, co. Wicklow.
„	longissima. Wm. Sm.	Malahide, St. Fenton's Well, Sutton, co. Dublin. Ditch near town of Wicklow.
„	splendens. Kütz.	Lucan, Friarstown, Bohernabreena, Malahide, co. Dublin.
„	var. radians. Kütz.	Friarstown, co. Dublin.
„	salina. Wm. Sm.	Malahide, Clontarf, co. Dublin.
„	Gallionii. Ehr.	Malahide, Howth, co. Dublin.
„	spathulata. O'Meara.	Well, Newcastle Lyons, co. Dublin.
„	barbatula. Kütz.	Salt Hill, co. Dublin.
„	tubulata. Agardh.	Malahide, co. Dublin. Newcastle, co. Wicklow.
„	arcus. Kütz.	Malahide, Monkstown, co. Dublin. Bray, co. Wicklow.
„	affinis. Kütz.	Malahide, Clontarf, co. Dublin.
„	Nitzschoides. Grunow.	Rush, co. Dublin.
„	putealis. O'Meara,	St. Fenton's Well, Sutton, co. Dublin
„	Smithii. O'Meara,	St. Fenton's Well, Sutton, co. Dublin.

Tabellaria. Ehr.	
„ flocculosa. Roth.	Abundant in fresh water.
„ fenestrata. Lyngb.	With the preceding.
Toxonidea. Donkin.	
„ Gregoriana. Donkin	Ireland's Eye, co. Dublin.
„ insignis. Donkin,	Malahide, co. Dublin.
Triceratium. Ehr.	
„ alternans. Bailey,	Mud of R. Liffey, Dublin Bay.
„ amblyoceros. Ehr.	Stomachs of oysters. Poolbeg, co. Dublin.
„ exiguum. Wm. Sm.	R. Liffey, co. Dublin.
Tryblionella. Wm. Sm.	
„ scutellum. Wm. Sm.	Murrough, near town of Wicklow.
„ gracilis. Wm. Sm.	Newcastle, co. Wicklow.
„ marginata. Wm. Sm.	Portmarnock, co. Dublin.
„ punctata. Wm. Sm.	Malahide, Portmarnock, co. Dublin. Newcastle, co. Wicklow.
„ acuminata. Wm. Sm.	Howth, Malahide, Portmarnock, co. Dublin. Salt ditch near town of Wicklow.
„ angustata. Wm. Sm.	Friarstown, R. Dodder, co. Dublin.
„ apiculata. Greg.	Monkstown, Howth, co. Dublin.
„ constricta. Greg.	Monkstown, co. Dublin. Salt ditch near town of Wicklow.
„ lævidensis. Wm. Sm.	Malahide, co. Dublin. Newcastle, co. Wicklow.
„ Hantzschiana. Grunow.	Newcastle, co. Wicklow.
„ Neptuni. Schuman,	Howth, co. Dublin.

THE LICHENS OF THE COUNTIES OF DUBLIN AND WICKLOW.

BY

GREENWOOD PIM, M.A., F.L.S.

[Read March 18, 1878.]

The annexed list of Lichens is compiled chiefly from the catalogue given by Dr. Taylor in the Flora Hibernica and that by Admiral Jones, published in the proceedings of the Dublin Natural History Society. This was submitted to the well-known Lichenologist, Mr. Isaac Carroll, of Cork, who has added a very large number of species, many of which have been detected since the time of Admiral Jones. Mr. Carroll believes that there are at least 140 species of lichens in Dublin and Wicklow still unrecorded, inasmuch as those in the Flora of County Cork amount to about 290, while those of this district hitherto collected only number 150.

The compiler wishes to take this opportunity of expressing his thanks to Mr. Carroll for his invaluable assistance in making out the following list, which doubtless would have been more perfect had Mr. Carroll explored this region as thoroughly as he has examined Cork and Kerry.

Family. COLLEMACEI.

Tribe. Lichinei.

Genus. Ephebe. Fr.		
pubescens. Fr.	Dublin Mts.	W. Archer.
Genus. Lichina. Ag.		
pygmæa. Ag.	Dublin.	D. Moore.
confinis. Ag.	Dublin.	D. Moore.

Tribe. Collemei.

Genus. Collema. Ach.	
pulposum. Ach.	Probably frequent. I.C.
var. tenax. Ach.	Taylor in Flor. Hib. Near Dublin.
=C. limosum.	Mr. Carroll believes that the true C. limosum Ach. is not Irish.
nigrescens. L.	Dargle. Flor. Hib.

Genus. Leptogium. Ach.
- fragrans. Ach. — Dargle. Flor. Hib. Mr. Carroll is doubtful about this form.
- tremelloides. Ach. — Dargle. Whitley Stokes.
- palmatum. Nyl. — Luggelaw. Crombie. Jones.
- muscicola. Nyl. — Luggelaw. Jones.

Family. LICHENACEI.

Tribe. Calicei.

Genus. Calicium. Pers.
- sphærocephalum. Ach. (= trachelinum. Ach). — Powerscourt. Dr. Stokes.

Tribe. Sphærophorei.

Genus. Sphærophoron. Pers.
- coralloides. P. — Rocks. Common.

Tribe. Stereocaulei.

Genus. Stereocaulon. Schreb. — paschale. Ach. var. denudatum. Luggelaw. Lough Bray. Jones.

Tribe. Cladoniei.

Genus. Pycnothelia. Ach.
- papillaria. Duf. — Howth. Jones.

Genus. Cladonia. Hffm.
- cervicornis. Schær. — Lough Bray. Jones.
- pyxidata. Fr. — Abundant.
- fimbriata. Hffm. — Common.
- gracilis. Hffm. — Kilranelagh. Jones.
- cornuta. Fr. — Dargle. G. Pim.
- degenerans. Flk. var. anomala. Ach. — Kelly's glen. D. Moore.
- furcata. Hffm. — Common. Dargle. G. P.
- cornucopioides. Fr. — Frequent.
- deformis. Hffm. — Howth. D. Moore.
- digitata. Hffm. — Kelly's glen. D. Moore.
- macilenta. Hffm. — Powerscourt. G. Pim.
- var. carcata. Ach. — Killiney. D. Moore.
- bellidiflora. Schær. — Kelly's glen. D. Moore.
- rangiferina. Hffm. — Heaths and commons.
- uncialis. Hffm. — Do. Do.

Tribe. Usnei.

Genus. Usnea. Hffm.
- barbata. Fr. — On trees and rocks, common and variable. Powerscourt, &c.

Tribe. Ramalinei.	
Genus. Alectoria. Ach.	
jubata. Ach.	Lough Bray and Killiney. Flor. Hib. Luggelaw. Jones.
Genus. Evernia. Ach.	
furfuracea. Mann.	Lough Bray. Flor. Hib. Rochestown Hill. Herb. T.C.D.
prunastri. L.	Powerscourt. Ovoca. Common.
Genus. Ramalina. Ach.	
scopulorum. Ach.	Rocks by the sea frequent. Howth.
calicaris. Fr.	var. canaliculata. Fr. Trees. I.C.
	var. fraxinea. Fr. Common. I.C.
	var. farinacea. L. Do. I.C.
	var. fastigiata. L. Do. I.C.
Tribe. Cetrariei.	
Genus. Cetraria. Ach.	
aculeata. Fr.	Heaths. I.C.
Genus. Platysma. Hffm.	
glaucum. L.	Luggelaw. Jones.
Tribe. Peltigerei.	
Genus. Nephromium. Nyl.	
lævigatum. Ach.	Luggelaw. Jones.
lusitanicum. Schaer.	Do.
Genus. Peltigera: Hffm.	
canina. L.	Very common.
rufescens. Hffm.	Frequent.
Tribe. Parmeliei.	
Genus. Stictina. Nyl.	
fuliginosa. Dicks.	Old trees.
sylvatica. L.	Powerscourt. G. P.
Genus. Ricasolia. De Not.	
herbacea. Huds.	Powerscourt. D. Moore.
Genus. Parmelia. Ach.	
caperata. L.	Rocks, &c. Common.
olivacea. L.	Rocks and trees. Frequent.
prolixa. Ach.	Howth. D. Moore.
physodes. L.	Powerscourt. G. S. Gough.
perlata. L.	Trees, rocks. Common.
var. ciliata. D.C	Rocks.
Borreri. Turn.	Near Wicklow. Dr. Maingay.
conspersa. Ehr.	Killiney. Jones.
saxatilis. L.	Rocks and trees. Common.
var. furfuracea. Schær.	Lough Bray. Flor. Hib.
lævigata. Sm.	Mountain rocks.
incurva. Pers.	Rare. Howth. D. Moore.

Genus.	Physcia. Nyl.	
	flavicans. Sw.	Dublin Mts. and Killiney. Flor. Hib. Lambay. I.C.
	parietina. L.	Trees and walls. Very common.
	lychnea. Ach.	Luggelaw. Jones.
	pulverulenta. Schreb.	Trees. Not rare. I.C.
	obscura. Ehr.	"Trees near Grand Canal at Lyons, probably frequent." I.C.
	stellaris. L.	Trees. Frequent.
	var. tenella.	Ditto.
	erosa. Borr.	Very rare. Dargle. Flor. Hib.
	aquila. Ach.	Maritime rocks.
Genus.	Umbilicaria, Hffm.	
	pustulata. Hffm.	Lough Dan. Jones.
	polyphylla. L.	Luggelaw. Jones.
	erosa. Web.	Ditto. Ditto.
	polyrhiza. L.	Tonelagee. Flor. Hib.
	proboscidea. Ach. var fimbriata. T. and B.	Glenmaher. I.C.
Tribe.	Lecanorei.	
Genus.	Pannaria. Delis.	
	carnosa. Dicks. var. determinata. Nyl.	Dublin. Mts. and Luggelaw. Jones.
Genus.	Amphiloma. Fr.	
	lanuginosum. Ach.	Shady rocks and banks. I.C.
Genus.	Squamaria. D.C.	
	crassa. Huds.	Skerries. D. Moore.
Genus.	Placodium, D.C.	
	murorum. Hffm.	Rocks, &c., common.
	citrinum Ach.	Walls. Frequent.
Genus.	Lecanora, Ach.	
	pruinosa. Sm.	Granite rocks near Dublin. Flor. Hib.
	tartarea. L.	Rocks. I.C.
	parella. L.	Rocks and trees.
	rupestris. Scop.	Rocks, &c.
	var. calva Dicks.	Limestone.
	varia. Ehr.	Trees and rocks.
	atra. Huds.	Rocks, especially near the coast; also trees. I.C.
	cinerea. L.	Rocks.
	sulphurea. Hffm.	Killiney. Jones.
	subfusca. L.	Rocks and trees. Common.
	var. coilocarpa.	Lambay. I.C.
	calcarea. L.	Limestone.

	var. Hoffmanni. Ach.	Near Portmarnock and Feltrim Hill. Fl. Hib.
	aurantiaca. Light.	Trees and rocks. Very variable.
	cerina. Ehr.	Trees. Not rare. I. C.
	sophodes Ach.	Trees and rocks. Frequent.
	var exigua. Ach.	Portmarnock. Fl. Hib.
	atrocinerea. Dicks.	Luggelaw. Jones.
	erysibe. Ach.	Near Dublin. Taylor.
	ventosa. L.	Near Dublin. Stokes. A submerged form. Luggelaw. Jones.
Genus.	Urceolaria Ach.	
	scruposa. L.	Portmarnock. Fl. Hib. Glendalough. Jones.
Genus.	Pertusaria. D.C.	
	Westringii. Ach.	Lough Bray. Turner.
	ceuthocarpa. Sm.	Lough Bray. Turner and Borrer.
	communis. D.C.	Trees, &c.
	fallax. P.	Ditto.
	ferruginea. L.	Ditto.
	pustulata. Ach.	Ditto.
Genus.	Thelotrema. Ach.	
	lepadinum. Ach.	Trees in mountainous districts.
Tribe.	Lecideei.	
Genus.	Lecidea. Ach.	
	atro-rufa. Dicks.	Djouce. Jones.
	lurida. Sw.	Glasnevin. D. Moore.
	decolorans. Flk.	Co. Wicklow. D. Moore. Lough Bray. Jones.
	vernalis. Ach.	Lough Dan. Jones.
	sanguinaria. L.	Lough Bray. Templeton. Jones.
	parasema. Ach.	Trees. Common. Bray. G.P.
	uliginosa. Schrad.	Dublin Mts. Lough Bray. Jones.
	tessellata. Flk.	Lough Bray. Jones.
	tenebrosa. Flot.	Killiney. Lough Bray. Luggelaw. Jones.
	polycarpa. Flk. var. declinans Nyl.	Killiney. D. Moore.
	rivulosa. Ach.	Mountain rocks. Lugnaquilla. I.C.
	contigua. Fr.	Rocks. Common.
	gelatinosa. Flk.	Kelly's Glen. D. Moore.
	canescens. Dicks.	Co. Wicklow. D. Moore. Usually barren.
	disciformis. Fr.	Rocks and trees. Howth and Killiney. Jones.
	atro-alba. Ach.	Rocks. Not rare. I.C.
	badio-atra. Flk.	Killiney. Jones.

	vesicularis. Hffm.	North wall. Brown. Sand hills, Baldoyle. Fl. Hib.
	pineti. Schrad.	Baltinglass. I.C.
	lutea. Dicks.	Luggelaw. Jones.
	albo-atra. Hffm. (= L. speirea. Fl. Hib.)	Portmarnock.
	melæna. Nyl.	Howth. Jones.
	milliaria. Fr.	Frequent.
	var. montana. Nyl.	Co. Wicklow. D. Moore.
	citrinella. Ach.	Turf. Co. Wicklow. D. Moore.
	muscorum. Sw.	Malahide. Carrington.
	geographica L.	Mountain rocks. Sugarloaf, &c.
	petræa. Wulf.	Rocks frequent.
	concentrica. Dav.	Rocks, &c., common.
	parmeliarium. Smrf.	Roundwood. Jones.
	cladoniaria. Nyl.	Kelly's Glen. D. Moore.
Genus.	Graphis. Ach.	
	scripta. Ach.	Trees. Frequent.
Genus.	Opegrapha. Ach.	
	atra. Pers.	Trees. Common.
	varia. Pers.	Trees. Common.
	vulgata. Ach.	Trees. Frequent.
Genus.	Stigmatidium. Mey.	
	crassum. Dub.	Old trees.
Genus.	Arthonia. Ach.	
	cinnabarina. Wallr.	Trees.
	astroidea. Ach. var Swartziana.	Trees. Common. I.C.
	varians. Dav.	parasitic on Lecanora subfusca. Lambay. I.C.
Tribe.	Pyrenocarpei.	
Genus.	Endocarpon. Hedw.	
	miniatum. L.	Rocks.
	fluviatile. D.C.	Dargle. Stokes. Luggelaw. Jones.
Genus.	Verrucaria. Pers.	
	mucosa. Whlnb.	Howth. D. Moore.
	epigaea. Pers.	Killiney. Taylor.
	margacea. Whlnb.	Wet rocks.
	maura. Whlnb.	Maritime rocks.
	viridula. Schrad.	Limestone.
	rupestris. Schrad.	Rocks, &c.
	var. muralis. Ach.	Near Dublin. D. Moore.
	calciseda. D. C.	Limestone.
	gemmata. Ach.	Trees. Frequent.
	epidermidis. Ach.	Trees. Common variable.

	lectissima. Fr.	Dargle. Fl. Hib.
	var. irrigua. Tayl.	
	calcaricola. Mudd.	Killiney. Jones.
	nitida. Schrad.	Trees.
	nigrescens. Pers.	Dublin. Jones.
	umbrina ?	Dargle. Fl. Hib.
Genus.	Endococcus. Nyl.	
	erraticus. Mass.	Killiney. Jones.

THE FUNGI OF THE COUNTIES OF DUBLIN AND WICKLOW.

By GREENWOOD PIM, M.A., F.L.S.

[Read March 18, 1878.]

In presenting the accompanying list of Fungi of Dublin and Wicklow, the compiler wishes to point out that it cannot be considered as embodying all, or nearly all, the species to be found in the district. The reason of this is not far to seek. With the exception of a short list of some fifty species, published by Wade in his "Plantae Rariores in Hibernia inventae" in 1804, the only available materials are the observations made by the writer in leisure hours during the past five years. Hence it is evident that but little can be said as to the rarity or otherwise of the species, except as regards a few forms which occur with sufficient frequency to be considered common. Doubtless, as investigation proceeds, many kinds now only recorded from one or two localities will be found elsewhere, and many new ones added to the list.

Almost nothing is known as yet of the Mycology of Ireland; and it is highly desirable that observers in all parts of the country should work vigorously at this, the only department of our Flora which has escaped the attention of Botanists.

To any one conversant with Fungi, the paucity (and in some instances absence in the subjoined list) of the species of some orders will seem remarkable. Such are Hypogaei, Sphæronemei, Tuberacei, Sphæriacei, &c. This is due, no doubt, to the minuteness of many of the species, and the subterranean habits of others, rendering them less likely to be observed as compared with the larger and more showy forms.

So far, about 470 species have been met with in the district, which is probably two-thirds of those actually to be expected.

The arrangement adopted by Dr. Cooke in his "Handbook" has been followed in this list. In all cases where no authority is quoted, and in many where there is, the writer is responsible for the identification of the species: the persons named being those by whom the specimens were communicated.

DIVISION I.—SPORIFERA.

FAMILY I.—HYMENOMYCETES.

Order.—Agaricini. Fries.
Genus.—Agaricus. Linn.

Subgenus. Amanita. Pers.		
	vaginatus. Bull.	Fassaroe, near Bray.
	ceciliæ. B. and Br.	Dargle.
	mappa. Batsch.	Powerscourt.
	muscarius. L.	Scalp. Ovoca.
	rubescens. P.	Powerscourt. Scalp. Ovoca.
Subgenus. Lepiota. Fries.		
	procerus. Scop.	Mount Merrion.
	delicatus. Fr.	Powerscourt. Rev. M. J. Berkeley.
	holosericeus. Fr.	Powerscourt.
	cristatus. Fr.	Lawns and meadows; everywhere abundant.
Subgenus. Armillaria. Fr.		
	ramentaceus. Bull.	Powerscourt.
	melleus. Vahl.	Stumps, abundant. Powerscourt. Fassaroe. Ovoca, &c.
	mucidus. Fr.	Powerscourt; on a beech tree.
Subgenus. Tricholoma. Fr.		
	flavo-brunneus. Fr.	Hollybrook, near Bray; abundant.
	rutilans. Schæf.	Scalp, woods.
	scalpturatus. Fr.	Shankill. Dargle.
	luridus. Schæf.	Powerscourt.
	imbricatus. Fr.	Fassaroe.
	murinaceus. Bull.	Hollybrook.
	terreus. Schæf.	Hollybrook. Mount Merrion, abundant.
	lascivus. Fr.	Ovoca.
	gambosus. Fr.	Near Bray; in various localities, common.
	monstrosus. Sow.	Ovoca.
	albus. Fr.	Powerscourt.
	personatus. Fr.	Howth. Dr. W. M. A. Wright. Mount Merrion. G.P.
	grammopodius. Bull.	Monkstown. Dargle.
	humilis. Fr.	Shankill. Powerscourt.
	subpulverulentus. P.	Hazlehatch, Co. Dublin.
	melaleucus. P.	Fassaroe.
Subgenus. Clitocybe. Fr.		
	nebularis. Batsch.	Kilbride, near Bray. Shankill.
	inornatus. Sow.	Fassaroe.

	cerussatus. Fr.	Hollybrook. Powerscourt, abundant.
	candicans. Fr.	Scalp.
	gallinaceus. Scop.	Foxrock.
	infundibuliformis. Schæf.	Devil's Glen.
	geotrupus. Bull.	Hollybrook.
	cyathiformis. Fr.	Shankill.
	brumalis. Fr.	Scalp.
	fragrans. Sow.	Near Carrickmines. Hollybrook. Ovoca, common.
	laccatus. Scop.	Ovoca. Mount Merrion, and elsewhere, common.
Subgenus. Pleurotus. Fr.		
	ulmarius. Bull.	College Park, on poplar; very large, pileus, 12 in. by 9 in.
	craspedius. Fr.	Dunran, Co. Wicklow.
	mitis. P.	Mount Merrion.
Subgenus. Collybia. Fr.		
	radicatus. Relh.	Monkstown, apparently not very common.
	platyphyllus. Fr.	Killakee.
	fusipes. Bull.	Powerscourt. Brackenstown—Wade, Plant. rar.
	velutipes. Curt.	Near Kilternan. Glendruid, &c.
	confluens. P.	Hollybrook.
	acervatus. Fr.	Bray. Glasnevin.
	collinus. Scop.	Powerscourt.
	clavus. Bull.	Santry. Wade, Plant. ran.
	dryophilus. Bull.	Powerscourt. Hollybrook. Fassaroe.
	tenacellus. P.	Glendruid.
Subgenus. Mycena. Fr.		
	purus. P.	In woods, common. Ovoca, &c.
	iris. Berk.	Bray.
	lacteus. P.	Shankill. Mount Merrion.
	galericulatus. Scop.	Woods, common.
	alcalinus. Fr.	Mount Merrion, &c.
	epipterygius. Scop.	Dargle. Kilbride, near Bray.
	vulgaris. P.	Bray.
	tenerrimus. Berk.	Monkstown, common.
Subgenus. Omphalia. Fr.		
	pyxidatus. Bull.	Powerscourt, common.
	muralis. Sow.	Charleville. Near Bray. Dargle.
	umbelliferus. L.	Carrickmines.
	fibula. Bull.	Easton Lodge, Monkstown.
Subgenus. Volvaria. Fr.		
	parvulus. Weinm.	Powerscourt.
	speciosus. Fr.	Shankill.
Subgenus. Chamæota. Sm.		
	cretaceus. Fr.	Glasnevin. Wade, Plant. rar.

Subgenus. Pluteus. Fr.		
	cervinus. Schæff.	Hollybrook. [I am not certain of this species.]
Subgenus. Entoloma. Fr.		
	nidorosus. Fr.	Shankill.
Subgenus. Leptonia. Fr.		
	lampropus. Fr.	Powerscourt.
Subgenus. Nolanea. Fr.		
	pascuus. P.	Dalkey. Dr. W. M. A. Wright.
	rufo-carneus. Bk.	Kilbride, near Bray. Ovoca, common.
Subgenus. Eccilia. Fr.		
	carneo-griseus. B. & Br.	Devil's Glen. A doubtful form.
Subgenus. Pholiota. Fr.		
	aureus. Math.	Dargle.
	squarrosus. Mull.	On stumps; very common. Fassaroe. Powerscourt, &c.
	adiposus. Fr.	Scalp.
	mutabilis. Schæf.	Killakee.
Subgenus. Hebeloma. Fr.		
	testaceus. Batsch.	Fassaroe.
	fastigiatus. Fr.	Mount Merrion.
	scaber. Müll.	Glasnevin. Wade, Plant rar.
	fibrosus. Sow.	Scalp.
	Curreyi. Bk.	Powerscourt.
	geophyllus. Sow.	Near Delgany.
	crustuliniformis. Bull.	Powerscourt.
	rimosus. Bull.	Hollybrook. Ovoca, common.
Subgenus. Flammula. Fr.		
	lentus. P.	Scalp.
	flavidus. Schæf.	Powerscourt.
Subgenus. Naucoria. Fr.		
	sideroides. Bull.	Kilbride.
	pediades. Fr.	Dalkey. Dr. W. M. A. Wright.
	melinoides. Fr.	In grass, common.
	semiorbicularis. Bull.	Dargle.
	furfuraceus. P.	On orchid-pot, Rockville, Blackrock.
Subgenus. Galera. Fr.		
	tener. Schæf.	Dalkey. Dr. W. M. A. Wright.
	hypnorum. Batsch.	Dargle, &c., common.
Subgenus. Psalliota. Fr.		
	arvensis. Schæf.	Powerscourt, &c. Not nearly so common as P. campestris.
	campestris. L.	Pastures, &c., very abundant.
	vaporarius. Otto.	
	sylvaticus. Schæf.	Kilbride. Hollybrook. Scalp.
Subgenus. Stropharia. Fr.		
	semiglobatus. Batsch.	Common.
	æruginosus. Curt.	Scalp. Dr. W. M. A. Wright.

Subgenus. Hypholoma. Fr.		
	sublateritius. Fr.	Scalp.
	fascicularis. Hud.	On stumps; extremely common everywhere. Perhaps our commonest agaric.
	dispersus. Fr.	Scalp.
	velutinus. P.	Charleville. Bray, abundant.
	appendiculatus. Bull.	
	egenulus. Berk.	Powerscourt. [I am not certain of this species.]
Subgenus. Psilocybe. Fr.		
	areolatus. Klotch.	Fassaroe.
	spadiceus. Schæf.	Common.
	Fœnisecii. P.	Do.
Subgenus. Panæolus. Fr.		
	campanulatus. L.	Santry. Wade.
	separatus. L.	Dr. W. M. A. Wright.
	fimiputris. Bull.	Common.
	papilionaceus. Bull.	Monkstown.
Subgenus. Psathyrella. Fr.		
	gracilis. Fr.	Kilmacanoge, near Bray.
Genus. Coprinus. Fr.		
	comatus. Fr.	Pastures, roads, &c., common.
	atramentarius. Fr.	College Park, &c., abundant.
	micaceus. Fr.	Extremely common everywhere.
	niveus. Fr.	Dung, &c.
	radiatus. Fr.	Common.
	domesticus. Fr.	Easton Lodge, Monkstown.
	plicatilis. Fr.	Charleville.
	hemerobius. Fr.	Do.
Genus. Bolbitius. Fr.		
	tener. B.	Charleville. Bray.
Genus. Cortinarius. Fr.		
	(Phlegmacium) varius Fr.	Scalp.
	purpurascens. Fr.	Hollybrook.
	(Dermocybe) sanguineus. Fr.	Ovoca, not common.
	(Hygrocybe) armeniacus. Fr.	Scalp. Powerscourt.
Genus. Lepista. Sm.		
	personata. Fr.	Powerscourt, abundant.
Genus. Paxillus. Fr.		
	involutus. Fr.	Shankill, Powerscourt, &c., frequent.
	panuoides. Fr.	On oak; Powerscourt.
Genus. Hygrophorus. Fr.		
	pratensis. Fr.	Meadows and pastures plentiful.
	virgineus. Fr.	Bray Head, &c.
	niveus. Fr.	Monkstown.

	ceraceus. Fr.	Ovoca?
	coccineus. Fr.	Fassaroe.
	miniatus. Fr.	Carrickmines.
	puniceus. Fr.	Bray.
	conicus. Fr.	Fassaroe.
	psittacinus. Fr.	Pastures, common.
	murinaceus. Fr.	Powerscourt.
Genus.	Gomphidius. Fr.	
	glutinosus. Fr.	Powerscourt.
Genus.	Lactarius. Fr.	
	insulsus. Fr.	Dargle. Ovoca.
	blennius. Fr.	Hollybrook. Ovoca, common.
	pyrogalus. Fr.	Kilbride. Bray.
	piperatus. Fr.	Powerscourt. Ovoca.
	vellereus. Fr.	Powerscourt.
	deliciosus. Fr.	Fassaroe, &c., common.
	volemum. Fr.	Ovoca.
Genus.	Russula. Fr.	
	nigricans. Fr.	Ovoca. Hollybrook, &c.
	delica. Fr.	Ovoca.
	virescens. Fr.	Ovoca.
	foetens. Fr.	Hollybrook. Kilbride. Ovoca, &c.
	emetica. Fr.	Hollybrook. Ovoca.
	alutacea. Fr.	In woods, abundant.
Genus.	Cantharellus. Adams.	
	cibarius. Fr.	Ovoca, &c. common.
	retirugus. Fr.	On moss. Loughlinstown. Dargle.
Genus.	Nyctalis. Fr.	
	parasitica. Fr.	On Russulæ. Ovoca.
Genus.	Marasmius. Fr.	
	urens. Fr.	Scalp. Fassaroe.
	peronatus. Fr.	Scalp.
	oreades. Fr.	Pastures, common. Howth. Dundrum. Wicklow, &c.
	Wynnei. B and Br.	
	terginus. Fr.	Hollybrook.
	impudicus. Fr.	Fassaroe.
	Vaillantii. Fr.	Dalkey. Dr. W. M. A. Wright.
	rotula. Fr.	Dargle.
	graminum. B. and Br.	Near Bray.
	insititius. Fr.	Ovoca.
	androsaceus. Fr.	Ovoca.
	Hudsoni. Fr.	Hollybrook.

Order—Polyporei.

Genus.	Boletus. Fr.	
	luteus. L.	Powerscourt.
	bovinus. L.	Brackenstown. Wade, Pl. Rar.
	elegans. Schum.	Scalp.

	flavus. With.	Ovoca.
	laricinus. B.	Shankill.
	badius. Fr.	Bray.
	chrysenteron. Fr.	Shankill.
	subtomentosus. L.	Ovoca. Scalp.
	satanas. Lenz.	Dalkey. Dr. W. M. A. Wright.
	luridus. Fr.	Powerscourt. Glasnevin. A. G. More.
	edulis. Bull.	Powerscourt.
	olivaceus. Schæf.	Brackenstown. Wade.
	scaber. Fr.	Shankill. Powerscourt.
	pachypus. Fr.	Ovoca. Powerscourt.
Genus.	Polyporus. Fr.	
	lentus. Berk.	On furze. Near Bray, in several localities.
	squamosus. Fr.	On trunks, very common.
	sulfureus. Fr.	Hollybrook. Powerscourt.
	cytisinus. Bk.	Glasnevin. Wade.
	fumosus. Fr.	Common.
	hispidus. Fr.	Powerscourt.
	dryadeus. Fr.	Hollybrook. Cherry Valley.
	fomentarius. Fr.	Delgany. Hollybrook.
	igniarius. Fr.	Common.
	radiatus. Fr.	Hollybrook.
	velutinus. Fr.	Do.
	versicolor. Fr.	Extremely common, and variable.
	abietinus. Fr.	Powerscourt.
	armeniacus. Bull.	Ovoca.
	ferruginosus. Fr.	Ashford.
	vaporarius. Fr.	Common in woods.
Genus.	Dædalea. Fr.	
	quercina. P.	Powerscourt.
Genus.	Merulius.	
	corium. Fr.	Hollybrook.
	lacrymans. Fr.	Common.
Genus.	Fistulina.	
	hepatica. Fr.	Phœnix Park. Wade, plant. rar.

Order—Hydnei.

Genus.	Hydnum. Linn.	
	repandum. L.	Powerscourt. Ovoca.
	ochraceum. P.	Glendruid.
Genus.	Radulum. Fr.	
	quercinum. Fr.	Delgany. Ovoca.

Order—Auricularini.

Genus.	Craterellus. Fr.	
	cornucopioides. Fr.	Ovoca.
	sinuosus. Fr.	Ovoca.
Genus.	Thelephora. Fr.	

	cæsia. P.	Scalp.
	mollissima. P.	Scalp.
Genus.	Stereum. Fr.	
	purpureum. Fr.	Cherry Valley.
	hirsutum. Fr.	On stumps, very common.
Genus.	Hymenochæte. Lev.	
	rubiginosa. Lev.	Ovoca.
Genus.	Corticium. Fr.	
	sulfureum. Fr.	Dargle.
	quercinum. P.	Devil's Glen.
	comedens. Fr.	Hollybrook.
	cinereum. Fr.	Bray.
	nudum. Fr.	Mount Merrion.
Genus.	Cyphella. Fr.	
	griseo-pallida. Fr.	Ovoca.
	capula. Fr.	Kilbride (Yellow var.).
	Goldbachii. Fr.	Monkstown.

Order—Clavariei.

Genus.	Clavaria. L.	
	coralloides. L.	Powerscourt. Stillorgan.
	cinerea. Bull.	Powerscourt.
	cristata. Holmsk.	Glendruid.
	rugosa. Bull.	Bray.
	abietina. Schum.	Ovoca.
	purpurea. Müll.	Powerscourt.
	inæqualis. Müll.	Do.
	vermiculata. Scop.	Ovoca.
	juncea. Fr.	Dargle.
	uncialis. Grev.	Powerscourt.
Genus.	Calocera. Fr.	
	viscosa. Fr.	Hollybrook.
Genus.	Pistillaria. Fr.	
	quisquilaris. Fr.	Glasnevin.
	furcata. Sm.	Monkstown.

Order—Tremellini.

Genus.	Tremella. Fr.	
	mesenterica. Retz.	Easton Lodge. Powerscourt. Dargle, common.
	albida. Hud.	Dargle, &c., common.
Genus.	Exidia.	
	recisa. Fr.	Powerscourt.
Genus.	Hirneola. Fr.	
	auricula-Judæ. Bk.	Mount Merrion. Blackrock. Newtown Mount-Kennedy, &c., frequent.
Genus.	Dacrymyces. Nees.	
	deliquescens. Dub.	Monkstown.
	stillatus. Nees.	On pine wood, very common.

Family II.—Gasteromycetes.

Order—Phalloidei.

Genus.	Phallus. L.		
	impudicus. L.	Scalp. Powerscourt. Hollybrook. Widely distributed, but nowhere common.	

Order—Trichogastres.

Genus.	Geaster. Mich.		
	fimbriatus. Fr.	Monkstown.	
	rufescens. Fr.	Do.	
Genus.	Bovista. Dill.		
	nigrescens. P.	Powerscourt.	
Genus.	Lycoperdon. Tourn.		
	cælatum. Fr.	Common.	
	giganteum. Batsch.	Powerscourt.	
	saccatum. Vahl.	Do.	
	geminatum. Fr.	Hollybrook. Scalp.	
	pyriforme. Schæf.	Powerscourt. Mount Merrion.	
Genus.	Scleroderma. P.		
	vulgare. Fr.	Powerscourt, &c. Ovoca, &c.	
	bovista. Fr.	Glendruid. Miss Finlay.	

Order—Myxogastres.

Genus.	Lycogala. Mich.		
	epidendrum. Fr.	Loughlinstown.	
Genus.	Reticularia. Bull.		
	applanata. B. and Br.	Bray.	
	umbrina. Fr.	Monkstown.	
Genus.	Æthalium. Link.		
	vaporarium. Fr.	On tan. Monkstown.	
Genus.	Diderma. P.		
	vernicosum. P.	Scalp.	
	lucidum. B. and Br.	Monkstown.	
	globosum. Fr.	Scalp.	
Genus.	Didymium. Schrad.		
	farinaceum. Fr.	Powerscourt.	
	xanthopus. Fr.	Howth.	
Genus.	Physarum.		
	nutans. P. var aureum.	Scalp.	
	bulbiforme. Schum.	Powerscourt.	
Genus.	Stemonitis. Gled.		
	ovata. P.	Powerscourt.	
	fusca. Roth.	Glasnevin. Wade.	
Genus.	Arcyria. Hill.		
	punicea. P.	Ovoca.	
	incarnata. P.	Powerscourt, very abundant.	

Genus. Trichia. Hall.
turbinata. With. Hollybrook. Powerscourt, abundant.
Genus. Licea. Schrad.
cylindrica. Fr. Howth.

Order—Nidulariacei.
Genus. Cyathus. P.
striatus. Hfm. Glasnevin. Dr. Moore.
vernicosus. D.C. Dublin. G. S. Eves. Bellevue. Near Delgany. Wade.
Genus. Sphærobolus. Tode.
stellatus. Tode. Mount Merrion.

FAMILY III.—CONIOMYCETES.

Order—Sphæronemei.
Genus. Phoma. Fr.
asteriscus. Bull. On dead stems. Common.
Genus. Diplodia. Fr.
herbarum. Lev. On Fennel.
Genus. Vermicularia. Tode.
dematium. Fr. Enniskerry.
Genus. Piggotia. B. and Br.
gladioli. Pim. Decaying gladiolus leaves. Monkstown. 1876.
Genus. Dinemasporium. Lev.
graminum. Lev. var. herbarum. Cooke. On dead stem. Killiney.
Genus. Asteroma. D.C.
rosæ. D.C. Monkstown. Bray, &c. Very common.

Order—Melanconiei.
Genus. Glœosporium. Mont.
fructigenum. B. On Apples. Very common.

Order—Torulacei.
Genus. Torula. Pers.
ovalispora. Bk. Dargle.
pulveracea. Ca. Seapoint.
herbarum. Lk. Dead stems. Monkstown.
Genus. Septonema. Ca.
irregulare. B. and Br. Dargle.
Genus. Sporochisma. B. and Br.
mirabile. B. and Br. On holly twigs. Hollybrook.
Genus. Sporidesmium. Link.
lepraria. B. and Br. Decaying gladiolus. Monkstown.

Order.—Pucciniæi.

Genus. Phragmidium. Lk.		
	mucronatum. Link.	On wild and garden roses, very common.
	bulbosum. Schl.	On bramble leaves, extremely common.
Genus. Triphragmium. Link.		
	ulmariae. Link.	Ballybrack.
Genus. Puccinia. Pers.		
	graminis. Pers.	Corn and grass leaves. Common.
	arundinacea. Hedw.	Ballybrack.
	striola. Link.	Hollybrook.
	primulæ. Grev.	Devil's Glen.
	menthae. Pers.	Ballybrack.
	compositarum. Sch.	
	glomerata. Grev.	Ballybrack.
	variabilis. Grev.	Ballybrack, Rocky Valley.
	apii. Corda.	Received from Mr. T. Moore. Locality not stated.
	saniculae. Grev.	Dargle, Ovoca. Common.
	smyrnii. Corda.	Carrickmines, Kill-o'-Grange, Glendruid, Newcastle. Abundant; one of our commonest species.
	violarum. Link.	Monkstown.
	umbilici. Guep.	Enniskerry, Stepaside. Abundant.
	epilobii. D.C.	Ballybrack.
	prunorum. Link.	Dalkey. Dr. W. M. A. Wright.
	malvacearum.	On hollyhocks and wild mallow. In many localities. Very common since 1874.
Genus. Gymnosporangium. D.C.		
	juniperi. Lk.	Powerscourt.
Genus. Podisoma. Lk.		
	sabinae. Fr.	Blackrock. Rev. M. H. Close.

Order.—Cæomacei.

Genus. Ustilago. Link.		
	carbo. Tul.	Oats, &c., common.
	grandis. Tul.	Ballybrack.
Genus. Coleosporium. Lev.		
	tussilaginis. Lev.	Coltsfoot. Very common.
	pingue. Lev.	Garden and wild roses. Common; chiefly affects the wild ones.
	petasitis. Lev.	On Butterbur.
	sonchi-arvensis. Lev.	Bray.
	rhinanthacearum. Lev.	Near Fassaroe.
Genus. Melampsora. Cast.		
	salicina. Lev.	Dargle. Plentiful.

	populina. Lev.	Fassaroe.
	euphorbiae. Cast.	Very common wherever the Spurge occurs.
Genus.	Cystopus. DeBary.	
	candidus. Lev.	On Cabbage, very common.
	cubicus. Str.	Monkstown.
Genus.	Uredo. Lev.	
	hypericorum. D.C.	Dargle.
Genus.	Trichobasis. Lev.	
	petroselini. B.	Abundant. The *uredo* form of Puccinia smyrnii.
	oblongata. B.	Glendruid.
	suaveolens. Lev.	On thistles. Very common.
	compositarum. var. hieracii. Ck.	Kilmacanoge, Ovoca.
	rumicum. Cooke.	Killiney.

Order.—Æcidiacei.

Genus.	Æcidium. Pers.	
	epilobii. D.C.	Ballybrack. Common.
	ranunculacearum. D.C.	Ballybrack.
	grossulariæ. D.G.	Gooseberry leaves and fruit. Plentiful.
	urticæ. D.C.	Templeogue, Co. Dublin. Apparently not common.
	compositarum. Mart. var. tussilaginis. Pers.	Extremely common. Usually followed by *Coleosporium tussilaginis*. Lev. Qu. A condition?
	var. bellidis. D.C.	Ovoca.
	saniculæ. Carm.	Very abundant wherever Sanicula, which is common in the district, grows.

FAMILY IV. HYPHOMYCETES.

Order.—Isariacei.

Genus.	Ceratium. A. and S.	
	hydnoides. A. and S.	Hollybrook.
Genus.	Pachnocybe. Bk.	
	subulata. B.?	Monkstown. Along with Dactylium.

Order.—Stilbacei.

Genus.	Volutella. Fr.	
	ciliata. Fr.	On decaying Gladiolus.
	setosa. Bk.	On decaying Gladiolus.
	phaii. Pim.	On decaying leaves of Phaius grandifolius.

Genus. Epicoccum Link.
neglectum. Desm. On decaying maize. Monkstown.
Genus. Ægerita. P.
candida. P. Common.

Order—Dematiei.
Genus. Sporocybe. Fr.
byssoides. Fr. On orchid bulb.
Genus. Haplographium. B. and Br.
delicatum. B and Br. Monkstown, Ovoca.
Genus. Helminthosporium Link.
velutinum. Lk. Monkstown.
Genus. Macrosporium. Fr.
cheiranthi. Fr. Monkstown.
Genus. Polythrincium. Kunze.
trifolii. Kze. Monkstown.
Genus. Cladosporium. Link.
herbarum. Lk. Common.
epiphyllum. Nees. Monkstown.
bacilligerum. Mont. Monkstown. On rose leaves.
nodulosum, Ca. Decaying onion.

Order—Mucedines.
Genus. Aspergillus. Mich.
glaucus. Lk. Very common.
Genus. Rhinotrichum. Corda.
repens. Preuss. Monkstown.
Genus. Botrytis. Mich.
tilletii. Desm. On Begonia.
dichotoma. Corda. Monkstown. This I believe is the only occasion of this species occurring in Britain.
Genus. Peronospora DeBary.
infestans. Mont. Often very common.
gangliformis. Berk. Monkstown. On lettuce.
parasitica. Pers. Monkstown. On wallflower and cabbages.
effusa. Casp. On spinach. Monkstown.
candida. Fckl. Monkstown. On primrose.
Genus. Haplaria. Link.
grisea. Lk. On Paxillus. Hollybrook.
Genus. Polyactis. Link.
vulgaris. Lk.
cana. Berk. } Monkstown.
cinerea. Berk.
Genus. Penicillium. Link.
crustaceum. Fr. Extremely common.
bicolor. Fr. On condensed milk.
candidum Lk. var coremium. On dead leaves.

Genus.	Dactylium. Nees.	
	pyriferum. Fr.	Monkstown, &c. Common.
	macrosporum. Fr.	On moss. Ovoca.
Genus.	Cylindrium. Bon.	
	septatum Bon.	On gladiolus.
Genus.	Fusidium. Link.	
	flavo-virens. Fr.	Hollybrook.
Genus.	Helicomyces.	
	roseus.	Fassaroe.
Genus.	Sporotrichum. Link.	
	sulphureum. Grev.	Scalp.
Genus.	Menispora. Pers.	
	lucida. Ca.	On Tacsonia.
Genus.	Acremonium. Link.	
	verticillatum. Link.	On vine. Monkstown.
	fuscum, Sch.	On Hoya. Blackrock.
Genus.	Botryosporium. Ca.	
	pulchrum. Ca.	Monkstown.
Genus.	Rhopalomyces. Ca.	
	pallidus B. and Br.	On tan.
	candidus B. and Br.	On pods of Nice pepper.

Order—Sepedoniei.

Genus.	Sepedonium. Link.	
	chrysospermum. Lk.	On Boleti. Common. Scalp, Ovoca.
	roseum. Fr.	Dunran.

DIVISION II.—SPORIDIIFERA.

FAMILY V. PHYSOMYCETES.

Order.—Antennariei.

Genus.	Zasmidium. Fr.	
	cellare. Fr.	In cellars, very common.

Order.—Mucorini.

Genus.	Mucor. Mich.	
	ramosus. Bull.	Var. α. On Strelitzia. Var. β. On Heracleum.
	mucedo. L.	On fruits, &c. Extremely common.
	caninus. S.	On dogs' dung. Common.
	clavatus. Lk.	On plums.
Genus.	Hydrophora. Tode.	
	stercorea. Tode.	On seedling pots.
Genus.	Acrostalagmus. Corda.	
	cinnabarinus. Ca.	On decaying potatoes.

Family VI. Ascomycetes.

Order.—Perisporiacei.

Genus.—Sphærotheca. Lev.	
pannosa. Lev.	On roses; the conidioid condition; extremely common. I have only once found conceptacles.
Castagnei. Lev.	Monkstown. Newcastle, County Wicklow. Common.
Genus. Phyllactinia. Lev.	
guttata. Lev.	Dalkey. Local. Where it occurs abundant.
Genus. Uncinula. Lev.	
adunca. Lev.	Carrickmines.
bicornis. Lev.	Common. Monkstown. Ballybrack.
Wallrothii. Lev.	Carrickmines and elsewhere.
Genus. Podosphæra. Kunze.	
clandestina. Lev.	Carrickmines. Near Bray, &c. Not uncommon.
Genus. Microsphæria. Lev.	
berberidis. Lev.	Kingstown. Glasnevin.
grossulariae. Lev.	On gooseberry. Abundant.
Genus. Erysiphe. Hedw.	
graminis. D. C.	Widely diffused, but not very common.
martii. Lk.	Peas, &c. Very common.
communis. Schl.	On columbine, Circæa, &c. Common.
Genus. Eurotium. Lk.	
Herbariorum. Lk.	On a tan-bed. Extremely abundant.

Order. Elvellacei.

Genus. Morchella. Dill.	
esculenta. P.	Glasnevin. Wade.
Genus. Helvella. Linn.	
crispa. Fr.	Luttrellstown. Wade. Hollybrook. G. P.
Genus. Mitrula. Fr.	
cucullata. Fr.	Glencullen. A. G. More.
paludosa. Fr.	Above Powerscourt Waterfall. Glencullen.
Genus. Spathularia. P.	
flavida. P.	Shankill. Abundant.
Genus. Leotia. Hill.	
lubrica. P.	Ovoca. Kilbride.
Genus. Geoglossum. P.	
viride. P.	Hollybrook.

	olivaceum. P.	Hollybrook.
	glabrum. P.	Glencullen. Abundant. Also Kilternan.
Genus. Peziza. Linn.		
(Aleuria. Fr.)	acetabulum. L.	Dargle. Common.
	badia. P.	Powerscourt.
	leporina. Batsch.	Powerscourt.
	onotica. P.	Howth.
	cerea. Sow.	Glasnevin. Wade.
	vesiculosa. Bull.	Dunghills. Very common.
	cupularis. L.	Monkstown.
	saniosa. Schrad.	Charleville.
	granulata. Bull.	Cow-dung. Common.
(Lachnea. Fr.)		
	scutellata. L.	Hollybrook.
	stercorea. P.	Bray.
	ciliaris. Schrad.	Powerscourt.
	virginea. Batsch.	Monkstown. Ovoca.
	calycina. Schum.	Altidore.
	clandestina. Bull.	Monkstown.
	variecolor. Fr.	Altidore. Dunran.
	villosa. P.	Enniskerry.
(Phialea. Fr.)		
	firma. P.	Glencullen.
	striata. F.	Fassaroe.
	caucus. Reb.	Ovoca.
	vinosa. A. & S.	Tullow, County Dublin.
	cinerea. Batsch.	Powerscourt. Common.
	vulgaris. Fr.	Dargle.
	var. β. diaphana.	Hollybrook.
	leucostigma. Fr.	Monkstown.
Genus. Helotium.		
	æruginosum. Fr.	Powerscourt. Ovoca, with fine cups.
	citrinum. Fr.	Ovoca, &c. Common.
	epiphyllum. Fr.	Altidore.
	fagineum. Fr.	Hollybrook.
Genus. Ascobolus. Tode.		
	Crouani. Cooke.	Monkstown.
	furfuraceus. P.	Cow-dung. Common.
Genus. Phacidium. Fr.		
	coronatum. Fr.	Devil's Glen.
Genus. Rhytisma. Fr.		
	acerinum. Fr.	Very common.
Genus. Hysterium. Tode.		
	fraxini. P.	Powerscourt, and elsewhere. Common.
	hederæ. De Not.	Common.
	arundinaceum. Schrad.	Common.

Genus.	Stegia. Fr.	
	ilicis. Fr.	Common.
Genus.	Trochila. Fr.	
	lauro-cerasi. Fr.	Devil's Glen.
Order.	Sphæriacei.	
Genus.	Nectria. Fr.	
	cinnabarina. Fr.	Extremely common.
	aquifolia. Berk.	Blackrock. Rev. M. H. Close.
	peziza. Fr.	Glasnevin.
	sanguinea. Fr.	Hollybrook.
Genus.	Xylaria. Fr.	
	hypoxylon. Grev.	Extremely common.
Genus.	Hypoxylon. Fr.	
	fuscum. Fr.	Hollybrook, &c.
Genus.	Eutypa. Tul.	
	lata. Tul.	Hollybrook.
Genus.	Dothidea. Fr.	
	ulmi. Fr.	Monkstown.
	filicina. Fr.	On bracken, Powerscourt.
Genus.	Diatrype. Fr.	
	disciformis. Fr.	Hollybrook.
Genus.	Valsa. Fr.	
	nivea. Fr.	Monkstown. Spermogonia only.
Genus.	Cucurbitaria. Gray.	
	laburni. De Not.	On laburnum. Common.
Genus.	Sphæria. Hall.	
	tristis. Tode.	Dargle.
	macrotricha. B. & Br.	Glasnevin.
	moriformis. Tode.	Altidore.
	botryosa. Fr.	Altidore.
	ordinata. Fr.	Shankill.
	pulviscula. Curr.	Glasnevin.
	pulvis-pyrius. P.	Monkstown.
	arundinacea. Sow.	Ballybrack.
	culmifraga. Fr.	Dalkey.
	acuta. Moug.	Monkstown.
	setacea. P. Var. petiolae.	Glendruid.
Genus.	Capnodium. Mont.	
	sphæricum. Cooke.	Dargle. On Veronica.

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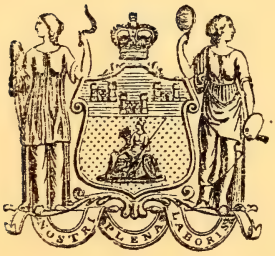

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