

The northern flora, or, A description of the wild plants belonging to the north and east of Scotland, with an account of their places of growth and properties. Part. 1 / by Alexander Murray.

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THE
NORTHERN FLORA;

OR,
A DESCRIPTION
OF
THE WILD PLANTS

BELONGING TO
THE NORTH AND EAST OF SCOTLAND.

WITH
AN ACCOUNT OF THEIR PLACES OF GROWTH
AND PROPERTIES.

BY
ALEXANDER MURRAY, M.D.

PART I.

EDINBURGH:
ADAM & CHARLES BLACK;
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AND
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MDCCCXXXVI.

NORTHERN FLORA:

A DESCRIPTION
OF THE RICH HERBAGE

THE WILD PLANTS

THE NORTH AND EAST OF SCOTLAND

ABERDEEN:

PRINTED BY G. CORNWALL,
HERALD OFFICE.

R36047

TO THE RIGHT HONOURABLE
GEORGE EARL OF ABERDEEN, K.T.

§c. §c. §c.

MY LORD,

It will excite no surprise, that permission has been solicited to dedicate to your Lordship an attempt to illustrate the native vegetation of the North and East of Scotland, as the request will, doubtless, appear to be sufficiently explained by your Lordship's high rank and important hereditary connexion with the tract to which the undertaking relates. Without, however, any view to those circumstances, but contemplating solely your Lordship's personal character—founded upon qualities, attainments, and talents, which do not need to be here recorded—I know not where another could have been found, whatsoever his local situation or his rank, better fitted than your Lordship for conferring honour upon this or any other publication. That a knowledge of botanical science enables your Lordship to be a competent judge of any observations pertaining to that subject, is a fact which may also be adverted to on the present occasion, particularly as it is, perhaps, comparatively but little known.

These reasons might have well created a desire of the honour now in view; but it may be permitted me to say, that it was no mere wish to connect these pages with rank and name, joined with ability to appreciate their merit (if they possess any), which directed my thoughts to your Lordship; for the

truth simply is, that the request already alluded to, may be said to have arisen from the interest taken by your Lordship in this publication, which was felt to be the kinder, because of its being equally unexpected and unsought. Your Lordship, moreover, was pleased to favour me with a Catalogue of indigenous plants growing in a small northern district, and with an opportunity to examine the corresponding specimens collected by your own hand; while, with no little personal trouble, your Lordship had the condescension also to point out the places wherein some of the more interesting species had been discovered.

I have thus, my Lord, though aware that they possess no general interest, taken the liberty of noticing the circumstances, owing to which these pages—little worthy, it is feared, of being in any manner connected with so distinguished a name—are now, with profound respect, inscribed to your Lordship.

I have the honour to be,

MY LORD,

Your Lordship's most obedient

and very humble Servant,

ALEX. MURRAY.

UNION TERRACE, ABERDEEN,

10th August, 1836.

P R E F A C E

IN addition to Works of a more general nature, separate accounts of the native vegetable productions of particular districts have, in many parts of the world, been long ago given to the public. It is also true, that while there are local Floras in no small number, which relate to various parts of England as well as to the South and West of Scotland, no similar attempt has at any time been made, regarding the counties which lie in the North and East of Britain. It cannot be said that this deficiency is supplied by publications having a more extensive range; for, not to mention Floras comprehending the whole island—which, however, do not contain the small notice of this quarter, to have been expected even from works with so wide an object—it may be fairly observed, that the Scottish Floras of Lightfoot and Hooker belong to the South and West of the kingdom, rather than to Scotland in general. At least, with some knowledge of both these, doubtless, important and interesting contributions to Botany, I cannot bring to recollection any proof that either of the authors ever set foot on the extensive plain, which may be alluded to in a general way, as extending from Angus to Nairn—unless, indeed, it may be the statement of Lightfoot, in his Preface, that he “traversed the kingdom from Argyleshire to the county of the Mearns”—while their communications from correspondents, relative to that tract, particularly to Aberdeenshire and the contiguous counties, are so meagre as scarcely to be worthy of notice, or of being taken into any practical account.

With the causes of this comparative deficiency I am unacquainted, and to discover these is no part of the object now in view; as it is enough, if the present publication, besides being sanctioned by custom, is also proper upon general grounds. Upon this point, it seems sufficient to add to the above observations, that inferring the utility of local Floras from their frequent occurrence, and, moreover, considering the remarkable variety and extent of our botanical stations, no one, it is probable, will contend that a Flora of this quar-

ter is improper or unnecessary; and that the North-east of Scotland is either so defective in materials, or so uninteresting to readers, that it deserves to remain undescribed, and to the public in general, botanically unknown. No doubt, the alpine parts of the North are occasionally referred to in the *Scottish Floras* of Lightfoot and Hooker, as well as in various publications of the same kind, pertaining to Britain in general. Valuable lists, too, of our rarer species are to be found in the *Edinburgh New Philosophical Journal*, as well as in *Anderson's Guide to the Highlands*; nor ought it to be forgotten, that a copious catalogue of the plants of Forfarshire, by Mr. George Don, is given in *Headrick's Survey* of that county. These considerations, however, in no degree, prevent or discourage an attempt like the present. Indeed, in one respect, they ought rather to have the contrary effect, namely by multiplying the sources from which the publication is to be derived.

The tract of country which is at present in view, may be supposed to be separated from the rest of the island, by an irregular boundary stretching from the Forfarshire coast on the east, to that of Sutherland on the west; and may, in a general way, be said to consist of that portion of the East and Interior of Scotland, which lies to the north of Montrose, in addition to the western part of the county of Sutherland. This district may be considered as consisting of two great promontories, each making a degree of approach to the peninsular form—one of these a large, and, for the most part, a rather level district; the other, mainly, a rugged alpine region. Though it is, therefore, to be understood, that no profession is strictly made of the present publication reaching beyond Montrose; yet frequent references are made to situations still farther to the south, and an expectation has sometimes been indulged, that with the aid of a little supplementary matter, which, on various accounts, it may be found necessary to give at the conclusion, this Flora will be found to suit any part of the East of Scotland northward of Dundee.

The object, in short, has been to offer an account of the native vegetation of the tract referred to, which might afford to those residing within it, the means of acquiring a knowledge of the native plants they may expect to find, without the evident and well-known inconvenience arising from the extraneous matter, occurring, of necessity, in Works of a more general character; while, at the same time, a knowledge of our indigenous species might be imparted to others at a distance, who may be interested in such matters.

The method which has been followed may, as a whole, be considered new, and is therefore deserving of a brief explanation. In the first place it may, without technical language, be observed regarding the present descriptions of plants, that—in place of the usual method, wherein the strict characters of species are succeeded by a detailed account, or at least by any supplementary matter which appears necessary—it has been endeavoured, in one brief description, to combine the characters necessary for distinguishing the species from one another, with any other points which may be deemed useful or interesting. There is also for the most part a paragraph, entitled “Observations,” annexed to each genus, wherein the more tangible points of difference among its species are noticed, along with any other remarks appearing to deserve attention, which may have suggested themselves. And when the genus is long, it is subdivided into sections or groups, each of which is followed by the *observations* alluded to. It may also be mentioned that, when the name made use of by Linnæus, or in the more common of our British Works, differs from the specific appellation which the author has adopted, the corresponding synonym is mentioned.

It is also necessary to say a few words regarding the stations of plants; that the manner in which this part of the subject has been treated, may be understood. The general statement attached to each species, regarding the nature of its place of growth and the frequency of its occurrence, is usually succeeded, in the same paragraph, by particular stations, accompanied by no observer's name. For these the author is entirely responsible. This is immediately followed by a separate paragraph, containing the observations of friends; and it is, in general, to be understood that these communications have been made to the author, and not before published; but it ought to be kept in view, that it is not always to be inferred, that the individual communicating a plant was the original observer of it in the station specified. Farther, it must be explained that, when the individual's name is in *Italics*, the information has been accompanied by one or more specimens; but that, in other cases, it was not so corroborated. It may be added that, in the comparatively few instances in which the localities are derived from books, the name of the Work is invariably quoted.

Particular localities of the less common plants are always given; and in the vicinity of Aberdeen, the places of growth of almost every species, whether rare or not, are regularly indicated. Indeed, in the

author's own observations, he has usually commenced with plants growing in the neighbourhood of this city, proceeding afterwards in various directions, according to circumstances; while the stations communicated by others are arranged in a series, extending more or less regularly from South to North.

It is unnecessary to mention at present all those who have favoured me with information, particularly as their names accompany the respective communications; but a few may be alluded to, on account of the superior magnitude and importance of their contributions.

The mountains of Angus are so rich in vegetable treasures, that no apology is necessary, if some deviation should have taken place from the regular bounding line, for the purpose of including this tract, which the discoveries of George Don, confirmed and extended as they have recently been, have rendered so famous in Scottish Botany; and it is with much satisfaction, that copious stations of the more interesting species growing in this celebrated alpine district are inserted. These are almost all due, as well as other information, to a friend in Edinburgh, with whom these pursuits made me first acquainted in the wilds of Sutherland; whose progress in scientific and professional knowledge has justified my early opinion and expectations.

It is also proper to direct attention to the notices, general and particular, of the counties of Elgin and Nairn, derived from a gentleman residing in that district; who, however, I feel bound to mention, pointedly attributes much of the merit of his communication, to the Rev. George Gordon.*

A particular acknowledgment is also due to one already well known by his writings on botanical Geography, who, soon after the announcement of the present undertaking, kindly favoured me with his "*Outlines of the Geographical Distribution of British Plants*" (printed for private distribution)—along with not a little supple-

* In all cases where the term "Moray," or "Province of Moray," occurs in Part I., the information, though not always acknowledged, is derived from the above source, and refers to the counties mentioned. This district is defined as follows, in *Shaw's History of the Province of Moray*:—"I include within the Province, all the plain country by the seaside, from the mouth of the river Spey to the river Farar or Beaulie, at the head of the Frith, and all the valleys, glens, and straths, situated betwixt the Grampian Mountains, south of Badenoch, and the Frith of Moray, which discharge rivers into that Frith."

mentary matter in manuscript, which has been frequently referred to in these sheets, and, so far as is known, not previously given to the public. The altitude to which many species ascend upon our northern mountains will be deemed an interesting feature of this publication; and it may be perceived that this information is entirely due to the laborious and useful observations of the gentleman in view.

To the Professor of Botany in Edinburgh, I must also allude; and I am the more anxious to do so, that the plan pursued has prevented me from mentioning his name, in instances wherein the information has been derived from his writings. But there is now an opportunity of compensating for this, by one general acknowledgement, that all the information extracted from the *Edinburgh New Philosophical Journal* is properly due to this gentleman. Indeed, with a knowledge of the successful investigations carried on, within the few years past, in the mountains of Forfar, Aberdeen, and Sutherland (to which the extracts alluded to, relate), it may be safely asserted, that there are but few individuals whose merit in practical Botany will bear a comparison with that of Dr. Graham.

There is yet another to be here mentioned, who has been numbered with the dead for more than half a century; and I feel a sincere wish to do justice to his memory, particularly as the grave in which he was laid seems to have closed, as it were, over his merit; and he may be said to have gone down to dust without leaving that enduring name, which might have been well expected from the laborious and ardent career of one, whose society and correspondence were courted by some of the most distinguished men of his time, both at home and abroad.

Not many months ago, from the kindness of a friend, a mass of papers accidentally came into my hands, which had formerly been in the possession of the late Rev. Dr. Alexander Smith, Chapel of Garioch, an individual, of much literary and scientific merit. Part of these—consisting chiefly of old letters, with botanical observations written upon them and on other loose papers by their original owner; as well as a continuous set of descriptions of many indigenous species, arranged according to the system of Linnæus—proved to have once belonged to Dr. David Skene, a physician in Aberdeen. These came into my possession too late for properly availing myself of them at present, beyond some localities of plants which have been invariably acknowledged. Enough, how-

ever, was seen to produce a desire for farther information, and the result of the inquiries is interesting enough for being now mentioned; particularly as it is hoped that the subsequent Parts of this publication may be farther benefited by the writings referred to.

Dr. David Skene—after a short time of study at Paris, in addition to the more ordinary preparations—settled as a medical practitioner in Aberdeen, where his father and grandfather had been physicians of reputation; and he soon became eminent in his own profession, as well as in literature and science. To Botany he was particularly devoted; and he frequently herborized in company with Principal Campbell and Dr. Reid, who were both fully aware of his merits. The former is said to have often lamented that his observations on plants had never been given to the world; while Dr. Reid, in a letter addressed to him, observes, regarding his extensive acquirements—"But is it all to die with you, and to be buried in your grave? This, my dear Sir, ought not to be. *Stultum est perituræ parcere chartæ*. Can you find no time either when you are laid up in the gout, or when the rest of the world is in good health, to bequeath something to posterity? Think seriously of this." I find the same distinguished philosopher, in another of his letters from Glasgow, urging this physician to present himself as a candidate for one of the medical chairs of that place, about to become vacant by the removal of Dr. Black to Edinburgh; particularly as this might become a step towards the University of Edinburgh, to which Dr. Reid thought his ambition should extend. Nor was this a mere partiality derived from previous personal intimacy; for more than one seem to have been anxious that the Scottish metropolis should become Dr. D. Skene's place of abode. Thus, Lord Kames, a frequent and attached correspondent, says, in one of his letters (dated, Blair Drummond, 11th January, 1769), "I have a most hearty resentment at you for refusing the offer made you by Dr. Hope, which would have settled you in the town of Edinburgh, much to your profit I am certain; but no particulars till I see you in the Harvest circuit;" and in another, "I wish from my heart to have you settled here, and cannot but regret a good opportunity you missed." Dr. S. also received many letters from Mr. Pennant and Mr. Ellis, well known authors of that day, who mention his observations in their Works. I have also remarked a letter to him, from the late Dr. Walker, Professor of Natural History at Edinburgh (dated Moffat, 14th April, 1770), who, though

personally unknown, wrote to procure his opinion regarding a list of plants which it is probable may be subsequently referred to in this publication.*

It is yet to be mentioned that Dr. D. Skene had the honour of corresponding with Linnæus, several of whose letters are preserved; and these being, doubtless, in his own handwriting, a few *imitated* lines from two of them, which have been inserted in another place, may gratify curiosity, and, moreover, indicate the degree of respect in which our countryman was held by that illustrious individual.

I have had an opportunity of seeing the following manuscripts, by Dr. D. Skene:—a volume of more than 360 pages upon Chemistry—another volume on Zoology—two 4to. vols. of papers read before a Society in Aberdeen—and many papers upon various medical subjects. His botanical writings have been already referred to; and I can remember evidence among them that he had made a collection of dried plants. Indeed, his museum, consisting of plants, minerals, and shells, might, it is said, have well been called immense; taking into account his extensive professional avocations, as well as the brief period in which it was formed.

It remains to be mentioned that Dr. D. Skene, according to my information, was cut off by gout, in December 1771, at the age of thirty-six. I shall only add, that if any farther apology is necessary for this detail, it will partly be found in a sincere wish to rescue from oblivion, probably as extraordinary a man as the North of Scotland ever produced. Aberdeen has been sometimes thought ready enough to boast of individuals to whom its claim is not so unequivocal; while the name of David Skene—born and bred, living and dying in this place—is never mentioned; and he may be said, even in his native city, to be entirely forgotten and unknown.†

* “I have been long employed,” says Dr. W. “in collecting our Scotch plants, and have sent you a list of some which have hitherto eluded all my inquiries. If they grow in Scotland at all, I am persuaded they are among the rarest plants we have, and it would give me great pleasure to know if any of them have fallen in your way in the North.”

† In addition to the source already referred to, the greater part of these facts is due to the liberal kindness of a gentleman residing in the vicinity of Aberdeen, the nearest male relative of Dr. D. Skene; though I am indebted for a portion of the information to a clergyman in this neighbourhood, who is also nearly connected to the subject of it. I may be permitted here to notice, that it seems highly probable to me, that Dr. D. S. (though he was in error regarding the names)

Notwithstanding the assistance of which I have thus had the advantage, there can be no doubt that these pages will, with reason, be considered susceptible of many improvements. This will excite no surprise in those who are acquainted with the difficulty of such matters; by whom it will be readily admitted, that partly to collect in person and partly to procure from others, the specimens and the information necessary for the illustration of a tract like the northern counties of Britain; and to mould this information for the first time into a written form, which shall have even but a small degree of pretension to being accurate and complete—is an undertaking not of the very lightest description. To enlarge, however, upon this topic, is neither pleasant nor judicious. If a writer, meaning to prefer any degree of claim to an adequate elucidation of his subject, should, at the same time, studiously set forth the magnitude of the undertaking—this will appear only in the light of an idle boast; while the admission of unusual difficulties, without his being able to show the possession of any extraordinary fitness for surmounting them, or any peculiar facilities towards the execution of his task, will be apt to suggest errors, which might, perhaps, have been concealed, and deficiencies which might otherwise have been overlooked.

In the present case, no peculiar advantages of that sort can be boasted of; for it may be lawful to say, that this is not the work of an individual able to devote his time and attention to the present subject alone—as, doubtless, it would have well deserved—but of one who, speaking to the very letter, first botanically examined a plant within the northern counties, upon the very day on which he commenced the

had detected, in Aberdeenshire, both *Carex incurva* and *Rhodiola rosea*; the former of which was not then known to be a native of Britain, while it is only a few years ago that the author published, as a discovery of his own, the existence, upon the Buchan coast, of *Rhodiola rosea*, which, in Scotland, had previously been supposed to be confined to alpine situations. This is at present mentioned, partly to create an opportunity for requesting particular attention to the coast alluded to; as one reason for which it may be mentioned, that in the tract extending from Peterhead to Banff, two or more localities have of late been observed for each of the following unexpected species:—*Rhodiola rosea*, *Scilla verna*, and *Saxifraga oppositifolia*. I have recent accounts, too, though not yet completely verified, of another *Saxifraga*, still more exclusively confined to the mountains, having been detected upon the same coast. This interesting tract, it may be added is one of the chief British stations for *Juncus Balticus*; and there is some reason to think that this species was there noticed, for the first time in Britain, by a surgeon residing in that district, a persevering and meritorious follower of practical Botany.

duties of active life, and who has ever since, with the exception of one short interval, been incessantly engaged with business and pursuits of other kinds ; although it may be added that he has never lost sight of the present subject, nor missed any opportunity in the course of journeys, accidental or professional or made for botanical purposes, of extending his knowledge of indigenous species. I am aware that no apology would be valid, if a work should be voluntarily offered to the public for which the author is upon any account unsuited ; yet it may, in the present case, be some excuse for imperfections to know, that, with the exception of the acknowledged communication of the stations of plants, these pages, such as they are, were constructed without assistance or advice—though, perhaps, no kind of publication stands more in need of such aid ; and that, within the wide bounds of the North, very few could be named less favourably situate for illustrating its vegetable productions than he who has undertaken to do so. And if the deficiencies should be considered numerous and important, the author may derive some consolation from reflecting, that he has only failed in an undertaking, which, perhaps, no other could have executed in a perfectly satisfactory manner.

I am aware that various objections will readily suggest themselves, even to those who are by no means anxious to view these pages with censorious eyes. There is, perhaps, no point upon which criticism is more likely to fasten, than upon the descriptions. To have violated the mode of describing species, so long almost universally admired and adopted, will, doubtless, excite general disapprobation ; but there is nearly an equal confidence that the mode which has been followed will, on a practical trial, be deemed both agreeable and useful.

It is also probable, that the district which has been selected will be considered vague and ill defined ; and, no doubt, the objection would be of importance, were Nature, in her vegetable productions, materially influenced by any precise bounding line ; but no such lines of demarcation exist, and thus an obvious natural boundary becomes comparatively unimportant. It would little interest the public to know how limited is the tract which the author originally contemplated ; or how humble the intentions which have gradually expanded into the present undertaking. The only question upon this point, which possesses any general interest is—whether or not the district ultimately fixed upon (in point of fact perhaps determined by the state of the author's knowledge, and by the nature of communications from others

which happened to come into his possession, fully more than by any other circumstance) is one which is suitable to the present purpose? Upon this head, it is enough to say, as before hinted, that an account of the vegetable productions of the northern counties, while it serves the ordinary purposes of a local Flora, will, it is presumed, at the same time, tend to fill up a hiatus in the Botany of Britain. How far this district—in point of what may be called capabilities for a Flora—may bear advantageous comparison with the other parts of the island, is a question which but few will easily determine until this publication is completed; and it is one upon which it may not become the author to offer an opinion. Yet, as the answer can imply no personal merit, he will venture to inquire what other alpine tract, equally extensive and difficult of access, has been so completely explored as the mountains of Angus, Aberdeen, and Sutherland, and has been discovered to contain so great a number of interesting vegetable products?

It will, moreover, be supposed that, in seeking for words which may be simple and easily understood, I have lapsed into language which is vague and indefinite. I cannot, however, perceive that plainness ought always to be sacrificed to precision; or that, by the use of epithets which can be defined with mathematical exactness, much is gained in the frequent instances, wherein there is no exact uniformity in the vegetable form or appearance to be described; and when, perhaps, no one of its phases entirely accords with the idea, however precise, that is attached to the term made use of.

Some may also think that too much attention has been here paid to mere species, and too little to the wider relations subsisting in the vegetable kingdom. Upon this point it may be enough, that the author has only proposed to describe the species growing in the North and East of Scotland, and to give an account of their properties and places of growth; and it is requested that these objects be kept in view, by readers who shall discover many collateral matters which might have been advantageously introduced. He may, however, bring to recollection the assurance of Sir W. J. Hooker—"that, in plants taken individually and in an isolated manner, there are subjects that will give ample scope for the employment of the talents of the greatest philosophers." Nor should it be forgotten, that an accurate and extensive knowledge of species is the only true origin of those wider views already alluded to; which, though highly interesting, and doubtless requiring a deep insight into the vegetable kingdom, are yet but creations of the mind, sometimes resting upon

no solid foundation ; while species and even genera are in all cases stamped as the undoubted work of Nature's own hand.

In the last place, it may occur to many, that a view of the rocky surface of the tract under consideration, sometimes attached to local Floras, would have been an important and interesting addition to the present publication ; but the author is ready to confess himself not possessed of the means of furnishing any such account in a satisfactory manner. This, however, will be but little regretted by those who believe with him that rocks, generally speaking, have little influence upon the vegetable species which grow over them. There was at one time an intention of inserting the reasons formerly given by the author for this conclusion—that the knowledge of the opinion might be thus extended, and the question submitted to farther examination—but these sheets having been already retarded long beyond the expected time, he must content himself with referring to Papers which he published in the *Edinburgh Philosophical Journal* for July, 1831, and in the *Magazine of Natural History*, Vol. vi. p. 335.

There are yet, however, a few desultory observations to be introduced. It may, in the first place, without claiming any higher merit, be observed, that there has been, throughout, a sincere wish for rigid fidelity, both in the descriptions and localities. With exceptions of the most trifling amount, not a plant has been described without a specimen before me (generally gathered with my own hand), which had grown in the tract to which these sheets relate ; and it may not be amiss to add that the *habitats* depending upon my own authority, have been introduced, not from recollection, but invariably from memorandums made at the time of observation. The present opportunity may be taken to explain that the communications which are here styled *Anonymous* may be relied upon with nearly equal certainty as the rest ; since the meaning simply is, that the information, designed as above, has come either from persons who have requested that they should not be mentioned ; or from individuals whose names are not, with certainty, known to the author. It may be added, that the same method has been followed in these cases as in others ; that is, *Italics* have been used only when specimens accompanied the information.* It is right also to say that,

* Perhaps, *Italics* are more thinly sprinkled through these pages than, upon the principle formerly explained, they ought to have been. For instance, owing to an error of this kind, it would seem (though erroneously) that Dr. Balfour's stations for *Alopecurus pratensis* and *Phleum pratense* had not been accompanied by specimens.

when the communication of stations has *not* been accompanied by specimens, the utmost pains have been taken—as some of my correspondents well know—to assure myself that the statement is accurate.

Let it be remembered that more anxiety has been felt to make these pages an accurate register of our veritable natives, than to swell the list with doubtful species or even to discover plants or stations which no one had hitherto observed; and that the main object has been to indicate with accuracy the comparative frequency of plants whether common or not; and to specify stations of the more interesting and rare species. To these considerations all other things are to be deemed more or less subordinate. No little pains have been taken to exclude species having no solid pretensions to a place among our natives. In matters of this sort, every thing will depend upon the judgment and experience of the observer; as it cannot be possible to give, in each particular case, reasons why species are inserted or omitted, so as to enable the reader to determine the question for himself. Upon this point, it seems almost impossible to lay down any rule which shall not be liable to numerous exceptions. I have sometimes, however, thought that, in the construction of Floras, it would not be amiss to adopt the following view—whether original or borrowed I cannot exactly tell—namely, to include only the species which are considered to have dropped from the hand of Nature; along with those which, though introduced from other sources, are now so established that they would continue to grow and to propagate themselves, though man and animals should be withdrawn from the region, and all artificial operations were also to cease.

It is hoped that for the most part the general statement regarding each species will apply—with a few exceptions, chiefly depending upon alpine and maritime localities—not only to the North-east of Scotland viewed collectively, but to every county, district, and parish, within it. Some of the original expectations and intentions, however, it has been found necessary to relinquish. Thus, the hope was contemplated of being able to make journeys, when necessary, to rectify, confirm, or increase, my knowledge of plants and localities; and there was, in particular, an intention to make efforts to extract something of value, more frequently than has in reality been done, from the statements of old authors regarding the properties of vegetables, salutary and deleterious; particularly as it was thought that chemical qualities, as well as botanical affinities, might

be brought to have a bearing upon the question. But these proved to be visionary schemes; for (adopting words which are suitable, though originally used in very different circumstances) "I soon found that it is too late to look for instruments when the work presses for execution, and that, whatever abilities I had brought to my task, with those I must finally perform it. To deliberate whenever I doubted, to inquire whenever I was ignorant, would have protracted the undertaking without end, and, perhaps, without much improvement."

The intention of compensating for unavoidable deficiencies, by means of a Supplement, has been already noticed. It is, indeed, almost certain that some errors will have crept in; as I cannot feel myself entitled to hope, that in no instance has any of our northern species deceived me or escaped notice.

"Atque nec herba nec latens in asperis,
Radix fefellit me locis." *

It is expected that the remainder of the Flowering Plants and Ferns will be comprehended in two other Parts similar to the present, though, perhaps, more condensed; the whole being adapted for forming one volume. It only remains that I refer to the Appendix, by two esteemed friends, consisting of—1. Notes from the Ancients, regarding certain indigenous species, by Francis Adams, Esq. Translator of the Works of Paulus Ægineta, &c.; and—2. Observations on the Agricultural Properties of Native Plants, by the Rev. J. Farquharson, F.R.S.

* As a remarkable proof of how apt plants are to be overlooked, it may be noticed that the conspicuous *Osmunda regalis*, not previously known to me as a native of the North-east, was, in the course of last summer, observed in several places in the vicinity of Aberdeen.

NORTHERN FLORA.

CLASS I. MONANDRIA. One Stamen.

ORDER I. MONOGYNIA. One Pistil.

GENUS I. SALICORNIA.

Calyx swelling, fleshy. Corolla none. Stamens one or two. Style short. Stigma in two or more segments. Seed invested with the enlarged calyx.

SPECIES.

1. *Salicornia herbacea*. *Jointed Glasswort*. *Marsh Samphire*.
Salicornia annua.—*English Botany*.

Stem usually erect except at the base, jointed, very tough within, branched and bushy, from a few inches to nearly a foot high. Joints compressed, notched, their intervals becoming thicker upwards. Spikes of flowers terminating the stem and branches, with numerous joints, each of which bears a cluster of three flowers on two opposite sides.

Sea shores overflowed by the tide, and in salt marshes, but not very common.—On the Aberdeenshire coast, a little to the south of the river Ythan. Also at Montrose.

Covering the muddy beach, to a great extent, at Montrose, and plentiful about four miles from the town at the head of the basin. *Mr. D. White*, surgeon.—Near Ythan Lodge, Aberdeenshire. *Rev. A. Smith*, Chapel of Garioch.—At Brotherton, in Kincardineshire. Anonymous.—On the Moray coast, east of Nairn harbour. *Mr. W. A. Stables*.—Munlochy Bay, Ross-shire. *Mr. G. C. Smith*.

Annual—flowering in September.

2. *Salicornia radicans*. *Creeping Glasswort*.

“Stem woody procumbent and rooting, articulations cylindrical spreading and notched at the top, spikes oblong obtuse.”

Sea coast near Montrose—*Hooker's Flora Scotica*.

OBSERVATIONS.—The genus *Salicornia* is easily detected by the peculiar nature of its leafless, jointed, fleshy plants, which bear inconspicuous flowers, and abound with a saline juice; but regarding its species some difficulty will occasionally be experienced. As I have no knowledge of *S. radicans*, it is here described in the words of Dr. Hooker, who says, “this scarcely differs from the preceding, except in its more branching, straggling, and perennial stem, quite woody below, often growing at the edge of a low muddy bank, and depending from it.” It is, indeed, at present introduced, entirely on the authority of the *Flora Scotica*; in which, no doubt, the name of a competent judge is given for the observation that it grows at Montrose. It must, however, be observed, that Mr. D. White, surgeon, who has carefully attended to the genus, evidently leans to the opinion that, properly, but one species of *Salicornia* occurs in that quarter; although the variations in structure and manner of growth are considerable, probably owing, in a great measure, as Mr. White thinks, to differences of the degree in which the plants are exposed to the influence of the tide.

It deserves to be added, that it appears, from a brief memorandum by Dr. David Skene, regarding a journey in which his companion was probably the author of the “*Inquiry into the Human Mind*,” that, about three quarters of a century ago, *Glasswort* grew, as it does now, in the vicinity of Ythan mouth, where it was then associated with another plant, with which it is mixed in that station to the present day. His words are:—“I took a ride with Mr. Reid as far as Slains. * * * Returning to Aberdeen by the water side, I found two plants new to me in the sand, within the flood-mark on each side of Aithan—the *Salicornia* and *Chenopodium maritimum*.”

The name *Salicornia* is derived from *sal*, salt, and *cornu*, a horn, on account of the horn-like appearance of the plants and the saline juice which they contain.

When the species of *Salicornia* are burnt, the ashes contain a large quantity of soda, an article which, besides other purposes, is much used in the formation of glass; whence the English name, *Glasswort*. I am not aware that in any part of Britain these plants are found in such quantity as to be a matter of practical importance; but, in the south of Europe and north of Africa, they grow naturally in great abundance, and in Spain they are cultivated in the salt marshes, for the sake of the soda which they furnish. It is said that attempts have been made to cultivate them in inland situations, but it was found that, instead of producing soda, they then only contained potass. Soda is procured by the combustion of some other vegetable species, but the barilla thus obtained is far less valuable than that from the genus *Salicornia*, as it contains a much smaller proportion of soda.

English writers on botany, from the old herbalists to the most modern, mention that *Salicornia herbacea* is sometimes pickled, forming a bad substitute for *Crithmum maritimum*, the true *Samphire*—a totally different plant, alluded to in “King Lear”:

——— “half-way down
Hangs one that gathers samphire; dreadful trade!”—

which is unknown in the east of Scotland, but not uncommon on rocky parts of the English coast.

GENUS II. HIPPURIS.

Calyx forming a very slight border to the germen. Corolla none. Stigma one, acute. Seed oval, inferior, naked.

SPECIES.

1. *Hippuris vulgaris*. *Mare's Tail*.

Root creeping. Stem erect, polished, jointed, many inches above the water, supporting numerous whorls of eight or more linear leaves, which have callous whitish points. Flowers seated close to the stem, immediately above the leaves.

Stagnant water, especially in peat-pits; not uncommon.—Near Aberdeen, in the mosses at Ferryhill, Scotstown, and Brediach. Various parts of the same county, as in the peat-holes between the Tillyfourie toll and Tough; Alford, at Balfluig; also, Towie, Lumphanan, &c.; and in Buchan, at Aberdour.

In Forfarshire. *Mr. D. White*.—Pools near Guthrie, twelve miles west from Montrose. *Dr. Balfour*.—Kincardineshire. *Mr. Chrystall*.—Near Upper Banchory. *Mr. M'Connachie*.—Aberdeenshire, near Haddo House. *Earl of Aberdeen*.—Clatt. *Mr. John Minto*.—St. Fergus. *Mr. Alex. Murray*.—Turner-hall moss. *Dr. D. Skene*.—Cairney. *Rev. Mr. Cowie*.—Knockando and Alves, Elginshire. *New Statistical Account of Scotland*, No. VIII.—In Moray, not rare. *Mr. Stables*.

Perennial—flowering in June and July.

OBS.—This species is remarkable for the flowers being arranged like rings around the stem, one at the base of every leaf; so that the flowers and leaves are the same in number. It may be added, that the stamen is sometimes wanting, and the nuts which succeed the flowers are usually most perfect towards the middle of the plant; also, that the stem, though with us undivided, is, on the Continent, sometimes branched in the more vigorous specimens. *Hippuris vulgaris* is sometimes stated to be less common in Scotland than in England. I can only say that it is far from rare in the tract to

which these observations refer; while it is reckoned a scarce plant in some parts of England, and in Devonshire it is understood never to have been observed. Mr. Hewett C. Watson observes, that the southern limit of this species, in Europe, seems to be 44°.

The name is derived from *ἵππος*, a horse, and *οὐρα*, a tail; being of similar import to *Equisetum*, the name of a cryptogamous genus to which *Hippuris* has an apparent resemblance. It has also been likened to a little pine growing in water, and hence the French call it *Pesse d'eau*.

Hippuris vulgaris is said to possess slightly astringent qualities, and is sometimes used by country people as a tea, in a relaxed state of the bowels.

CLASS II. DIANDRIA. Two Stamens.

ORDER I. MONOGYNIA. One Pistil.

GENUS I. FRAXINUS.

Calyx none, or in four segments. Corolla none, or of four petals. Capsule compressed, mostly two-celled and two-seeded.

SPECIES.

1. *Fraxinus excelsior*. Common Ash.

Bark of the tree greyish. Leaves pinnate, consisting of from four to six pairs with an odd one, of lanceolate, shortly-stalked leaflets, which are serrated, especially towards the pointed summit. Flowers brown, without calyx or corolla. Capsules with a leaf-like termination. Seeds glittering, bitter.

Common, though usually introduced.—In the forest of Mar, &c. &c.

Perennial—flowering in April and May.

OBSERVATIONS.—It may be noticed that the flowers sometimes want the stamens, and appear rather before the leaves. The wood is white and tough.

It is unnecessary to enumerate the various common uses to which the straight-grained and rather light timber of the ash is put. The bark has been supposed to possess the property which physicians call *febrifuge*. In Sicily, and to a small extent even in the neighbourhood of Paris, a concrete

juice resembling the manna of the shops, transudes from the trunk, branches, and leaves of the ash.

GENUS II. CIRCÆA.

Calyx in two deflexed segments, uniting into a tube at the bottom. Corolla of two petals. Capsule pear-shaped, rough, two-celled, two-seeded.

SPECIES.

1. *Circæa alpina*. *Mountain Enchanter's Nightshade*.

Stem not quite erect, usually smooth. Leaves mostly upon long opposite stalks, heart-shaped, pointed, toothed, smooth and shining. Flowers in clusters, white or reddish.

Woods and shaded lake-sides, and similar situations; not rare, though unknown in many extensive tracts.—Den of Rubislaw, near Aberdeen; and occasionally on the banks of the Dee and Don. Near the Fall of Foyers, Inverness-shire. And on the banks of Loch Erriboll, in Sutherland.

Kincardineshire, at Drumtochty. *Mr. David Lyall*; and in various woods in the same county. *Mr. Chrystall*.—Deeside, at Upper Banchory. *Rev. James Paull*.—Woods near Castleton, Braemar, and stony places by the side of Lochlee. *Dr. Balfour*.—Donside, at Glenkindy. *Mr. Proctor*, surgeon.—Centre of Banffshire. *Mr. Craigie*, surgeon.—Millowood and Dhu Craig, near Keith. *Rev. W. Cowie*.—Speyside. *Mr. R. Bremner*.—In the province of Moray. *Mr. Stables*.—Ross-shire. *Mr. G. C. Smith*.

Perennial—flowering in July.

2. *Circæa Lutetiana*. *Common Enchanter's Nightshade*.

Stem erect, more than a foot high, downy, as well as the stalks both of the leaves and flowers. Leaves opaque, dull green, ovate or imperfectly heart-shaped, slightly toothed, the upper ones far the narrowest. Flowers in long and slightly branched clusters. Fruit covered with curved bristles.

Shaded places, rare.

Den of Rubislaw. *Mr. William Smith*.—Upper Banchory. *Mr. Francis Adams*, surgeon.—Ravine at Formartin. *Earl of Aberdeen*.—Inverness and Parish of Urquhart and Glenmorriston. *New Statistical Account*, Pt. VI.

Perennial—flowering in June and July.

OBS.—These species may be distinguished from one another by the latter being erect, taller and more downy, with ovate opaque

leaves, while those of the former species are heart-shaped, thin, and shining, with the margins more deeply toothed. This, however, is a case, like many more in Botany and other branches of knowledge, wherein confidence and decision, in place of being tokens of extensive knowledge, indicate rather ignorance and inexperience. He who has seen only the extreme forms of the above species will, at once, pronounce them unequivocally different, but his belief may partake of no small doubt, if he have an opportunity of tracing the plants through their various *varieties*, and of becoming acquainted with the fact, that excellent observers consider them as passing into one another; although others believe them to be essentially different, and to continue in a garden permanently distinct. I cannot, from my own proper knowledge, say that more than one species of this genus is a native of the north, or any other part of Scotland, and at one time I had great doubt about inserting the 2d as one of our indigenous plants; though that there is in Nature a *Circæa*, agreeing with the characters of *Lutetiana*, and really different from our *alpina*, I feel convinced, from having gathered such a plant in the centre of a large forest in the Netherlands. It will be observed above, that specimens of this species, from three different northern stations, have been inspected. The first of these is not a well-marked plant, and the second was found in rather suspicious ground; but, upon the third, I am disposed to place reliance, as its characters are good, and the plant undoubtedly wild, having been gathered by the noble author of the observation in a sequestered romantic valley, near the old castle of Formartin, or Gight.

On the whole, then, though there are intermediate *varieties* of both species, which, taken singly, it is perhaps impossible to refer always to their proper places, it may be concluded that the two are really different, and that both do occur in the north of Scotland. The 2d is, however, with us a rare native, while the 1st appears to be little known in the south of England, where, on the other hand, *C. Lutetiana* is said to be pretty common.

Old writers give *Enchanter's Nightshade* a place among the herbs considered to possess amorous qualities, although (as I find an English botanist complaining) they are silent about the manner in which it is to be applied. The genus is dedicated to the sorceress *Circé*, celebrated for her skill in poisonous herbs. These plants are, however, very innocuous, being probably devoid of active qualities of any kind, and upon this head nothing needs be added to the following words of old Gerarde:—"There is no use of this herbe either in physicke or surgerie that I can reade of; which hath happened by the corruption of time and the errour of some who have taken Mandragoras for *Circæa*; in which errour they have still persisted unto this day, attributing unto *Circæa* the vertues of Mandragoras."

GENUS III. VERÓNICA.

Calyx in four deep somewhat unequal segments. Corolla wheel-shaped, deeply divided above into four not quite equal segments; the lower smallest. Capsule usually heart-shaped and compressed, two-celled. Seeds numerous.

SPECIES.

* *Flowers in lateral clusters or spikes.*

1. *Veronica Beccabunga. Brooklime.*

Stem round, thick, more or less prostrate or floating, with rooting fibres at the lowest joints. Leaves in pairs, upon short stalks, oval, blunt, slightly serrated; and, like the whole plant, deep green, smooth, shining, and juicy. Flowers blue, in spikes or clusters, which are upon long opposite stalks, springing from the base of the leaves. Bractees narrow, inconspicuous, shorter than the flower stalks. Capsules roundish, turgid, cloven at the summit.

Brooks, ditches, and wet places frequent.—Near Aberdeen, in Powis' burn, Old-Town Links, and between Craiglug and the Bridge of Dee, &c. &c.

Perennial—flowering in June, July, and August.

2. *Veronica Anagallis. Long-leaved Brooklime.*

Stem erect. Leaves lanceolate, rather long, slightly embracing the stem, more or less serrated. Flowers light blue, upon opposite stalks, as in the former species.

Ditches and slow streams; rather rare.—In Aberdeenshire, at Inverury and near Fraserburgh. Kincardineshire, near Stonehaven. In Sutherlandshire, but not common.

Forfarshire. *Mr. D. White.*—Common in ditches near Montrose. In a ditch on the roadside between Montrose and Usan; and about a quarter of a mile from the latter place, plentifully. *Dr. Balfour.*—Noranside, in the upper part of the same county. *Anonymous.*—Lake of Forfar. *Mr. G. Don.*—Kincardineshire, at St. Cyrus. *Mr. D. White.*—Abundant in ditches in St. Fergus, Aberdeenshire, and about Peterhead. *Mr. Alex. Murray.*—In the province of Moray.—Knockando, Elginshire. *New Statistical Account, Part VIII.*

Perennial—flowering in June and July.

3. *Veronica scutellata. Narrow-leaved Speedwell.*

Stem erect, feeble. Leaves linear or narrow-lanceolate, entire or slightly toothed. Flowers flesh-coloured, with dark or bluish veins, in loose spikes, which are seldom or never opposite, and sometimes branched; stalks of the flowers, and indeed, of the clusters, bending down more and more as the

fruit advances to maturity. Capsule of two large membranous lobes.

Rather common. Ditches at roadsides are the most usual stations, but it is sometimes met with in spongy bogs and other wet places.—Near Aberdeen, at Ferryhill, Rubislaw-quarry, Stocketmoor, Old-Town Links, &c. Midmar; and not uncommon in ditches at Alford; Buchan, at Aberdour, &c. In Ross-shire.

Forfarshire. In woods of Charlton, &c. *Mr. D. White*.—Abundant in ditches near Montrose, Forfar, and Brechin. In ditches by the side of the new road between Montrose and Forfar; and also on the roadside between Brechin and Finhaven. *Dr. Balfour*.—Aberdeenshire, at Inverury. *Dr. James Anderson*.—Peterhead, Longside, and Loch of Strathbeg. *Mr. Alex. Murray*.—Banff Parish. *Mr. G. C. Smith*.—And middle of the county. *Rev. Mr. Cowie*.—In Moray.

Perennial—flowering in July and August.

OBS.—Of these three species, the 1st is by far the most common, and may be readily distinguished by its creeping or floating stem, with the leaves broad, short, blunt, and mostly stalked. To this species, *V. Anagallis* (a rather scarce plant in many parts of Scotland, though in England sometimes more common than *V. scutellata*), makes an approach, but is easily detected by the erect stem, and long acute, somewhat embracing leaves; while the 3d species is sufficiently separated from the two others, by narrower leaves, capillary reflected fruit-stalks, and most of all, by the clusters not being opposite. Indeed, at an advanced period, the large seed-vessels alone of this species are a sufficient distinction, being then likened to little shields; whence comes the specific name.

A hairy *V. scutellata* has been sent to me by *Mr. John Proctor*, from Glentanner, Cairnomonth, Hills of Birse, and Culmelly; and by *Mr. John Minto*, from bogs half a mile west of the Church of Clatt. This variety is perhaps pretty frequent in the north, and seems well known upon the Continent, although some British authors allude to it as rare.

It may be added that these three plants constitute the genus *Beccabunga* of some of the older authors, who considered them all possessed of similar properties, and as differing both botanically and medicinally from the other species.

4. *Veronica officinalis*. Male, or Common, Speedwell.

Stem creeping, wiry, of variable length, and, like the whole plant, rough from hairs. Leaves rigid, oval, serrated, tapering at the base into a short stalk. Spikes long, composed of light blue, streaked flowers, whose stalks are shorter than the bracteas. Capsule heart-shaped.

Dry woods and banks, common.—Near Aberdeen, in the Den of Rubislaw (with pale flowers), and in the adjacent quarry; Corn-

hill, &c. Frequent in the Alford woods; and remarkably abundant between Kintore and Inverury.

In the vicinity of Haddo House. *Lord Aberdeen*.—Banffshire. *Rev. Mr. Cowie*.—Indeed, so common over all the north, that a detail of stations is unnecessary. *Mr. H. C. Watson* finds this species at the height of above 500 yards on the Forfarshire mountains, and 100 yards higher in Aberdeenshire.

Perennial—flowering in June and July.

5. *Veronica Chamædrys*. *Germander Speedwell*. *Wild Germander*.

Stem by no means erect, somewhat twisted, its hairs collected into two opposite longitudinal lines. Leaves for the most part stalkless, ovate, wrinkled, very deeply serrated. Clusters rather long, many-flowered, their stalks hairy all round. Corolla of a bright blue. Capsule heart-shaped, small, shorter than the calyx.

Abundant in woods, banks, pastures, and the bottoms of hedges. *Mr. Watson* observed it 500 yards high in Forfarshire.

Perennial—flowering in May and June.

6. *Veronica montana*. *Mountain Madwort*.

Stem long, weak, trailing, uniformly hairy. Leaves ovate, deeply serrated, with very hairy stalks. Spikes loose, few-flowered. Corolla pale blue. Capsule large, extending much beyond the calyx, roundish, approaching the kidney-shape, membranous, fringed.

Woods and moist places, rare.

Forfarshire, on the banks of the Esk. *G. Don*.—Deskford, Banffshire, in a wood near the Church. *Rev. Mr. Cowie*.—Between Gordon Castle and Deskford. *Mr. Craigie*.—"Holly Bank," near Gordon Castle. *Mr. R. Bremner*.—In Moray, at Bridge of Newmill, Alves, and "the Island," Inverness. *Mr. Stables*.—Knockando, Elginshire. *New Stat. Account*.

Perennial—flowering in June.

Obs.—The three preceding species have various points of similarity. The rigid, stalked, slightly serrated leaves of *V. officinalis* tapering at the base into an elliptical form, might alone separate this plant from the two others; and if we add its hairiness and almost prostrate woody stem, this species will not be mistaken for any other member of the genus. *V. montana*, though, without any doubt, a distinct plant (which it is said *Sherard* first discovered in England, in Charlton wood, Kent) has certainly no little similarity to the *Chamædrys*, but its uniform hairiness of stem with the leaves upon stalks which are often about an inch long, removes all doubt between this species and *V. Chamædrys*, which is remarkable for two hairy lines

upon the stem, and has generally the leaves quite sessile. Indeed, in the advanced stage, *V. montana* is sufficiently separated from almost every other species of the genus, by the large membranous capsule, looking like a wide border to the attached calyx. It may be added, that the name of this rare plant does not well suit the stations wherein it is usually found.

Several years ago, Mr. James Smith, Ayrshire, met with a *Veronica* allied to *officinalis*, but differing in its small size, and entire (not heart-shaped) capsules. Sir James Smith, Dr. Hooker, and others, have adopted this under the name of *V. hirsuta*, as a species previously unknown in the British Flora, or, as I believe, in any other; and there was, at one time, an intention of introducing it in the present publication, chiefly from finding in the Herbarium of my deceased relative, Mr. Wm. Smith, a plant with the name in question attached to it, collected by him in the neighbourhood of Aberdeen, which sufficiently agrees with the characters attributed to that species, and indeed with specimens of it from the Edinburgh Botanic Garden. Upon paying some attention to the point, however, it appeared highly probable that this is but an imperfect *V. officinalis*—in which species the young capsule proves to be always abrupt and entire—and my impression is that *V. hirsuta* is not a distinct species, and scarcely a good *variety*; but probably either a young or starved specimen of *V. officinalis*.

*** Flowers in clusters or spikes terminating the stem.*

7. *Veronica saxatilis*. Blue Rock Speedwell.

Stem not erect, below woody and bushy. Leaves rather small, scarcely stalked, oval, sometimes serrated, veined, semipellucid, bright green, some of them retaining the colour, others turning blackish. Flowers few, large, of a most brilliant blue, upon stalks nearly an inch long, forming a small cluster at the end of the stem. Capsule ovate, splitting into four lanceolate pieces.

Rocks on mountains, rare.

Abundant on the rocks at the south side of the Glen of the Dole, Clova, above the birch trees. In this situation I found it associated with *Veronica alpina*, *Salix reticulata* and *lanata*, and *Astragalus alpinus*. Some of the specimens were of very large size, and remarkably luxuriant. I have also gathered the plant in abundance on the rocks at the upper part, and on the south side of Canlochan Glen. *John Hutton Balfour, M. D.*—Common in Glen Dole; but in much larger quantity, and of much greater size in Glen Isla. *Jameson's Philosophical Journal*, October 1832.—Benmore, Assynt, in Sutherland, is given as a station in *Anderson's Guide*, upon what authority I know not.—Mr. H. C. Watson says this species is probably as low as 700 yards on the Clova mountains.

Perennial—flowering in July.

8. *Veronica alpina*. *Alpine Speedwell*.

Stem about four inches high, branching at the base. Leaves oval, sometimes slightly serrated. Flowers blue, six or eight in number, in short clusters which terminate the stem. Calyx fringed. Capsule ovate, notched, crowned with the short permanent style.

On the more elevated parts of the highest mountains, sometimes in considerable abundance.

On moist places at the foot of the steep cliffs of Loch-na-gar; on Ben-na-buird; on the rocks at the top of Glen Callader, and on those on the south side of Glen Dole, Clova. I have also gathered it on the banks of the White Water, before it enters Glen Dole; on the rocks in Canlochan Glen, at the head of Glen Isla; in Glen Fee; and on Craigmeskeldie, a mountain at the head of Lochlee. At the foot of the Loch-na-gar cliffs, where it is much sheltered, it flowers very late in the season. I have found it on that mountain, associated with the *Saxifraga rivularis*. *Dr. Balfour*.—Mr. H. C. Watson observed it at the height of about 850 yards in Forfarshire.

Perennial—flowering in July and August.

9. *Veronica serpyllifolia*. *Smooth Speedwell*. *Paul's Betony*.

Stem never quite erect, often curved and branched at the base. Leaves smooth, oval, much broader than the bractes, indistinctly notched, the lower ones upon short stalks. Flowers small, pale blue, or whitish, upon stalks which spring from the base of the bractes. Capsule, heart-shaped, not so long as the permanent style.

Roads and waysides; common.—Near Aberdeen, at the new bridge of Don, &c. &c.

Perennial—flowering in June and July.

10. *Veronica humifusa*. *Prostrate Speedwell*.

V. alpina.—*Lightfoot's Flora Scotica*.

V. Serpyllifolia, β .—*Smith's English Flora*.

Stem prostrate, the lower part of it throwing out long white fibres. Spike of flowers short. Corolla large, rich blue. Style long.

Moist upland situations.—Glen Callader, in Aberdeenshire; also, at Glentanner and Upper Banchory. Benmore, in Sutherland.

Abundant on the mountains of Clova and Braemar. I have picked it on Ben-na-buird and on the mountains on the south side of Glen Dole, Clova. *Dr. Balfour*.

Obs.—It must be mentioned that, in remarking upon this group.

I labour under the disadvantage of not having met with either of the first two species contained in it, in a living state, although, through the kindness of friends, I have various specimens of them both before me. The shrubby, much branched, and reclining lower part of the stem, with the remarkably brilliant flowers and rather small leaves, will be found sufficient for distinguishing *V. saxatilis*. As to the *alpina*; no one acquainted with it, in the growing state, entertains the smallest doubt that it is a well-marked species, although, when dry, it certainly has no small resemblance to some specimens of *V. serpyllifolia*. The more upright manner of growth of the former of these sufficiently separates it from the latter, and yet farther from the *humifusa*; while it is rendered still more evidently distinct from both these species, by the larger leaves, fewer flowers, and hairy calyx, and, perhaps most essentially of all, by the style, which, in this species, is short, being scarcely the length of the capsule; whereas in both *V. serpyllifolia* and *humifusa* it is considerably longer.

Botanists usually consider the two last-named plants as the same; but without being certain that they are different, it has been thought right to direct separate attention to *V. humifusa*, as it is a remarkable plant, which may be suspected to be a distinct species, and is at least worthy of a place in a group whose members press close upon one another. Lightfoot took it for the real *alpina*; and most persons seeing it for the first time will not be apt to refer it to *serpyllifolia*, but, like the writer of these remarks, may suppose it to be a species previously unknown to them. It is readily detected by the fine blue flowers, with the prostrate stem, sending out white fibres below, which take root; and it may be added that, in my specimens, the leaves are rounder and more distinctly stalked than in *V. serpyllifolia*. This is by no means a very alpine plant, being found, at Banchory, little more elevated than the sea, and at Glentanner, not much above the common level of the district. It is even met with in the neighbourhood of Paris, in the *Bois de Boulogne*.

It may be added, that all these four species turn more or less black in drying, although, judging from the specimens before me, *V. saxatilis* and *humifusa* have this tendency rather less than the rest.

*** *Flowers solitary, axillary.*

11. *Veronica arvensis*. *Wall Speedwell*.

Stem erect, from three to six inches in height, usually branched at the base. Leaves ovate, deeply serrated, mostly stalkless; those among the flowers narrow, entire, assuming the form of bracteas. Flowers small, pale blue, scarcely stalked. Capsule heart-shaped, compressed, fringed. Seeds flat, with a sunk spot upon one side, convex on the other.

Cultivated places and walls; not uncommon.

Annual—flowering in May.

12. *Veronica agrestis*. *Green Field Speedwell*.

Stem prostrate, branching at the base. Leaves upon short stalks, ovate, with a slight tendency to the heart-shape, deeply serrated, opposite below, but those above rather alternate. Flowers in the bosom of the upper leaves, their stalks fully equal in length to the leaves, and with a downward curve after flowering. Capsule heart-shaped, composed of two large, fringed, somewhat hairy lobes. Seeds convex on one side, and concave on the other.

Fields and cultivated grounds.

Annual—flowering throughout the summer.

13. *Veronica hederifolia*. *Ivy-leaved Speedwell*.

Stem prostrate. Leaves heart-shaped, cut into lobes (which are usually five in number, but varying from three to seven, the central one far the largest), opposite or alternate, stalked, except near the top, where they are almost sessile, especially in the young state. Flowers upon stalks, springing singly from the base of the leaves. Segments of the calyx large, heart-shaped, fringed. Corolla varying from blue to white. Seeds wrinkled, hollow upon one side.

Borders of fields, particularly in stony parts, near hedges, &c.; but not very frequent.—Near Aberdeen, at Ferryhill, Lunatic Asylum, Old Town Links, Powder Magazine, Alford Place, and common in fields bordering the road to Bridge of Dee. Rather rare in the Valley of Alford.

In Moray, but scarcely indigenous. Mr. Stables.

Annual—flowering during the summer months.

OBS.—The species in this section are considered to have solitary flowers, although the arrangement of these in the last plant of the preceding group is similar to that of the first in the present. The two species last described have truly solitary flowers, and may be distinguished from all the others by that circumstance, while they are readily known from one another by the remarkable lobed leaves of the *hederifolia*. The 11th and 12th species have been confounded, owing to their similarity of name, more than to any other cause. It is enough to say that in *V. arvensis* the flowers are almost sessile, while in *agrestis* they are upon stalks which are fully as long as the leaves. Were any other mark required, it might be recollected that in the former of these species, the floral leaves are peculiarly narrow; and the erect stem and compressed seed-vessel of this species might be compared with the prostrate stem and turgid lobes of the capsule in *V. agrestis*. As it is just possible, that the beginner might mistake *V. arvensis*, even for plants which are placed in some of the preceding sections, it may not be

amiss to refer to the upright stem, ovate, deeply-serrated leaves, and the narrow upper leaves mixed with nearly sessile flowers in *V. arvensis*, which is farther remarkable for the stem dividing at the base into several branches, whereof the central one is usually much the tallest.

There is a *Veronica (polita)* which has lately been added to the *British Flora*, akin to *V. agrestis*, but distinguished from it by small grey leaves, considerably shorter than the flower-stalk, and by acute calycine segments; which, it is believed, may be occasionally met with in the north, but so manifestly introduced as not to be entitled to a separate notice in this place. It is, indeed, doubtful if *V. agrestis* is a true native—a suspicion which may be extended to *V. hederifolia*, though not to *arvensis* with the same certainty.

On concluding this genus, it may be remarked that the present arrangement of the species of *Veronica* is not quite the same as that which is usually adopted. In general, the species with terminal spikes are placed first; next, those with lateral spikes, and lastly, the species with solitary flowers; but in this place the two first of these sections are transposed. By this means we form a natural series, wherein the solitary flowered species immediately follow those with terminal spikes; a sequence recommended by the consideration that these two groups are so much akin, that there is a difference of opinion as to which of them certain species ought to be placed in. Thus *V. arvensis* is occasionally considered as belonging to the section with terminal spikes, while, on the other hand, *V. serpyllifolia* has been placed by some, among the species with solitary flowers. It may be farther observed, that the first section of the genus has been, above, divided into two parts, one consisting of plants mostly smooth, and the other of hairy plants; so that we have four groups, each, with, perhaps, the exception of the last, composed of plants, all naturally allied to one another, and all different from the members of any of the other groups.

Sir James Smith says the qualities of this genus are insignificant. *Veronica officinalis* is, however, occasionally used upon the Continent in the regular practice of medicine, as a strengthener of the stomach, probably with some reason, and also as a demulcent in complaints of the lungs. This is *Thé d'Europe* of the French; and it is related that an old Danish botanist, Simon Paulli, by name, contended it was the identical tea of China. Woodville mentions that it was much recommended a century before his time, especially in Germany, as a substitute for tea—a circumstance which he ascribes to the very high price of the genuine article. The following words, however, which regard *V. officinalis*, from *Hill's British Herbal* (1756), will show that cheapness was not always one of its advantages:—

"There was an opinion very lately that it was a cure for the gout, and the leaves, picked and dried, sold for three or four shillings a pound." V. *Beccabunga* has a place in the Edinburgh and London Pharmacopæias, and it has been considered as improving the quality of the blood, and to be useful in the complaints termed scorbutic. The following words are from the author above referred to:—"A fresh and tender leaf of brooklime laid upon a fresh wound heals it without any other application. A large quantity of this herb put into beer while brewing gives it the virtues of an anti-scorbutic and sweetener of the blood in a very happy manner. A poultice of it boiled tender is excellent in piles." It is, indeed, likely that the *Beccabunga* eaten after the manner of cresses, would prove a salutary article of food; nor is the suggestion regarding hemorrhoidal affections to be despised, but might be worth adopting in some painful and intractable forms of the complaint.

GENUS IV. PINGUICULA.

Calyx five-cleft, small. Corolla gaping, divided into five lobes above, and prolonged into a spur at the base. Capsule one-celled, many-seeded.

SPECIES.

1. *Pinguicula vulgaris*. Common Butterwort. Yorkshire Sanicle.

Leaves radical, lying close on the ground, ovate, yellowish-green, fleshy, greasy, somewhat concave, the edges rolled in. Flower-stalks smooth, one, two, or three in number, each supporting a single purplish flower, the throat of which is covered with white hairs. Spur curved, slender, cylindrical, acute, as long as the irregular, veinless petal. Segments of the calyx oblong. Seed-vessel ovate.

Bogs, wet moors, and moist places upon hills.—Rather frequent near Aberdeen, as at Nigg, wood at Rubislaw, and to the south of the Church of Newhills, &c. Various parts of Banffshire.

Abundant in every marshy place or moist soil in Clova and Braemar. Dr. Balfour.—Belhelvie links. Mr. W. M. White, surgeon.—Near Haddo House. Lord Aberdeen.—In Moray.—North of Sutherland. Mr. H. C. Watson;—who observed it at the height of 350 yards in that county, and of 900 yards in Forfarshire.

Perennial—flowering in May and June.

2. *Pinguicula alpina*. *Alpine Butterwort*.

Leaves not dissimilar to those of *P. vulgaris*. Flower-stalk smooth. Flower pale yellow; the spur more or less curved, conical, and thick, much shorter than the irregular petal. Seed-vessel ovate.

Very rare.

Strath of Auchterflow, parish of Avoch, Ross-shire. *Mr. G. Campbell Smith*.—Black isle, Ross-shire. *Mr. Stables*.—Between Munlochy Bay and Invergordon. *Anderson's Guide*.

3. *Pinguicula Lusitanica*. *Pale Butterwort*.

Pinguicula villosa.—*Lightfoot's Flora Scotica*.

Leaves of a thin texture and semipellucid, hairy, over-spread with a network which is often reddish. Flower-stalks three or four inches long, hairy, especially towards the base, supporting each a pale flesh-coloured flower, with its spur and throat yellow. Spur curved, blunt, shorter than the rather regular petal. Seed-vessel globular.

In the most northern counties; where it is not very uncommon, particularly on the west coast, but by no means confined to it, being found in the interior, and even on the east side of the kingdom.—I have gathered it in various parts of the interior of Sutherland, in the tract stretching northward from Loch Shin; and on the west coast, between Sandwood and Cape Rath.

Abundant in the parish of Contin, or Government-church District of Gurdy, or Kinlochlichart, from Garvie to Achnanault, the very interior of Ross-shire. *Mr. G. C. Smith*.—Invershin, in Sutherland; and Strathpeffer on the east coast. *Mr. Stables*.—Very abundantly a little above Invershin, and thence by the roadside nearly as far as Oikel. *Jameson's Journal*, October 1833.—Adorning the roadside from Shin Bridge (near Bonar) towards Rosehall. *Anderson's Guide*.

Perennial—flowering in June and July.

OBS.—The 1st of these species is well known, being characterized by the purplish flower, long acute spur, and smooth scape; as the 3d is by the thin reticulated leaves, downy scape, and small pale flowers, with the spur short and blunt. *P. alpina* may be called a less marked species; but it may be separated beyond mistake from *vulgaris*, by the yellowish flower and very short blunt spur; while it is readily and decisively known from *P. Lusitanica*, by the want of the downy stem, and of the network upon the leaves. It is not a great many years since the 3d species was known to be found in any part of Scotland, except the western isles. It is, however, more common in some parts of England, than *P. vulgaris*. In Devonshire, for instance, it appears from the *Flora Devonensis*

that the last-named species is never observed ; whereas *P. Lusitanica* may be there called a common plant. *Pinguicula alpina* has only been recently added to the British Flora, and is at present considered exclusively confined to the stations mentioned, which are, I understand, all in the Black Isle.

Having received the following information regarding the discovery of this species, it may be introduced, as the usual accounts are not entirely correct. Mr. G. Campbell Smith, Land-surveyor at Banff—who possesses an useful combination of botanical with professional zeal, which leads him to embrace the opportunities afforded by his ordinary duties, of directing some attention to the native productions of the tracts with which he is occupied—first observed *Pinguicula alpina*, in June, 1831, upon the Rosehaugh property (part of the Black Isle of Ross, lying between the Friths of Beauly and Cromarty), which he was then surveying for Sir James W. Mackenzie. Mr. Smith communicated his specimens to Mr. Gordon, Minister of Birnie, who visited the quarter mentioned during the same summer ; and, subsequently, other discerning botanists had an opportunity of inspecting the plants, gathered either by Mr. Gordon or Mr. Smith, but these not being closely examined, were merely regarded as *P. Lusitanica* from a new and remarkable *habitat*.* The credit of ascertaining this to be a new *Pinguicula* is due to Mr. H. C. Watson, who decided it to be *P. alpina* of Linnæus. The distinctions of our three species, as given in the *Species Plantarum* of Linnæus, are indeed very simple, relating mainly to the nectary or spur, which is cylindrical in the 1st, conical in the 2d, and thickened at the point in the 3d.

It has been said that the late G. Don met with *P. alpina* either in Aberdeenshire or Angus ; and Lightfoot (Appendix, p. 1133.) observes, “ *Pinguicula alpina* is said to have been found in Orkney, and between Erwin and Air, in moist ground plentifully” ; but these statements stand in need of confirmation, particularly as Lightfoot is not very correct regarding names in this genus, and indeed the same thing may be said of Linnæus himself.

In the above species of *Pinguicula* the flowers and scapes have no little similarity ; and the leaves of all are radical, rolled in at the margin, and more or less overspread with small crystalline bodies. The name of this genus is thought to come from *pinguis*, fat ; owing to the greasy feel of the leaves.

The leaves of common *Butterwort* have been applied to sore nipples. It is mentioned in the cheap and interesting *Florigraphia Britannica* that they are put into broth by the common people in Wales, and taken as a cathartic† ; also,

* It is understood that Sir James Smith also mistook for the *Lusitanica*, specimens of *P. alpina*, sent to him by Mr. Mackay, in 1794, from Skye.

† Since the above was written, I have met with a similar remark by Ray, who adduces still older authority for it. “ *Cambrobritannici* (teste Parkinsono) ex herba *syrupum* conficiunt, quo seipsos purgant.”

that the juice of the leaves coagulates milk, and may be used as a substitute for rennet in the manufacture of cheese. It is added that this property is well known among the poor people in the northern parts of Scotland—a fact with which I was not previously acquainted, though aware of Light-foot's remark, that the Lowlanders believe the leaves of this plant, eaten by cows, to induce a ropiness in the milk. From this property the herb is called *Butterwort*; and *Sanicle* from *sano*, to cure, on account of its healing qualities. Old Gerarde says of the “vertues” of *Pinguicula vulgaris*:—“The husbandmen's wives of Yorkshire do use to anoint the dugs of their kine with the fat and oilous juice of the herbe Butterwort, when they are bitten with any venomous worme, or chapped, rifted, and hurt by any other means.” We may add another property which has been attributed to so many bog plants, that some suspect the effect to be owing to the wet, unwholesome situation:—“They say it rots their sheep when, for want of other food, they eat thereof.”

GENUS IV. UTRICULARIA.

Calyx of two equal leaves. Corolla two-lipped, spurred.
Capsule globular, one-celled.

SPECIES.

1. *Utricularia vulgaris*. *Greater Bladderwort*.

Plant floating, of considerable size, sometimes fully a foot long. Leaves green, composed of numerous capillary or bristle-like segments, fringed at the margin, and carrying small, beautiful, reticulated bladders. Flowers yellow, placed upon a leafless stem, which elevates them several inches above the water; lower lip longer than the upper, and having a projecting palate, which is about the same length as the upper lip. Spur conical.

Near Aberdeen, at Belhelvie, Brediach, and in a moss adjacent to the Loch of Skene. In the same county, at Balfluig, in Alford; Auchlossan, in Lumphanan; and Loch of Leys, in the neighbourhood of Banchory; and, perhaps, in not a few other lakes and peat-holes, but by no means frequent.

In Moray, not rare. Mr. Stables.

Perennial—flowering in the summer months.

2. *Utricularia intermedia*. *Intermediate Bladderwort*.

Leaves with a similarity to those of the former, usually dividing into three parts, each of which splits into two flat acute segments, fringed with bristle-like teeth. Bladders

placed upon separate stalks. Flowers yellowish ; the upper lip twice as long as the palate. Spur conical.

In the same kind of places as the preceding, and, perhaps, as common.—About twelve miles from Aberdeen, at the edge of an old lake called the Loch of Drum, and in a stream which runs into it. Also, in the interior of Sutherland.

Forfarshire, at the east end of Rescobie Loch, three or four miles from Forfar ; also in Loch of Belgavies, and in pools near Guthrie, twelve miles west from Montrose. Dr. Balfour.—Elginshire, Loch of Spynie. *Anderson's Guide*.—Bog on Benmore, Assynt. Small loch two miles east of Farr Church. *Jameson's Journal*, Dec. 1827.

Perennial—flowering in July.

3. *Utricularia minor*. *Lesser Bladderwort*.

Leaves smooth at the edges, and bearing bladders. Flowers few and small, pale yellow, with a very short, blunt, keeled spur ; upper lip about the length of the palate.

Ditches and pools ; rare.

Pool by roadside in Glen Clova, three or four miles north-east from Kirktown, not far from a small birch wood. Dr. Balfour.—Found in flower in a small pool near the base of Spickanconich, Assynt. *Jameson's Journal*, Oct. 1833.—Not in Mr. Stables's list of Moray plants.

Perennial—flowering in July.

OBS.—The species of this curious genus are aquatics, and, in the natural situation, their parts keep beautifully separate, but, on removal from the water, they fall together and become a shapeless mass. It is said that the bladders (which give the name to the genus—from *utriculus*, a little bladder) are at first filled with water, by which means the plant is kept at the bottom, until it is ready to flower, when the water gives place to air, and the plant rises to the surface. In the last stage the air disappears, the bladders become replenished with water, and the plant again falls to the bottom, where the seeds are ripened. Should the flower be met with (which, however, it has not been my own fortune to see, in any part of the tract to which this publication refers), attention to it, according to the marks given above, will be enough to decide the species ; but, independently of the flowers, it will be possible to determine the plant, as follows :—The 1st species may be always recognized by the large size, and by the leaves being minutely fringed and supporting the little bladders. In the 2d, the bladders are not mixed with the leaves, but placed upon distinct stalks, and the plant is more leafy, with the segments broader, and, so far as I have observed, of a paler green ; while the last species is known by its small size, and smooth leaves which support the bladder-like bodies. In this genus the shoots are occasionally terminated by *gemmae* or buds, having the appearance of a roundish mass of short hair or wool. These were at one time considered a means of propagation peculiar

to *U. intermedia*, but it now appears that the same green balls have been met with in *U. minor*, and I am certain that I have seen them, upon two occasions, in *Utricularia vulgaris*. It deserves to be added that, at the Loch of Drum, *U. intermedia* is mingled with *Subularia aquatica* and *Pilularia globulifera*, two species which are for the most part confined to alpine lakes.

GENUS V. LÉMNA.

Calyx of one leaf, membranous, torn. Corolla none.
Capsule with one seed.

SPECIES.

1. *Lemna minor*. Lesser Duckweed.

Plant floating, stemless. Leaves of an oval shape, thick, juicy, flat upon both sides, or slightly convex, often cohering in threes, and each sending down from its lower surface a root in the form of a long, single, unbranched fibre.

Tranquil waters, common—as in ditches at Torry, near Aberdeen, &c. &c.

Obs.—Though unable to say, from my own observation or information, that any other species of *Duckweed* is to be met with, I think it not very unlikely that some of the rest may exist in the north of Scotland. In some parts of the Continent, especially in the canals of Holland, *L. trisulca* and *polyrrhiza* may be observed floating as common as the *minor* does with us. The fructification of the *Lemna* is seldom seen. Mr. George Dickie, surgeon, a zealous and promising observer, has, however, had the fortune to meet with *L. minor* in flower, at Ferryhill, near Aberdeen.

“Duck’s meat, mingled with fine wheaten floure, and applied, prevaieth much against hot swellings, as phlegmons, erysipelas, and the paines of the joynts.” So testifies Master Gerarde; and the application mentioned would no doubt make a safe and good application in the milder forms of Erysipelas.

GENUS V. LŶCOPUS.

Calyx tubular, with five very deep acute teeth. Corolla tubular, four-cleft, with one of the segments rather larger than the rest, and slightly notched. Stamens two, distant. Seeds four, lying in the bottom of the permanent calyx.

SPECIES.

1. *Lycopus Europæus*. Gipsywort. Water Horehound.

Stem erect, from one to two feet high, hairy, with four angles. Leaves opposite, lanceolate, deeply toothed, the lower

ones, especially at the base, so deeply cut as to assume the pinnatifid character. Above they are smaller, and each upper pair has at its base a dense ring of flowers, which are whitish, with purple dots, and hairy within.

River sides, banks of lakes and marshy places; rare.—At the Loch of Leys, near Upper Banchory.

Ury. *Rev. Alex. Smith*.—In Moray, near Boath, and at Cawdor. *Mr. Stables*.—Strathpeffer, between Highfield and Contin, in Ross, opposite Miryford, along with *Iris Pseudacorus*. *Mr. G. C. Smith*.

Perennial—flowering in June and July.

OBS.—This species, though pretty frequent in England, is by no means common in Scotland, being unknown in many large tracts, both in the south and north of the kingdom. It does not appear in Greville's excellent *Flora Edinensis*, and it is said not to be in *Hopkirk's Flora Glottiana*, nor do I observe it in Mr. G. Don's list of Forfarshire plants. It was pointed out to me at Banchory, in 1835, by my learned friend Mr. Adams, surgeon; but from a list of plants observed by Hercules R. Scott, Esquire, Advocate, Edinburgh, with which I have been favoured, it appears that this gentleman had detected it in the station alluded to, several years before. The stamens being two in number, *Lycopus Europæus* is referred to the present class, though the botanist, finding it for the first time, is apt to be misled by its affinity to the Mints and other genera in the natural order Labiatae, and consequently, to refer it to the class Didynamia; in which, indeed, after all, perhaps it ought to be placed, especially if it is correct that the stamens are sometimes four. The large teeth of the leaves, extending occasionally almost to the mid-rib, are an obvious character that effectually distinguishes this species from the Mints, or any other plant with which it is likely to be confounded.

Lycopus Europæus has been considered astringent and useful in internal bleedings; but though allied to various active species, it is probably destitute of medicinal value, as it is of taste and smell. It contains, however, a colouring matter which dyes a good black; and in more than one Flora, Withering is quoted for the fact that the name *Gipsywort* is derived from this property, as the species was formerly used by gypsies for staining their skin. For this, however, we have far older authority. Gerard says, "some also think good to call it *Herba Egyptia*, because they that feign themselves Egyptians (such as many times wander like vagabonds from citie to citie in Germanie and other places), do use with this herbe to give themselves a swart colour, such as the Egyptians and people of Africke are of; for the juice of the herb doth dye every thing of this colour."

GENUS IV. CLADIUM.

Flower scale single, concave, chaffy, mostly empty, one or two of the uppermost only being perfect, and single flowered. "Fruit or Nut with a loose external coat, destitute of bristles at the base."

SPECIES.

1. *Cladium Mariscus*. *Prickly Twigrush*.

Schœnus Mariscus. Linn.—*Smith's Flora Britannica*.—*English Botany*.

Roots long, creeping. Stem several feet high, polished, round and angular at the top. Leaves long, taper-pointed, with fine teeth and a keel which, like their margins, is very rough. Spikelets roundish, rust-brown, composing a branched panicle, which has sheathing bristle-like bractæas.

In the moss of Restenet, formerly; G. Don in *Headrick's Survey*, 1813.—In large quantity, but very sparingly in flower, in a marsh by the roadside, about halfway between Kylestrome and Batcall church. *Professor Jameson's Journal*, October, 1833.

Obs.—This is one of the very few instances in which I am not possessed of specimens found in the tract to which these observations relate. Judging from English specimens, the spikelets may be said to have a similarity in appearance to those of *Rhynchospora alba*. The genus is, also, akin to *Schœnus*; but *Cladium* has only two stamens, and its fruit is different. It is remarkable that the present species, which is so conspicuous that it can scarcely have been overlooked, has never been seen but twice or thrice in Scotland; and, indeed, it is said to be now found in the more northern station only, being destroyed many years ago in the vicinity of Forfar, as well as *Eriophorum alpinum*, by the draining of the moss. In England and Ireland, however, this species is more abundant, and in *Loudon's Magazine of Natural History*, for March, 1836, which has come into my hands while in the act of writing these lines, it is noticed that, in the Fens of Cambridgeshire, *Cladium Mariscus* covers hundreds of acres, to the total exclusion of all other plants. I find in another place, a statement that it is so abundant near Cambridge, as to be commonly used in that town for lighting fires.

ORDER II. DIGYNIA. Two Pistils.

GENUS VI. ANTHOXANTHUM.

Calyx of two unequal, pointed, one-flowered scales. Corolla of two double scales, the outer pair awned.

SPECIES.

1. *Anthoxanthum odoratum*. Sweet-scented Vernal Grass.

Root fibrous, sending up several stems which are about a foot high, with one or two knots near the base. Leaves flat, varying much in downiness; those on the stem two or three in number, short, with swelling sheaths. Flowers shortly stalked, forming a compact panicle or loose spike, which is often interrupted at the base, and becomes yellow in an advanced stage.

Meadows and pastures; common.—On the coast of Kincardineshire, quite wild.

Anthoxanthum odoratum has been picked by me between 2000 and 3000 feet above the sea level, in Clova and Glen Isla. Dr. Balfour.—Mr. H. C. Watson finds it at the height of 1050 yards in Aberdeenshire, and of 700 yards in Sutherland.

Perennial—flowering in May and June.

OBS.—Regarding the flowers of this, our only grass with two stamens, different opinions have been entertained. Externally we observe two unequal, pointed scales, within which are two awned ones, of a brownish hue; and on the inside of these, close to the stamens and pistils, two very small awnless scales (which have been sometimes considered the nectary) are to be observed. The parts alluded to have been usually supposed to form a single flower, the most external pieces being the calyx, and the others constituting either a double corolla or a corolla and nectary. Our eminent botanist, Brown, suggested a view which has been adopted by various botanists, British and foreign; namely, that the calyx contains in reality three flowers. The two brownish awned valves are then to be considered a couple of lateral imperfect flowers, within which is a central perfect one, its corolla being formed by the little scales already referred to as the nectary.

The name of the genus is from *ἄνθος*, a flower, and *ξανθός*, yellow, from the yellowish hue of the spikes.

Mr. Sinclair observes that this grass constitutes a part of pastures in almost every kind of soil, and that its chief merit resides in its early growth; also, that it thrives best when combined with many different species, and is, therefore, a true permanent pasture grass. It does not, however, appear to be particularly liked by cattle. *Anthoxanthum odoratum* exhales, when drying, the odour of *Woodruff*, and is supposed to be the principal cause of the well-known fragrance of a hay field.

CLASS III. TRIANDRIA. Three stamens.

ORDER I. MONOGYNIA. One Pistil.

GENUS I. VALERIANA.

Calyx a slight border to the germen, expanding into a feathery crown for the seed. Corolla of one petal, five-cleft, bulging at the base. Seed one; its feathery crown gradually unrolled.

SPECIES.

1. *Valeriana officinalis*. Great Wild Valerian.

Stem from two to five feet high, round, furrowed. Leaves pinnate, with an odd one; the leaflets lanceolate, serrated, nearly uniform, those of the root leaves broader and ovate. Flowers in a branched head, usually reddish, but sometimes white.

Banks of streams and wet places; likewise in elevated woods and pastures; rather common.—Near Aberdeen in many places, as on the banks of Dee and Don, Den of Rubislaw, &c.

OBSERVATIONS.—Valerian, with its delicate reddish flowers and feathery seeds, is known almost to every one. It varies much in form and qualities according to the place of growth, having narrower leaves in dry mountainous pastures, as well as a stronger smell and more medicinal virtue, than when growing in low moist places. *V. officinalis* was long believed to be the celebrated *Φου* of Dioscorides; but it is now considered that Dr. Sibthorp, in his Greek tour, ascertained this to be a mistake, and that the *Phu* is a different species, which has been called *V. Dioscoridis*. Greek Valerian is a totally different plant, viz. *Polemonium caruleum*, which, notwithstanding the name, has no true affinity to the Valerians; nor is it supposed to be a Greek plant, or known to Dioscorides.

Cats are well known to delight in the smell of the root of Valerian; and rats, it is said, have a similar partiality, which rat-catchers sometimes make the means of decoying them. Valerian is reckoned of no inconsiderable value in hysterical and epileptic complaints, when these depend upon an increased susceptibility of the nerves rather than upon any alteration of structure; and with French authors it is even a greater favourite than with us in the diseases usually styled

nervous. Beyond a mitigation of the disease, Valerian produces no very conspicuous effects upon the system. The part made use of is the root, from which an infusion or tea may be prepared; but the powder is more commonly employed. Some entertain doubts regarding the utility of these preparations of Valerian; but I can, at least, attest the frequently excellent effects of its Ammoniated Tincture in spasmodic and nervous attacks. It does not, however, appear that recent medical observers have added much to our knowledge of Valerian, as some of the old Herbals may be said to contain the substance of what is to be found upon this subject in the works of the present day.

GENUS II. VALERIANELLA.

Calyx of three or four teeth, ultimately enlarged, and crowning the capsule. Corolla of one petal, five-cleft, protuberant at the base. Capsule with three cells, two of them usually abortive.

SPECIES.

1. *Valerianella olitoria*. *Corn Salad*. *Lamb's Lettuce*.

Valeriana locusta. Linn.—*Lightfoot's Flora Scotica*.—*Smith's Flora Britannica*.—*English Botany*.

Fedia olitoria. *Smith's English Flora*.—*Hooker's Flora Scotica*, and *British Flora*.

Stem soon dividing into two, each side of the fork repeatedly splitting in a similar manner. Leaves tongue-shaped, the highest sessile, and toothed or jagged; those below entire, and tapering at the base; the radical ones being on distinct stalks. Flowers pale blue, collected in heads, which have at the base bracteas resembling the leaves, though of a smaller size. Capsule inflated, two-lobed, smooth, with a minute crown of three inflexed teeth, one of them much the largest.

At Balfuig, in Alford; but probably not indigenous. An undoubted native of several spots on the Kincardineshire coast, between Stonehaven and Muchals. Coast of Buchan.

Angus-shire. Mr. G. Don.—South side of Kincardineshire, at St. Cyrus. Anonymous.—Old-Aberdeen Links. Dr. Fleming.—Banffshire. Near Castle Oliphant, Keith. Rev. Mr. Cowie.—Wall at Cawdor Castle; but rare in Moray. Mr. Stables.—Coast of Sutherland. Mr. Watson.

Annual—flowering in May and June.

2. *Valerianella dentata*. *Oval-fruited Corn Sallad*.*Valeriana dentata*. *Smith's Flora Britannica*. — *English Botany*.*Fedia dentata*. *Smith's English Flora*. — *Hooker's Flora Scotica, and British Flora*.

Stem repeatedly dividing. Leaves narrow, tongue-shaped. Flowers flesh-coloured; some single in the forks, others in corymbs. Capsule ovate, ribbed, with a crown of three or four unequal teeth, one much larger than the rest.

In the south-east part of Angus-shire (by Mr. G. M'Nab). Dr. Balfour.—Rare in Moray, and not indigenous. Fields near Stotfield and Coltfeld, Alves. *Mr. Stables*.

Annual—flowering in June and July.

OBS.—Some difficulty has been experienced with these two species, partly because most of my specimens are not in a very fit state for complete examination; but principally because they do not respectively well agree with the descriptions in the *English Flora* of Smith, upon which, in general, I am disposed to place the most implicit reliance. Thus, in the work alluded to, it is said of the 1st species, that none of the flowers are at the forks of the stem; whereas there are, in my specimens, a few single flowers in the upper forks, and the same thing is to be observed in some old figures of this species. It is also mentioned that, in the 2d species, almost all the flowers are from the forks of the smooth stem; but I observe a great part of the flowers not to be in the forks, or at least to be crowded into a capitate form, as in the 1st species; nor is the stem quite smooth, but with short and remote bristles, as in the *olitoria*. For these reasons, it is possible that some of the stations assigned to one of the species may, in reality, belong to the other. It may be said that the species differ in the former having bluish flowers, mostly in heads, with a globular two-lobed seed-vessel; while in the latter, which is a taller plant, with narrower leaves, the purplish flowers are frequently in the forks, even at some distance from the summit, and the capsule is of a pear-shaped form.

Lamb's Lettuce is frequently cultivated for a sallad both in England and on the Continent.

GENUS III. IRIS.

Calyx a sheath of two pieces. Corolla of six deep segments, alternately erect and reflexed. Stigmas three, petal-like, covering the stamens.

SPECIES.

1. *Iris Pseudacorus*. *Yellow Water Iris*.

Root large, fleshy, horizontal, acrid, and astringent. Stem one, two, or three, feet high, not quite straight at the summit. Leaves long, sword-shaped, bright sea-green, clasping the stem. Flowers from three to six, bursting from a

membranous calyx or sheath ; the inferior upon stalks. Corolla lemon-coloured, with purple or black lines ; three of its segments being large, external, and reflexed ; the other three interior, erect, and small. Stigma petal-like, larger than the inner segments of the corolla, fringed, and forming an arch over the anthers. Capsule angular, with three many-seeded cells.

In marshes, and at the sides of ditches and streams ; not very common.—At Aberdeen, on the west side of the Old-Town Links ; Burn of Millden ; Canal above Mounthooly ; and a few miles southward upon the Kincardine coast. Inverury.

Various parts of Banffshire, and occasionally throughout the north. Scarcely known, however, in the Alford district, though found in Cromar.

Caithness and Sutherland. Mr. Watson.

Perennial—flowering in July.

There is some reason to think that the root will act upon the bowels and kidneys ; and toothache may be alleviated by chewing it and retaining the acrid juice in the mouth. Various authors, British and foreign, say that the seeds of this plant have been tried as a substitute for coffee ; but they do not mention the result of the experiment. Lightfoot informs us that the roots of *Iris Pseudacorus* are used to dye black in Arran and some other of the western isles, and that, in Jura, they are boiled with copperas to make ink.

GENUS IV. RHYNCHOSPORA.

Flowers with a single scale, the outer barren and small.

Spikes terminal and axillary. Bristles several. Style enlarged at the base, remaining so as to form a beak to the seed.

SPECIES.

1. *Rhynchospora alba*. *White Bogrush*.

Schænus albus. Linn. — *Lightfoot's Flora Scotica*. — *Smith's Flora Britannica*. — *English Botany*. — *Hooker's Flora Scotica*.

Stems triangular, thread-like, leafy. Leaves erect, tapering, narrow, channelled. The loose heads or clusters of flowers are level-topped ; one, two, three, or more upon each stem, white at first, but ultimately brownish. Bractees of variable length, sometimes much longer than the clusters. Stamens two. Style remaining, and forming a beak to the seed, which is surrounded by numerous bristles.

In boggy situations not uncommon, but chiefly in the most northern counties.—In Sutherland, on the banks of Loch Shin and other places.

Angus-shire, near Rescobie. Dr. Balfour.—Rare in Moray, found at Dyke moss, north of Brodie House. Mr. Stables.—Ross-shire. Mr. G. C. Smith.—In Sutherland, to the east of Loch Erriboll. Mr. Watson.

Obs.—This plant is sufficiently distinguished by its whitish flowers collected into loose heads, of which there are usually three or four upon each stem. It is remarkable for the style remaining upon the seed; whence comes the name of the genus—from *πυγξος*, a beak, and *σπορα*, a seed. A writer in *Loudon's Magazine of Natural History*, for December, 1835, states that this species has "bristles nine to twelve, with reflexed teeth," an observation of some importance, as it is added that a kindred species, not, however, hitherto found in Scotland, *Schœnus fuscus* of Linnæus, has "bristles six, with erect teeth." In the *Flora Scotica* of Hooker, it is stated that the flowers of *Rhynchospora alba* are terminal and collected into a sort of corymbus, as long or longer than the involucre—a description with which this species, according to my opportunities of observing it, does not usually coincide.

GENUS V. SCHÆNUS.

Flowers with a single scale, the outer ones small and barren. Spikes terminating the stem. Seed with or without bristles at the base.

SPECIES.

1. *Schœnus nigricans*. *Black Bogrush*.

Stems in tufts, round, from ten even to twenty inches high, naked except at the base, which is surrounded by blackish sheaths; whence arise rigid bristle-like leaves, shorter than the stem. Flowers collected into a single dark roundish head, having at its base a couple of awl-shaped leaves, one of them shorter, and the other in general far longer, than the head. Seed white, shining, pointed. Bristles, if any, small and brownish.

In boggy places; rather rare.—In wet ground, adjacent to Montrose, where I found it in 1828; but it is probably in very small quantity, as Mr. D. White has since searched that neighbourhood for it in vain. Banks of Loch Shin in Sutherland, and not uncommon on the west side of the county. Not hitherto observed in Kincardine or Banff.

About seven miles from Aberdeen, in a swamp upon the east side of the road to Udney, near the dark, serpentine rocks; from which specimens were brought to me in 1835, by Mr. John Henderson, who discovered it in company with Mr. A. K. Clarke, whose untimely death has happened when these sheets are about to go to press.—In Moray. Mr. Stables.—Black Isle, Ross-shire. Mr. John Minto.—North coast of Sutherland. Mr. H. C. Watson.

Perennial—flowering in June and July.

3. *Schœnus rufus*. *Brown Bog-rush*.

Schœnus ferrugineus and *Schœni compressi* varietas.—*Lightfoot's Flora Scotica*.

Scirpus rufus.—*Smith's English Flora*.

Biysmus rufus.—*Hooker's British Flora*.

Stem round, varying from a few inches to a much greater height; having near the bottom two leaves which are narrow, smooth, grooved, but not keeled. Spike somewhat compressed, of a dark rust-brown colour, composed of from five to seven spikelets, which are in two ranks, with a bractea at the base, varying in length, and sometimes wanting. Seed pointed, without bristles.

In not a few places, though Lightfoot calls it rare, but always, so far as I have observed, in the neighbourhood of the sea.—At Aberdeen, on the Old-Town Links, but in extremely small quantity. Upon the same coast, a little to the south of Ythan; and in Buchan, at St. Fergus. Abundant in many parts of the Kincardineshire coast, especially between Stonehaven and Muchals. In the neighbourhood of Cromarty.

Common on the sea shore at Montrose, and near the basin there. *Mr. White*, surgeon.—Kincardineshire, at Brotherton. Anonymous. And near Portlethen. *Dr. Fleming*, King's College.—Boyndie Links, Banffshire. *Mr. G. Campbell Smith*.—Common along the sands on the Moray coast, and in moorish bogs, for some hundred feet of altitude. *Mr. W. A. Stables*.—North of Sutherland. *Mr. Watson*.

Perennial—flowering in June and July.

Obs.—The dark brown sheaths at the base of the stem, and the round, ovate, blackish head, with its two bracteas, one short and the other long, indicate *S. nigricans* with sufficient precision. Upon referring just now to the *Scottish Floras* of Lightfoot and Hooker, I have been surprised to find that in both these Works this is called a common Scottish species; but I observe that in Hooker's *British Flora*, it is more correctly stated to be rare in Scotland, unless upon the west coast. Except the stations now published, the only known Scottish *habitat* on the east coast, is in Fife, near the Frith of Forth, where I have gathered it in company with Dr. Graham, the discoverer, I believe, of that station for the plant. As to *S. rufus*, it is sufficiently separated from the 1st species by the dark brown, compressed spike, which is composed of about six spikelets, placed in two rows, and has usually a single leaf at its base. This leaf is stated by authors to be shorter than the spike, or only to equal it in length; but it is certain that, in Kincardineshire, where the plants are luxuriant, the bractea is frequently longer than the spike, not seldom, indeed, twice, nay, even occasionally three times as long. Dr. Walker of Edinburgh is considered the original discoverer of this species, which was unknown to Linnæus. Lightfoot has given

a figure of it upon the same plate with *Carex incurva*, and it is remarkable that these two plants grow together—sometimes, as it were, passing insensibly into one another—on the coast of Aberdeen and Kincardine.

Should *Schœnus compressus* be met with in the tract to which these observations relate, it may be distinguished from *rufus* by its lighter brown, chesnut-coloured, and still more compressed spike, which, like the whole plant, is larger, the spikelets as well as the flowers whereof they are composed being much more numerous. The leaves, too, are far larger and broader; but, indeed, the long bristles at the base of the seed (distinctly to be observed, but not always included even in the most recent accounts of the species; though, without attention to this point, it cannot be in all cases recognized) will effectually distinguish *S. compressus* from *rufus*, and so far as I know from every other plant with which it is likely to be confounded. *S. compressus* is a rare native of Scotland; at least the author of these remarks has never seen it in the growing state, except once—which was in the South, not very far from the English Border. This species may, it is possible, exist in the north and east of Scotland, as I have got more than one account of it occurring in the tract to which this publication relates; but all the northern specimens supposed to be *S. compressus* which I have yet seen, proved to be either *Carex intermedia* or *S. rufus*. There are, it may be added, several common features in the following species:—*S. compressus* and *rufus*, *Carex intermedia*, *arenaria*, *ovalis*, and even *incurva*, all of which, except the first, are to be found associated a few miles to the south of Aberdeen, forming, in their various gradations, a study not devoid either of difficulty or interest.

GENUS VI. SCIRPUS.

Flowers with one scale, almost all fertile, arranged in one or more lateral or terminal spikes. Seed usually with bristles at the base.

SPECIES.

* *Stem leafless, terminated by a single spike.*

1. *Scirpus cæspitosus*. *Scaly-stalked Clubrush.*

Eleocharis cæspitosa. *Hooker's British Flora.*

Heleocharis cæspitosa. *Lindley's Synopsis.*

Stems roundish, slender, slightly furrowed, from two or three inches to more than a foot high, invested at the base with a straw-coloured scaly mass, within and above which are one or two green sheaths, each terminating in a short leafy appendage. Spike single, small, reddish, or chesnut-coloured, with the outermost scales pointed, and as long, or longer, than itself. Stigmas three. Seed surrounded by six bristles.

On moist moors; rather common.—Near Aberdeen, at the Stocket Moor; Scotstown; and in the north-east part of Old Machar. At Dorzel, Alford; but not common in that district.

Birse; Monymusk; and on the Buchan moors, as at Aberdour, &c. Banffshire, and perhaps in all parts of the north.

Mr. H. C. Watson finds it in the mountains of Forfar, Aberdeen, and Sutherland; 500 yards high in Sutherland, and 1000 yards in Aberdeenshire.

Perennial—flowering in July.

2. *Scirpus pauciflorus*. *Chocolate-headed Clubrush*.

Eleocharis pauciflora.—*Hooker's British Flora*.

Heleocharis pauciflora.—*Lindley's Synopsis*.

Stem round, surrounded at the base by tight sheaths, which are somewhat scaly at the bottom, and above quite leafless. Spike short, ovate, or nearly cylindrical, larger than the two outer blunt scales. Seed with six bristles at the base.

Alpine and maritime situations.—Aberdeen Links. Ross-shire, at Kincardine, near Bonar-bridge; and in Sutherlandshire.

Marshes in Angus. Mr. G. Don.—Near Aberdeen, at the Stocket. Anonymous.—Glen Clova, near to Kirktown. Mr. Watson.—In the Province of Moray.

Perennial—flowering in August.

3. *Scirpus palustris*. *Marsh Clubrush*.

Eleocharis palustris. *Smith's English Flora*.—*Hooker's British Flora*.

Heleocharis palustris. *Lindley's Synopsis*.

Root creeping extensively. Stems not many together, round, thick, spongy, with leafless sheaths at the base, and each bearing a single oval brownish spike, about half an inch long. Stigmas two. Seed crowned with the permanent base of the style, and surrounded by about four bristles.

In marshes, lakes, and river sides; very common.—Near Aberdeen, at Nigg, and in the edges of Dee.

Perennial—flowering in July.

4. *Scirpus multicaulis*. *Many-stalked Clubrush*.

Eleocharis multicaulis. *Smith's English Flora*.—*Hooker's British Flora*.

Heleocharis multicaulis. *Lindley's Synopsis*.

Root scarcely creeping. Stems numerous, with one or two straw-coloured or purplish sheaths at the base. Spike small, acute, and of a dark colour. Stigmas, three. Seed with bristles at the base, and crowned with the lower part of the style, as in the preceding species.

In marshy places.—In a bog at Smithyhill, Alford. Between Loch Inchard and Arcle in Sutherland.

Near Aberdeen, at Nigg. Mr. Dickie.—In a marsh behind the Invercauld Arms, Castletown. Dr. Balfour.—In the vicinity of Kincardine O'Neil. Mr. W. M. White.—Various parts of Donside. Mr. John Proctor.—Wet moors, west of Inshoch castle, Moray. Mr. Stables.—Ross-shire. Lochlee and moss of Lithie, Nairnshire. *Anderson's Guide*.

Perennial—flowering in August.

Obs.—The plants in this group are marked by the single spike at the extremity of the stem. *Scirpus cæspitosus* is well characterized by having at the base of the stem a mass of withered scales, and within these, one or more young sheaths, ending in little tongue-like leaves; and farther, by the long glumes which sometimes extend completely beyond the spike. It is not with quite so much ease and precision that the remaining three species are at all times to be distinguished from one another. Of these, the 3d is a well-known common plant, and, therefore, it is enough to refer to the tall, stout, spongy stem, and the single spike often nearly an inch long. With respect to the 4th species (*multicaulis*) I can add little or nothing to the points noticed above; but it may be observed that though there has been a difference of opinion upon the subject, it is probably a good species. Doubts, however, may be entertained as to whether some of the preceding stations do not regard mere *varieties* of the *palustris*. *S. pauciflorus*, a species unknown to Linnæus, makes sometimes a near approach in appearance to small specimens of *S. palustris*, but the two are essentially different, and as practical means of distinction, we have the longish spike of the latter species tapering at both ends into an elliptical form, to compare with the short, broad, and blunt spike of *pauciflorus*; while this last-named species is distinctly separated from *S. cæspitosus* by the spike being smaller, and of a darker colour, usually twice as long as its outer scales, and still more evidently by the want of any thing like the rudiments of leaves observed in *S. cæspitosus*. *S. pauciflorus* is sometimes met with of very small size; but at no time need it be confounded with *S. acicularis*, a species not known to me with any certainty as occurring in the north of Scotland, well characterized by the extremely slender stem and very minute spike. It is to be recollected that in all the preceding species the stems are apt to occur without spikes, in which condition they are sometimes taken for leaves.

** *Stem usually leafy with several spikes.*

5. *Scirpus fluitans*. *Floating Clubrush*.

Heleogiton fluitans. *Lindley's Synopsis*.

Stem zig-zag, branched, flaccid, jointed, with floating awl-shaped short sheathing leaves, long capillary ones being thrown out in tufts from the joints under water. Spikes small, pale green, upon stalks which are several inches long. Seed without bristles.

In lakes and pools; not very common.—In the neighbourhood of Aberdeen, at Maryculter and Pitfoddels. Also, in the Loch of Leys, and of Auchlossan in Lumphanan. Abundant in Sutherland, on the west side of the county.

Angus-shire. G. Don.—At Hilton, near Aberdeen. Herbarium of the late *Dr. Harvey*.—Banffshire. Rev. W. Cowie.—North of Brodie; west of Ardroughty, Elgin; Cawdor. Mr. Stables.

Perennial—flowering in June and July.

6. *Scirpus setaceus*. *Bristle-stalked Clubrush*.

Isolepis setacea. *Lindley's Synopsis*.

Root fibrous. Stems numerous, slender, furrowed, from two to five inches in length, each having, at the base, one or more bristle-like leaves, and a sheath which terminates in an awl-shaped point. Spikes one or two, rarely three, greenish-brown, at the extremity of the stem, but appearing to be lateral, from the bractea seeming a continuation of the stem. Bristles none.

Dry ditches and gravelly places which have been under water; not very abundant.—Near Aberdeen, at Bridge of Dee, and to the south of the Suspension Bridge; also, on the Old-Town Links; and at "the Black Dog," Belhelvie. Brux, Lumphanan, Buchan, &c.

Head of Birse Forest. *Mr. Proctor*.—Keith. *Mr. Craigie*.—Black Isle of Ross. *Mr. Smith*.—In Moray.—North of Sutherland. *Mr. Watson*.

Annual—flowering in July and August.

7. *Scirpus sylvaticus*. *Wood Clubrush*.

Stem from one to three feet in height, triangular, leafy to the top. Leaves grassy, broad and long, sheathing, rough at the margins. Spikes very numerous, small, greenish, collectively forming a large, irregular, very branched panicle, with several leaves at its base, and a small bractea below each principal division. Seed small, whitish, surrounded by six or eight long bristles.

Woods and shaded places; rare.

Angus-shire. G. Don.—Banks of the Burn of Beltie, in Kincardine O'Neil, Aberdeenshire. *Mr. Francis Adams*.—On a shady bank overhanging the Old Bridge of Don, at Aberdeen. *Mr. Chrystall*.—At Paradise, Monymusk, Donside; and banks of Bogie, below Manse of Huntly. Anonymous.—Near Peterhead. *Mr. Alex. Murray*.—Not in the list of Moray plants.

Perennial—flowering in July.

8. *Scirpus maritimus*. *Salt-marsh Clubrush*.

Root creeping, sometimes knotted. Stem triangular, leafy

especially at the base and summit. Leaves rather broad and very long. Spikelets eight or ten, or much fewer, even single; brown, oval, some of them stalked, forming a cluster, which has several leaves at its base; one of these of considerable length. Scales torn, with an awn-like point between the segments. Stigmas three. Seed with bristles at the base, which vary in number.

In marshes and rivers near the sea; but not very common.—Aberdeenshire in the river Ythan, between Ellon and the sea. Ross-shire, near Bonar Bridge.

Angus-shire, at Montrose and Craig. *New Statistical Account*, Part V.—Gourdon in the Mearns. Anonymous.—Near Aberdeen, in the marsh at the north end of the Old-Town Links, but not abundant. *Mr. George Dickie*, surgeon.—Not in the list of Moray plants; but at Dingwall, according to *Anderson's Guide*.

Perennial—flowering in July and August.

9. *Scirpus lacustris*. *Bullrush*.

Stem from two to six feet and more in height, round to the very top, spongy, thick, tapering upwards, naked, but having, at the base, sheaths, of which some end in very short leaves. Spikelets with fringed scales, brown, oval; often above thirty in number, occasionally many more, arranged in an irregular head or umbel, the stalks of which differ in length, some being branched and others not. There are membranous bracteas to the principal divisions, that, at the base of the umbel, being long and leaf-like. Seed with six bristles at the base.

In old lakes; not very uncommon.—In the lochs of Drum and Leys, Deeside; and of Kinnord, in Cromar. Abundant in Loch Shin, Sutherland.

Angus-shire at Bridge of Dun. *Mr. D. White*.—Abundant in the lakes of Balgavies, Rescobie, and Forfar. Dr. Balfour.—Near Aberdeen, in the Corbie Loch, Old Machar. *Mr. John Henderson*.—Loch of Spynie, but not very common in Moray. *Mr. Stables*.—Sutherland to the east of Loch Erriboll. *Mr. Watson*.

Perennial—flowering in July and August.

OBS.—The present group is separated from the preceding by the spikes upon each stem being more than one; and farther, by the possession of leaves, which are wanting in the first four species; as we cannot consider, in the light of leaves, either the barren stems of the first division, or the leaf-like points of the sheaths in *S. caespitosus*.

S. fluitans is detected by the stem being branched and carrying several minute spikes, upon long stalks; and, moreover, by being, in general, a floating plant. The small, greenish spikes, two or three in

number, overtopped by the bractea, are characters of *S. setaceus*; and should the spike be single, as it sometimes is, the species will not be supposed to belong to the first section, as its fructification has at least the appearance of being on the side of the stem, and not at its extremity, as in the first group. *S. lacustris* is recognized by the tall, stout, round, soft, nearly leafless stem, and rather numerous spikes; while *S. maritimus* may be discriminated by its triangular stem and long leaves, taken in connexion with the maritime stations in which it grows. At the same time, we are not certain of sea water being necessary to this species, as I understand it has been found, in England, in *habitats* to which the sea had no access; and, if I recollect rightly, it occurs on the Continent under the same circumstances. There is little risk of *S. sylvaticus*, a rare species, both with us and in many other parts, being mistaken for any other *Scirpus*, as it is quite unlike them all, having the *port* rather of *Luzula maxima*. The stout triangular stem, with long leaves, and the hundreds of greenish spikelets, with the whitish seed surrounded by bristles, are unfailing marks of this species.

It remains to be observed, that the plants at present placed under the genera *Schoenus* and *Scirpus* have been often arranged differently, by individuals of great eminence. In the latter genus, *S. palustris* and *multicaulis* have, of late, usually been separated from the rest, chiefly on account of the lower part of the style being dilated and continuing attached to the seed, and have been placed in *Eleocharis*; while *S. setaceus* and *fluitans*, which are without bristles, enter into the genus *Isolepis*. Farther, *Schoenus rufus* and *compressus*, have been considered as forming a genus styled *Blysmus*, chiefly distinguished by the two-ranked compressed spike. The writer of these remarks has, however, thought it better to notice the characters referred to, in the respective specific descriptions, than, without absolute necessity, to indicate, in a local Flora, numerous genera, particularly when botanists are by no means quite agreed regarding their constituents. Superficial attention to the subject might have led to including *Cladium Mariscus* and *Rhynchospora alba* in the genus *Schoenus*, or to have put those two species in a genus consisting of themselves alone; but each of these being materially different from any other species, it is better to separate them generically from the rest, as well as from one another.

No doubt, it has been remarked, that to multiply genera more than enough is better than to fall into the opposite error, as we are, in that way, most likely to bring the important characters into a prominent light. This, though a good theory, would sometimes lead to inconvenience in practice; and certainly some carry the principle quite far enough in this portion of the *Cyperaceæ*, when they place, in different genera, even *Schoenus rufus* and *compressus*, species so nearly allied that good botanists have occasionally failed in distinguishing them from one another.

Mr. Curtis observes that the roots of *Scirpus maritimus*.

are very sweet, and would probably afford good and nutritious food for hogs, being larger than those of *S. palustris*, which are collected for that purpose in Sweden. Indeed, it is said that they have been ground and used in place of flour in times of scarcity. *S. cæspitosus* is considered excellent early food for the hill sheep, and cattle eat the herbage of *S. maritimus* and other species of this genus. It is observed, by Withering, that goats, horses, and hogs, eat *S. palustris*; but cows and sheep refuse it. *S. lacustris* is much used for mats and chair bottoms; also, for thatching cottages and filling up the spaces between the staves of casks.

GENUS VII. ERIOPHORUM.

Flowers with a single scale, imbricated. Seed encompassed beneath with numerous long cottony hairs.

SPECIES.

1. *Eriophorum alpinum*. *Alpine Cotton-grass*.

Root creeping, throwing up a row of crowded stems, which are triangular, and have, at the base, long sheaths, ending in short, channelled leaves. Spike single, oblong-ovate, very small, with nut-brown scales, and hairs which continue erect, and do not fall down upon the spike.

In the moss of Restenet, three miles east of Forfar. Mr. G. Don.

Perennial—flowering in June.

2. *Eriophorum vaginatum*. *Hare's-tail Cotton-grass*.

Root slightly creeping. Stem triangular at the top, in the early stage short and entirely included in swelling sheaths, of which, usually, the highest is leafless, the next ending in a short leaf, and the lowest yellow, sending up bristle-like leaves. These, in the early stage, are longer than the stem, which, however, afterwards far exceeds them, shooting up ultimately to a foot or two. Spike single, ovate; the scales at first, of a lead colour, afterwards silver-grey. Anthers yellow.

Perennial—flowering in April.

On moist heaths and hills; not rare.—Near Aberdeen, at Nigg, Brediach, Corbie Loch, &c. Loch of Skene, Lumphanan, Upper Banchory, Clatt, higher parts of Dee and Don. Also, upon Morven and Bennachie, and on the Buchan moors.

Not rare in Moray.—Clova, Braemar, and Sutherland. Mr. H. C. Watson; who observed it at the respective heights of about 900, 800, and 700 yards.

3. *Eriophorum angustifolium*. Common Cotton-grass.

Root of numerous fibres. Stem leafy, roundish, more than a foot high. Leaves rather long, sheathing, linear, triangular, grooved at the base. Spikelets five or six, upon stalks of unequal length, and having, at the base, two or three leaves, one longer than the rest. Scales brown, with a pale edge. Hairs long, at least thrice the length of the spike.

Bogs and muddy places; common.—Near Aberdeen, at Nigg; Old-Town Links, &c. &c.

Upon the mountains of Clova (850 yards high) and Braemar; and in the northern part of Sutherland. Mr. Watson.—Ross-shire, where the genus is much esteemed by shepherds for affording early pasture. Mr. J. C. Smith.

Perennial—flowering in May.

Obs.—This genus is well marked by the character whence comes the name—from *ἔριον*, *wool*, and *φέρω*, *I bear*.

The single spike sufficiently separates the two first species from the 3d; and, indeed, this character may be deemed pretty conclusive of the species being the 2d, as the chance against this is so small, that it scarcely deserves to be taken into practical account. It is an obvious enough general rule (not, however, necessary in the present instance), that where, in consideration of the characters of a plant, we are equally divided between two species, one of which is rare and the other common, the chances are greatly in favour of its being the latter. It is said that the first species has disappeared from the neighbourhood of Forfar; nor is it certain that it ever occurred in any other spot of British ground—a remarkable enough fact, considering that there is no doubt of its having been seen in the station alluded to, both by Mr. R. Brown and Mr. Geo. Don. Smith thinks it strange that so mountainous a plant as *E. vaginatum* should have been found at Croydon. It is certainly not an alpine species with us, but common enough throughout the north, usually at the ordinary level of the district. Having failed to meet with any many-spiked *Eriophorum*, differing, with certainty, from *E. angustifolium*, the writer of these remarks ventured, at one time, to suspect that, in Scotland, we have in reality but one species with several spikes; and that the differing lengths of the hairs of the seed might be owing to the different stages of the plants; but this conjecture rests upon no satisfactory foundation. Indeed, judging from the figures of Vaillant and Sowerby, *E. angustifolium* is abundantly distinct from the *polystachion*. Questions, however, about the limits of species are more seductive than important, and I would say, shortly, that, as the northern botanist may pretty safely refer any *single-spiked* *Eriophorum* to the *vaginatum*, so will he seldom err in considering every *many-spiked* species as *E. angustifolium*, though it is possible that others, especially the *polystachion* (cha-

racterized by broader leaves and shorter hairs), may exist in the tract to which this publication relates.*

Sheep are said to be very fond of *E. vaginatum*, and cattle feed readily upon the leaves of the *E. angustifolium*, before other herbage is sufficiently advanced. The down of these plants has been used for stuffing pillows; but it is too brittle for being manufactured into thread.

GENUS VIII. NARDUS.

Calyx wanting. Corolla of two scales, the outer largest. Stalk of the spike toothed. Flowers alternate, sessile, all turned to one side.

SPECIES.

1. *Nardus stricta*. Mat-grass.

Root of tenacious, tortuous, downy fibres. Stems almost leafless, several inches high. Leaves numerous, diverging, and, like the stems, bristle-shaped. Spikes long, about a quarter of the whole plant, of a purplish hue, toothed, and grooved for the reception of the flowers, which are unilateral, the stem being terminated by one of them. Larger scale of the corolla terminating in an awn.

Moist moors and woods; common.

Mr. H. C. Watson observed this species at the height of 1050 yards in Aberdeenshire, and of 700 yards in Sutherland.

Perennial—flowering in June.

Obs.—This rigid and rather elegant grass, untouched by cattle, and resisting the weather, often presents a solitary and desolate aspect in woods and moors, “where it forms thick tufts of rigid, rush-like leaves, which remain through winter ‘bleaching in the northern blast.’”

Smith observes that of its agricultural uses little can be said, for cattle, in general, refuse it; and though mats or baskets might be made of it, we are supplied, from Spain, with better grasses for those purposes, particularly *Stipa tenacissima*. *Nardus stricta* is said to possess a quality which is of importance upon some occasions. It offers a safe hold to the hands of the alpine herborizer, although it may increase the slipperiness of his path.

* Since the above was written, information has been received that *Eriophorum pubescens*, a *sp.* with downy spike-stalks, and the hairs of the seed still shorter than in *E. polystachion*, occurs in Ross-shire; but, in the absence of exact knowledge as to this being a valid species, farther notice of it is deferred.

ORDER II. DIGYNIA. Two Styles.

GENUS IX. ALOPECURUS.

Calyx of two nearly equal, acute scales, for the most part combined at the base, enclosing a single floret. Corolla of one scale, pointless, awned at the base. Styles combined.

SPECIES.

1. *Alopecurus pratensis*. *Meadow Fox-tail-grass*.

Stem erect, smooth; from one to two feet high. Lower leaves long and soft; those above short and pointed, with long, furrowed, slightly swelling sheaths. Stipule short. Spike about two inches long, cylindrical, blunt, silvery. Scales of the calyx, acute, united at the base, fringed with short hairs. Corolla of one piece, sending from its base a conspicuous awn, which is much longer than the calyx. Anthers prominent, yellow.

Fields and meadows; common.

Perennial—flowering in May and June.

2. *Alopecurus alpinus*. *Alpine Fox-tail-grass*.

Stem about a foot high, smooth, erect, with a curve at the base, having two or three long, furrowed, somewhat-inflated sheaths, ending in broad leaves. Spike ovate, not an inch in length. Calyx-scales very hairy, united at the base, ending abruptly, "nearly as long as the awn of the corolla."

Beside a stream which falls into the west side of Loch Whorrol, a lake at a considerable elevation on the mountains to the north-east of Kirkton, Clova. This was long the only station for it in Britain. I picked specimens here in 1830. The plant grows abundantly by the side of the White Water, at a considerable distance above its entrance into the head of Glen Dole; and also, on sides of a stream which runs from the south to join the White Water. In this situation it is associated with *Phleum alpinum*. I have also gathered it in immense profusion in marshy ground between Clova and Loch Lee, about two miles south from the head of the loch; and by the side of a rivulet on the mountains of Clova, south from the farm-house of Bradoony, at the upper part of Glen Clova; and in marshy places at the head of Glen Callader. Dr. J. H. Balfour.

Clova, at the top of Garryburn, Glen Fee, &c. *Mr. White*.—Hill, east side of Glen Feshie, 1831. Rev. G. Gordon; and, 1832, this very rare grass was gathered by Mr. Wilson of Alves, on the north side of Ben Weavis, Ross-shire. *Anderson's Guide*.—Mr. Watson observed this grass, in the Forfarshire mountains, 850 yards high and upwards.

3. *Alopecurus geniculatus*. *Floating Fox-tail-grass*.

Stem floating or lying on the wet ground, curved, bent at the joints. Leaves and sheaths similar to those of the two former species. Stipule oblong. Spikes cylindrical, from one to two inches in length, with long prominent awns. Calyx-scales purplish, fringed, and united at the base.

Ditches at roadsides, slow streams, and wet places; common. Also, occasionally upon dry spots (when the lower joints usually become oval and fleshy), as the Aberdeen Inch, &c.

Perennial—flowering in July and August.

Obs.—Of these species, it is only the 1st and 3d that the botanist may usually expect. The former is a taller plant, with a thicker and longer spike; but, indeed, the straight and erect stem of *A. pratensis* sufficiently distinguishes it from *A. geniculatus*. The 2d species (*alpinus*) is well marked by the very hairy calyx, which gives a woolly or shaggy aspect to the rather short, ovate spike; and though authors build a distinction upon the short upper leaf, with its inflated sheath, as pointed out by Mr. R. Brown, I cannot, in those respects, discover any essential difference between *A. alpinus* and the common species of the genus. Smith and Hooker concur in attributing the first observation of this species, to the distinguished botanist just mentioned; but if the statement is correct, that the discovery was communicated by Mr. Brown to Mr. G. Don, it is certainly remarkable that the latter meritorious observer should make use of the following words, regarding *A. alpinus*, in *Headrick's Survey of Forfarshire* (1813)—“a new species, which I discovered many years ago.” This point is worthy of notice, as there is an interest attached to the history of a species, observed for the first time in the world, in the tract to which this publication relates, and even at this day not known, with certainty (though Ben Lawers has been mentioned as a *habitat*), to occur in any other part of Europe, but understood to be plentiful in North America and Spitzbergen.

It remains to be mentioned that *A. agrestis* cannot, with propriety, be introduced among the northern natives. Indeed, in all parts, probably, of the kingdom it is rare and not indigenous, and therefore it is surprising to find Lightfoot and Hooker, in their *Floras* of Scotland, alluding to it, without even a hint of its being either uncommon or a doubtful native. In England, however, it appears to be common, and it is pretty frequent in some parts of the Continent. This species has been observed upon the Inch, at Aberdeen, probably transported with ballast; and though not properly indigenous, it may be mentioned that it is readily detected by the long, slender, and usually purplish spikes, with very long conspicuous awns.*

* The spikes of this genus have been likened to a fox's tail; whence its name—from *ἀλώπηξ*, a fox, and *ὄψα*, a tail. It may be added, that though the term *spike* is made use of both here and in the genus *Phleum*, the inflorescence in these cases is, in reality, of a looser kind.

Mr. Sinclair says *Alopecurus pratensis* constitutes the principal part of many rich natural pastures, and that, from its early growth, quantity of produce, nutritive qualities, and permanency, it is one of the best grasses for pasture, and should never form a less proportion than one-eighth of any mixture of different grasses, prepared for that purpose. It is said, however, to thrive, in perfection, only in lands of intermediate quality, as to moisture and dryness. The seed also is often defective, and consequently the crop cannot be depended on. Mr. G. Don, after having cultivated *Alopecurus alpinus* for several years, was convinced that it is but little inferior to *pratensis*.

GENUS X. PHALARIS.

Calyx of two scales, concealing the corolla, which is mostly of four pieces; the outer pair very small; the inner nearly as long as the calyx, ultimately hardened and closely investing the seed.

SPECIES.

1. *Phalaris arundinacea*. *Reed Canary-grass*.

Arundo colorata. *Smith's Flora Britannica*.

Digraphis arundinacea. *Lindley's Synopsis*.

Root creeping and jointed. Stem erect, from two to four or five feet high. Leaves harsh, ribbed, tapering to a point. Panicle long, with a tinge of brown or red, putting on a lobed appearance, and composed of crowded flowers, which tend to one side. Two inner scales of the corolla of a similar length to the calyx; the outer pair very minute and hairy.

Margins of lakes, rivers, and small streams.—Near Aberdeen, in the vicinity of the bridges of Dee and Don.

Perennial—flowering in July and August.

OBS.—At one time the minute outer pieces of the corolla were considered a tuft of hairs, and the plant was, in consequence, placed in the genus *Arundo*; and it may be added that some view these parts as belonging to an imperfect flower. A *variety* of the present species, with variegated leaves, is common in gardens, where it is called *Riband-grass* or *Gardener's Garter*, and it has been met with at a little island, called Handa, on the coast of Sutherland. *Canary-grass* belongs to this genus, and is distinguished by a thick, short, ovate spike, which is variegated with green and white; but though often met with, it is so undoubtedly introduced from serving as a food to birds, that it does not here merit a regular description.

GENUS XI. PHLEUM.

Calyx single-flowered, of two nearly equal scales, either pointed or ending in an awn. Corolla of two awnless scales, concealed by the calyx. Seed loose.

SPECIES.

1. *Phleum pratense*. *Common Cat's-tail-grass*. *Timothy-grass*.

Root fibrous. Stem erect, leafy except at the summit, with very long, close, furrowed sheaths, and short stipules. Spike cylindrical, two or three inches long. Scales of the calyx with a broad abrupt membranous margin, and a firm green keel or nerve, prolonged into a thorn or awn, which is much shorter than the calyx.

In fields and meadows; not uncommon.

Perennial—flowering in June.

2. *Phleum nodosum*. *Knotted Cat's-tail-grass*.
Phleum pratense γ. *Smith's English Flora*.

Root bulbous. Stem not erect, curved at the base, and knotted, with slightly swollen sheaths, which end in short leaves. Spike of a faint purplish hue, scarcely more than half an inch long. Scales of the calyx abrupt, fringed, about twice the length of the awn or less.

Near Aberdeen, at Footdee and Holborn Street.

Montrose Links. *Mr. W. Smith*.—Banffshire coast. *Mr. W. Craigie*.—Cairney. *Rev. W. Cowie*.

Perennial—flowering in July.

3. *Phleum alpinum*. *Alpine Cat's-tail-grass*.

Root tuberous. Stem eight or ten inches high, with a curve at the base. Leaves few and short, with slightly swelling sheaths. Spike short and thick, somewhat ovate, of a violet hue. Scales of the calyx abrupt, fringed, not longer than the awns.

Sides of the White Water, a mile or two before it enters the head of Glen Dole, in great quantity. Also, close to a waterfall at the head of Glen Dole, a little below the original station for *Sonchus alpinus*; and upon moist rocks on the south side of Glen Fee. I have also gathered it in moist places, on the side of Ben-na-buird nearest to Castleton, Braemar; on Loch-nagar; and on the moist rocks at the head of Glen Callader. In most of these situations it is associated with *Alopecurus alpinus*. *Dr. Balfour*.

Mr. Watson found this grass, in Forfarshire, at the height of upwards of 850 yards.

Perennial—flowering in July.

4. *Phleum arenarium*. *Sea Cat's-tail-grass*.

Phalaris arenaria. *English Botany*.—*Smith's Flora Britannica*.

Achnodon arenarius. *Lindley's Synopsis*.

Root of many long fibres. Stems several from the same root, from two to five inches high, mostly enclosed in the somewhat inflated sheaths. Spikes rather long and thick. Scales of the calyx long, narrow, fringed and pointed; "thrice the length of the abrupt, notched corolla."

Sandy spots near the sea; rather uncommon.—At Montrose, near the Academy.

Links, at Montrose. *Mr. D. White*.—Kincardineshire, at St. Cyrus. Anonymous.—Rattray Links, Aberdeenshire. *Mr. Alex. Murray*.—On the shore, about a mile north from Montrose, and in several parts of the Angus coast; also, near Aberdeen and Banff. *George Don*.

Perennial—flowering in May.

5. *Phleum Michelii*. *Michelian Cat's-tail-grass*.

Stems one to two feet high, leafy, sometimes purplish in the upper, naked part. Panicle close, from one to three inches long. Scales of the calyx exactly lanceolate, not abrupt, with sharp, rigid, often inflexed points; their keels strongly fringed.

On the very summit of the highest mountains of Clova. *Mr. G. Don*.

Perennial—flowering in July and August.

OBS.—Having no acquaintance, unless through garden specimens, with the last described species (which does not appear to have been ever gathered in Britain, unless by the individual above alluded to), the present account of it is extracted from the *English Flora*. The 4th species is confined to the sea-side, and may be distinguished by the spikes being often variegated with white and red; and, more particularly, by the calyx-scales being neither awned nor abrupt, but tapering gradually to a point. The 3d species is confined to stations indicated by the specific name, and is best known by the long awns giving a remarkable, bristly appearance to the short, thick, purplish, almost violet spikes. In *P. pratense*, the long spike and the abrupt blunt scales of the calyx, with an awn only half or third of their length, are sufficiently characteristic.

The 2d species (*nodosum*) is usually reckoned a *variety* of the *pratense*; but I have ventured upon restoring it to its present rank. My

attention was first directed to it by specimens from Mr. Craigie, surgeon, formerly of Keith, now in America, which were sent under the name of *P. alpinum*. At the time of receiving these, I differed from my acute friend, but I soon became convinced that his plant makes *fully* as near an approach to the species which he had named, as to *pratense*. It may, indeed, be observed, that the above description of *P. nodosum*, derived from the specimens alluded to, as well as others, has a resemblance to that of *alpinum* in every respect but the shorter awn; whence the spike is not quite so bristly.

Has it ever occurred to any one that *P. alpinum* may be a mere mountain *variety* of *pratense*? The chief distinction resides in the different length of awns, which will be admitted to be but a fallacious specific criterion; and, in fact, various gradual differences, both in that respect and in the length of the spike, have been observed. In English specimens before me of *P. pratense*, the spike is longer and more slender, with a shorter awn than in others gathered in an inland Aberdeenshire district, a few hundred feet high; while, in the plant above referred to as *nodosum*, the spike is still farther shortened and the awn longer, and these differences become yet more marked in the common specimens of *P. alpinum*, in which the spike is remarkable for being short, thick, and bristly. In short, it is to be suspected that the differences among *Phleum pratense*, *nodosum*, and *alpinum*, depend upon locality, particularly as the second of these proves to be intermediate, connecting, as it were, the two others. It may be farther said that, if *P. pratense* and *alpinum* are really different species, *P. nodosum*, as already suggested, may claim a similar rank; but if the last is to be considered only a *variety*, it probably rather belongs to *alpinum* than *pratense*.

Perhaps it might also be worth inquiry, whether the difference between *Alopecurus alpinus* and the *pratensis* depends upon situation.

Phleum pratense was once celebrated for its agricultural properties, but is now in less repute. It is, however, a productive and early grass, peculiarly nutritive when the seed is ripe. It is thus well adapted for pasture or hay, but it must be noticed that it grows but slowly after being cut or cropped. In 1815, Mr. Sinclair was informed, by a Canada proprietor, that it is considered the best grass in that province.

Gerarde attributes rather a curious quality to this grass, which, he says, when prepared as prescribed in his *Herbal*, "and so eaten, is a most perfect medicine against the disease in children, called, in Greek, *Ἐντεροκηλη*. This being used, as before specified, doth not onely helpe children and striplings, but growne men also." If any should avail themselves of this advice, it might be well that they keep in mind the annexed condition, that, "in time of their cure,

they use convenient ligature or trussings, and fit consounding plaisters upon the grieved place; according to art appointed for that purpose in Chirurgerie."

GENUS XII. MÍLIUM.

Flowers in a loose panicle. Calyx of two nearly equal tumid scales, longer than the corolla, and containing a single floret. Corolla of two scales, the outermost sometimes awned, finally hardened, and forming a permanent coat to the seed.

SPECIES.

1. *Milium effusum.* *Millet-grass.*

Stems from two to four feet high, slender. Leaves broad, bright green, with very rough edges; their sheaths ribbed, smooth. Panicle large, loose; its branches, smooth, unequal, variously divided, diverging, more or less whorled. Flowers awnless, solitary, drooping. Calyx permanently green.

Woods; rather rare.

Angus-shire. Mr. G. Don.—Kincardineshire, on a shady bank below Arbutnott House. *Mr. Chrystall.*—Buchan. Anonymous—Cawdor woods, in Moray. *Mr. Stables.*

Perennial—flowering in June.

Obs.—This is an elegant and lofty grass, rare with us, though more common in the southern parts of Britain. Mr. Purton observes, in the *Midland Flora*, that, in every specimen which he examined, "the middle branches of the panicle droop, and point directly downward."

GENUS XIII. ARÚNDO.

Calyx of two unequal awnless scales, containing mostly one floret. Corolla of two scales, one of which is usually awned, surrounded by erect, slender hairs, which lengthen as the flowers advance.

SPECIES.

1. *Arundo Phragmites.* *Common Reed.*

Stems five to seven feet high, stout, knotted, hollow, beautifully smooth, especially in old plants. Leaves a foot long, broad, many-ribbed, pointed, sometimes rolled up. Sheaths long, furrowed, with silky hairs for a stipule. Panicle brownish-purple, handsome, very large, much divided, ultimately drooping. Calyx of two, unequal, purple scales, shorter than the contained awnless flowers, which are five or less in

number, and surrounded by silky hairs, long and conspicuous in the advanced stage.

Large lakes, marshes, and sides of deep slow streams; but not frequent.—Near Aberdeen, both in Old Machar and Belhelvie, and a few miles to the south, on the Kincardine coast. Also, in the following Aberdeenshire lakes:—Drum, Leys, Skene, Auchlossan, and Kinnord. In a marsh near Leggerdale Inn. Banks of a stream between Huntly and Foggie-loan.

Corbie Loch, near Aberdeen. *Mr. John Henderson*.—In the river Ythan. *Mr. W. M. White*.—Near Craigendenny, Aboyne. *Mr. Proctor*.—Various parts of Buchan, as near Cairnbulg Bridge, at the mouth of the Ugie, and in Longside. *Mr. Alex. Murray*.—In Moray; not rare. Loch Alvie, Inverness, and Loch Echaltie, Ross. *Mr. Cowie*.—Sutherland. *Mr. Watson*.

Perennial—flowering in July.

2. *Arundo Epigejos*. *Wood Reed*.

Calamagrostis Epigejos. *Hooker's British Flora*.—*Lindley's Synopsis*.

Stems three to five feet high. Leaves narrow-lanceolate, pointed, with a tendency to be rolled up; the upper ones, in particular, assuming thus a grooved or even an awl-shaped appearance. Panicle purplish, long, erect, close; its flowers directed to one side. Calyx single-flowered; its scales long, narrow, awl-shaped, rough on the back, from minute prickles, like the branches of the panicle. "Corolla with a dorsal awn about as long as the hairs and calyx."

In Braemar, several miles below Invercauld, on the south side of the river, among wood; and on the north bank of Dee, about ten miles from Aberdeen, along with *Festuca sylvatica*, *Hypericum hirsutum*, *Origanum vulgare*, &c.

Perennial—flowering in July.

3. *Arundo stricta*. *Close Reed*.

Calamagrostis stricta. *Hooker's British Flora*.—*Lindley's Synopsis*.

Stems one to two feet high. Leaves long, narrow, ultimately rolled into a bristle-like form. Stipule remarkably short, especially in the lower leaves. Panicle two to four inches long, erect, narrow, brownish. Corolla about equal in length to the single-flowered calyx, and having an awn from the back of one of its scales. Hairs shorter than the corolla, but very perceptible.

Whitemire marsh, one mile from Forfar. *Hooker's Flora Scotica*.

Perennial—flowering in June.

4. *Arundo arenaria*. *Sea Reed*. *Marram*. *Sea Mat-weed*.
Ammophila arundinacea. *Hooker's British Flora*.
Ammophila arenaria. *Lindley's Synopsis*.

Root extensively creeping, often extending to a great many feet. Plant glaucous. Stem two or three feet high. Leaves rolled up and pungent, with stipules nearly an inch long. Panicle cylindrical, pointed, quite like a spike. Calyx single-flowered, longer than the corolla. Hairs short.

Sand hillocks near the sea; common.—At Aberdeen, on the sand hills, both south and north of Don mouth, and on very many parts of the east coast. Abundant, along with *Elymus arenarius*, in the north of Sutherland.

Perennial—flowering in July.

OBS.—These four species have, by some, been placed in no fewer than three genera, but the differences are not so material as to demand here such a subdivision. Few comparing together *A. Phragmites* and *Epigejos*, in the advanced stage, would think of putting them in different genera; and as to *A. arenaria*, there does not seem, beyond the closer panicle, to be even a good *technical* character for which it ought to be separated from the others.

Attention to the generic marks, in connexion with the close cylindrical spikes, *very long* stipule, and the maritime station, will leave little difficulty regarding *A. arenaria*. The number of florets in the calyx might be, alone, enough to distinguish the *Phragmites* from any other *Arundo*; although to this species, no doubt, *A. Epigejos* bears a degree of similarity, at least in an advanced stage. The bright brownish-purple spike, spreading in all directions, the thick stem, the very long broad leaves, not to mention the watery stations, are, in *A. Phragmites*, abundantly distinct from the close and fainter spike, with its branches directed to one side, of *A. Epigejos*,* which has the stem feebler and leaves smaller; and has, moreover, not been met with in the north in the quantity of more than a few specimens together, while *A. Phragmites* is usually very abundant wherever it grows. With *A. Epigejos*, however, the Scottish botanist will seldom require to deal, as I am not aware that any station in the kingdom has been previously recorded, except “Dalrymple wood, Ayr, Scotland.” It is, however, not unlikely that this grass exists in other

* Mr. W. Wilson has observed this grass “open at the exact time of flowering.” Of this point I am no judge, having seen it only in the early and advanced stages—first in Braemar, about the middle of July, 1833; and again, about a month later, in 1835, at Drumoak, in company with Mr. Adams and others. Owing to the plants in neither of these cases being in the fittest state for examination, it has been found necessary to quote the last branch of the description of *A. Epigejos* from Sir J. Smith. For the same reason, and, besides, on account of the obscurity and discrepancy among authors regarding this species and *Arundo Calamagrostis* (*Calamagrostis lanceolata*. *Hooker's British Flora*), the remarks on these species have not been made entirely without hesitation.

parts of Deeside ; and, indeed, it is strange that so conspicuous and elegant a plant should have so frequently escaped notice, in a tract so well known and so often explored. In *Arundo Calamagrostis*, Linn. (*Calamagrostis lanceolata* of *Hooker's British Flora*), a species said not to be uncommon in some parts of Britain, the calyx-scales are smoother and the tuft of hairs shorter ; while the panicle is more uniformly spreading and smaller than in *A. Epigejos*, of which, indeed, according to my observation, the panicle, though narrower, is longer than in the *Phragmites*, being occasionally little less than a foot in length.

This genus is of little interest to the agriculturist. The panicles of *A. Phragmites* have been used, in Sweden, as a green dye, and its reeds are frequently employed, in the south of Britain, for thatch, garden fences, and other purposes. In Holland, where this species seems abundant, I have frequently observed it lying in sheaves ; and in some parts of England, it is said to be annually cut as a regular crop. Newborough, in Anglesea, subsists chiefly by manufacturing *A. arenaria* into mats and ropes, and it is put to the same use in the outer Hebrides ; but this species has a far more important use. It grows upon the sea shore, and binds the loose sand into the form of hillocks ; thus serving the double purpose of preventing the adjacent country from being inundated by the sea or overspread with loose sand. More than one spot, within the tract to which these observations relate, have been rendered worthless from being blown over with sand ; and the yet more dreaded encroachment of the sea would have been greatly felt on flat parts of the English coast, and still more in Holland, had it not been for the embankments formed mainly by this grass with the sand—a combination which, possibly, may have been, in some instances, the remote origin of sand-stone cliffs. The sand hillocks, at Aberdeen, are chiefly formed by means of this species and *Festuca rubra* ; *Carex arenaria* as well as *Triticum junceum* being in smaller quantity.

Mr. Sinclair observes, “ So far back as the reign of William III. the important value of *Elymus arenarius*, and *Arundo arenaria* was so well appreciated as to induce the Scottish Parliament of that period to pass an Act for their preservation on the sea coasts of Scotland. And these provisions were, by the British Parliament, in the reign of George II. followed up by farther enactments, extending the operation of the Scottish law to the coasts of England, and imposing further penalties for its inviolability ; so that it was rendered penal not only for any individual (without

even excepting the Lord of the Manor) to cut the bent, but for any one to be in possession of any, within eight miles of the coast."

GENUS XIV. AGRÓSTIS.

Calyx of two scales, not quite equal, acute, awnless, containing one floret. Corolla of two unequal scales, the outer of which is usually about the same length as the calyx, and with or without an awn springing from below its middle.

SPECIES.

1. *Agrostis canina*. *Brown Bent-grass*.

Trichodium caninum. *Lindley's Synopsis*.

Root creeping. Stems not erect, often almost prostrate. Leaves mostly confined to the base of the stem, rather narrow, especially the tufts at the root, which are almost bristle-shaped; their stipules long and pointed, at last torn. Panicle brownish, much spread out when in flower; at other times very different in appearance, assuming a lobed, spike-like form. Calyx purple. Outer scale of the corolla little shorter than the calyx, with an awn extending beyond the point; the inner scale usually minute, or even wanting.

On moist moors.—Near Aberdeen, in Nigg; and on many heathy spots over the north.

Perennial—flowering in June and July.

2. *Agrostis vulgaris*. *Fine Bent-grass*.

Agrostis capillaris. *Lightfoot's Flora Scotica*.

Root somewhat creeping. Stems usually erect. Stipule remarkably short and blunt. Panicle purplish, spreading, with slender, rather smooth branches, diverging when in flower, afterwards contracted. Corolla mostly awnless.

Fields and pastures; common.—Near Aberdeen, on Deeside, &c. &c.

Perennial—flowering in July and August.

3. *Agrostis alba*. *Marsh Bent-grass*.

Stems long, sometimes extending to several feet, rising up at the summit, but prostrate at the base, where runners are sent out, which, like the lower part of the stem, take root at the joints. Leaves broad, flat, and pointed. Stipule long. Panicle between green and white, sometimes purplish, large, often fully six inches long, contracted, though looser at the period of flowering; its branches waved and rough, the

lower ones assuming a whorled form. Larger scale of the calyx rough at the keel, like the branches of the panicle, from minute bristles. Corolla seldom awned.

Banks of streams, woods, and moist shaded places; rather frequent.—Near Aberdeen, on the Kincardineshire coast. Pretty common on river sides in the Alford district; and in Logie Buchan, &c. &c.

In Caithness and Sutherland. Mr. Watson.

Perennial—flowering in July.

OBS.—To him who considers merely the written characters of the preceding species of *Agrostis*, it may appear easy to distinguish them. It will seem no difficult matter to detect the 1st *sp.* by its longish, acute stipule, evident awns, and one of the pieces of the corolla minute or wanting; the 2d, by its very short, blunt stipule and awnless flowers; and the 3d, by its long, pointed stipule, awnless flowers, and the very long panicle, which is usually greenish-white and contracted, with rough branches, and by rooting runners thrown out from the bottom of the stem. On the other hand, the botanist surveying them frequently in the field may see cause to conclude that, in Nature, the differences are by no means always evident, and even perhaps, to suppose that they run so much into one another, as collectively to form but one good species. *A. canina*, for instance, will be found occasionally without awns, and without deficiency in the scales of the corolla; so that this latter circumstance, though sometimes made a reason for this plant being put into a different genus, is not properly sufficient for even a good specific mark; while it will also be found that neither the 2d nor 3d *sp.* is invariably awnless. It is probable that neither of these opinions is altogether correct; for, though the differences are by no means always well marked, the three species may be considered quite distinct, and will generally be detected by the points above noticed.

Upon the title-page of his second Volume, Lightfoot figures an *Agrostis*, under the name of *A. pumila*, which is considered a *variety* of the *vulgaris*. This is a curious little species, almost stemless, with the rather conspicuous spike seated, as it were, upon the ground, which I have sometimes met with in Aberdeenshire, particularly in the parishes of Kincardine O'Neil and Tullynessle; and it has been sent to me from Birse.

It is to be added that the species named *alba* is not without difficulty and interest both to the botanist and agriculturist. Many years ago, Dr. Richardson, an Irish gentleman, recommended, under the name of *Fiorin*, an *Agrostis* which has sometimes been called *alba* and sometimes *stolonifera*; while Mr. Sinclair gives the name of *A. alba* to a creeping-rooted, unproductive *Agrostis*, and that of *A. stolonifera* to a species having a fibrous root and creepers running along the surface. Of this last species, considered *A. alba* of Linnæus, Mr. Sinclair figures three *varieties*; one

with awned flowers, first pointed out by the Duke of Bedford ; another with a large, spreading, dingy purple panicle and long broad leaves ; and a third, distinguished by a smaller, denser, whitish panicle, and smaller leaves. There is reason to think that the second of these *varieties* (a rare native form) is the plant which Dr. Richardson had in view ; and that the third *variety*, which, in agriculture, is said to be considerably inferior to the second, is the plant named *alba* in the present publication.

It may be mentioned that the species of this genus differ greatly from themselves, as observed in different stages. Indeed, it might be said of them and various other grasses, that the species, in a certain stage, compared with itself at a different period, differs more in aspect than it does, perhaps, from another species in the same stage.

Mr. Sinclair thinks the *Agrostis* recommended by Dr. Richardson (probably a *variety* of *alba*) worthy of attention, but not of so much value as has been supposed. The chief advantage, he says, of this grass, in permanent pasture, is its late growth ; and it will be found, upon inspection that, in those pastures, the latest herbage and sometimes the earliest, is principally afforded by this grass. Mr. Geo. Don seems to lose temper with Dr. Richardson and his favourite grass. Omitting the first part, the following words may be quoted :—“ Now what is this celebrated *Fiorin-grass* of Dr. Richardson ? It seems to be a mixture of all the tribe of couchy grasses, held equally in detestation by the farmers and their cattle ; and we, in Angus-shire, are apt to judge of the industry of the farmer, in proportion as he has eradicated these grasses. In the west of England, the *Agrostis stolonifera* is held in equal detestation by the farmers, and stigmatized by the name of *black squitch*. The *Agrostides* are the worst to eradicate of any grasses I am acquainted with. I am bold to say that, if these grasses, so strongly recommended by Dr. Richardson, come really to be introduced among farmers, it will prove the greatest barrier in the way of improvement that has ever yet taken place. * * * Dr. Richardson adds, that Irish cattle give *Fiorin* the preference to all other grasses—our cattle, on the contrary, give every other grass the preference to the *Agrostides*.—(*Headrick's Survey of Angus, Appendix*, p. 29. *et seq.*) To this we may oppose the words of Withering, who refers to “ an Essay by the Rev. Dr. Richardson of Clonfeacle, in which many experiments are detailed, tending to prove that *Fiorin-grass* produces hay preferred by cattle to all other, and near treble the quantity afforded by any other grass ; that this enormous produce is not the exhausting effect of a single year, but the

regular crop to be expected ; that this succulent grass is equally serviceable for winter green food ; that it is, in a great degree, indifferent to the extremes of wet and drought, and perfectly insensible to the severities of cold ; and that its universality of growth is most remarkable. * * It appears particularly suitable to unproductive extensive tracts."

GENUS XV. AIRA.

Calyx of two scales, containing two perfect florets, without any rudiments of a third. Corolla of two scales ; the outer one largest, and either awnless or with an awn attached to its back, above the base.

SPECIES.

1. *Aira cristata*. *Crested Hair-grass*.

Poa cristata. *Lightfoot's Flora Scotica*.

Airochloa cristata. *Lindley's Synopsis*.

Root of downy fibres. Stem five to six inches high and upwards, downy especially above. Leaves hairy at the edges, mostly confined to the lower part of the stem, where they are rather narrow, almost bristle-like ; farther up, one or two shorter and broader, ending in long downy sheaths, which are ribbed like the upper surface of the leaves. Stipule short. Panicle in the form of a spike, interrupted particularly below, shining ; its common stalk very downy. Calyx and corolla pointed ; the latter the longer, its inner scale white and membranous.

In the neighbourhood of the sea, and in inland situations ; not uncommon.—Near Aberdeen, in several places, as on the Links, Broadhill, banks of Dee, &c. On dry elevated moors in Alford. Abundant on the Kincardine coast, and in various parts of Buchan and Banffshire.

Dun-o-deer, and the serpentine tract near Knockespock. *Mr. John Minto*.—Cullen Links. *Mr. Bremner*.—Kirktown of Clova ; Castletown, Braemar ; and Sutherland. *Mr. Watson*.

Perennial—flowering in June and July.

2. *Aira aquatica*. *Water Hair-grass*.

Catabrosa aquatica. *Hooker's British Flora*.—*Lindley's Synopsis*.

Stems not erect, usually floating, occasionally extending to a very great length. Leaves broad and blunt, of a pleasant green, with loose sheaths, and pointed, broad stipules. Panicle reddish-brown, much spread out ; the branches assuming a whorled appearance. Scales of the calyx unequal, short, purplish, not nearly so long as the included florets.

In ditches, pools, and the edges of slow streams; not frequent.—Said to occur occasionally around Aberdeen. Rather common in Alford.

Perennial—flowering in June.

OBS.—The want of awns may serve to separate these two species from the succeeding members of the genus; and they may be distinguished from one another, by recollecting the downy, spike-like panicle of *Aira cristata*, with its very dry stations; and the spreading reddish panicle, and short calyx of *A. aquatica*, with the broad, blunt, and usually floating leaves.

3. *Aira cæspitosa*. *Turfy Hair-grass*.

Deschampsia cæspitosa. *Lindley's Synopsis*.

Stems two or three feet high, nearly erect, with a long leafless portion next the panicle. Leaves long, flat, pointed, rigid, furrowed and rough above, much smoother beneath; those from the root numerous. Panicle elegant, very large and spreading, shining, brownish-grey; the branches wiry and slightly rough. Calyx-scales nearly as long as the included florets, which have, at their base, short, whitish hairs springing from the bottom of the outer scale of the corolla, with an awn scarcely extending beyond themselves, and therefore little perceptible. One of the florets is sessile; the other on a short hairy stalk.

Roadsides and borders of fields; rather common.

Clova and Caithness. Mr. H. C. Watson.

Perennial—flowering in July.

4. *Aira alpina*. *Smooth Alpine Hair-grass*.

Aira lavigata. *English Botany*.

Stem ten or twelve inches high. Leaves mostly from the root, flat, furrowed above, very often rolled up so as to appear awl-shaped, short, especially those of the stem, which have very long smooth sheaths. Panicle shining, greyish-brown, sometimes erect and close; but, when viviparous (as it usually is), with spreading or even drooping branches. Scales of the calyx as long as the corolla. Awn short, attached to the outer scale of the corolla, above its middle. One of the florets on a short smooth stalk.

Moist alpine situations.—Benmore, in Sutherland, where it is viviparous.

Upon rocks, on the south side of Glen Dole, to the east of those on which the *Astragalus alpinus* grows. Dr. Balfour.—Near the summit of Ben-na-muic-dhui. Mr. Watson; who ob-

served it 1350 yards high in Braemar, and about 1000, in Sutherland.

Perennial—flowering in July.

5. *Aira flexuosa*. *Wavy Mountain Hair-grass*.

Stem nearly naked, slender, in general more than a foot high. Leaves short and bristle-shaped, mostly from the root. Panicle of a purple or brown hue, much spread out in the flowering stage, dividing more or less in a threefold manner; the branches fine and twisted. Scales of the calyx about as long as the included florets, which are hairy at the base, each with a long and very evident awn.

Heaths, hilly places, and upland woods; not uncommon.

Mr. Watson found it on the mountains of Clova, Braemar, and Sutherland; respectively at the heights of 950, 1200, and 1000 yards.

Perennial—flowering in July.

6. *Aira caryophyllea*. *Silver Hair-grass*.

Stems smooth, of variable height, from three or four inches to a full foot. Leaves few, narrow, almost bristle-shaped, with purplish, ribbed sheaths. Panicle of few flowers, purplish or greyish; the branches diverging and a little wavy. Calyx white and transparent at the point, rather longer than the enclosed florets, which are both sessile, and have a few hairs at the base, with a long evident awn.

Sterile fields; not uncommon.

Near Aberdeen, in many places. Rubislaw Quarry. *Mr. W. M. White*.—Caithness and Sutherland. *Mr. Watson*.

Perennial—flowering in June and July.

7. *Aira præcox*. *Early Hair-grass*.

Stems two or three inches high. Leaves short and bristle-shaped, with swollen angular sheaths. Panicle erect, close, assuming the form of a spike. Calyx and corolla of similar length; the awn twice as long and sufficiently evident. Florets both sessile.

Sandy places and dry pastures; rather common.—Old Aberdeen Links, Craiglug, &c.

Caithness and Sutherland. *Mr. Watson*.

Annual—flowering in the end of May and June.

OBS.—The two species in the first section have little affinity to those in the present, or, indeed, to one another. The members of the present group are more allied among themselves, and they have

been considered (or some of them) to have an analogy to the genus *Arundo*, which they resemble in having hairs around the base of the corolla, far less conspicuous, however, than the extensive tuft which communicates a character to the genus just named.

Aira cæspitosa is the well known, large, and coarse grass, often observed at roadsides, untouched by cattle; seldom growing single, but in tufts; sufficiently characterized by the long, flat, rough leaves, which are chiefly from the root, and a long panicle, the awns of which are scarcely visible. *A. flexuosa* is known by the bristle-shaped leaves, zig-zag branches of the panicle, and the long-awned corolla. It may be mentioned that, in the North-west of Sutherland, I have observed a tall, slender, pale-flowered *variety* of this species, which is probably *A. flexuosa* β . of Smith, the grass sometimes called *Aira montana*. From both *A. cæspitosa* and *flexuosa*, the far rarer *A. alpina* may at all times be distinguished by its short, flat leaves, often rolled inwards, and indistinct awns; to which may be added the viviparous condition wherein it usually exists. Distinct as are the *sp.* 5 and 6, it is possible for them to be confounded; and I know not that any marks can be set forth in words, more available than the white-pointed calyx of *A. caryophyllea*, with its small spikelets, as compared with the far larger ones of *flexuosa*. In the last place, *A. præcox* is sufficiently marked by its very small size, spike-like panicle, and the inflated angular sheaths.

About the properties of this genus little can be said. *Aira cæspitosa*, being one of the roughest and coarsest grasses, is seldom or never touched by our common animals; and they show, according to my observation, nearly an equal reluctance to feed upon *A. cristata*. *A. caryophyllea* and *præcox* furnish little herbage, and soon wither away.

GENUS XVII. HÓLCUS.

Calyx of two scales, containing two florets; the lower one perfect and awnless, the upper with stamens only and awned. Seed coated with the hardened corolla.

SPECIES.

1. *Holcus lanatus*. *Meadow Soft-grass*.

Root fibrous. Stem downy, as well as both sides of the leaves, which are mostly at the lower part of the plant; the upper ones ending in downy, almost woolly sheaths. Stipules short and blunt. Panicle of a reddish-green hue; its branches downy or hairy. Calyx of two very downy scales, which are blunt and terminated by a thorn. The enclosed flowers are two in number; the lower perfect and awnless, the upper barren, with a curved, barely perceptible awn.

Pastures and roadsides; very common. Sometimes ascending to a great height.

Kirktown, Clova; Castleton, Braemar; Sutherland and north of Caithness. Mr. Watson.

Perennial—flowering in July.

2. *Holcus mollis*. *Creeping Soft-grass*.

Root creeping, sometimes to a considerable extent. Stem leafy to the top, somewhat hairy, especially at the knots. Leaves similar to those of the preceding species, but without the soft down. Panicle whitish-green. Calyx-scales acute, mostly bare, containing two flowers, the upper barren, with a sharply-bent, long, and very evident awn.

In cultivated fields and woods; rather frequent.—Near Aberdeen, not uncommon; and so frequent in Alford, particularly on the Breda property, as to be reckoned a troublesome weed. Common in the Garioch; Buchan; Banffshire; and throughout the north.

Oldtown Links at Aberdeen, Bay of Nigg, and Den of Rubislaw. Mr. Dickie.—As common around Aberdeen as *H. lanatus*. Mr. W. M. White.—Aberdour. Rev. Geo. Gardiner.

Perennial—flowering in July.

OBS.—The prominent awn of the 2d species is quite enough for a distinction between it and the 1st, of which the awn is so concealed as seldom or never to be perceptible. As the distinction is of importance to the agriculturist, we may farther compare the creeping root, greenish and rather small panicle, and (best of all) the calyx tapering to a point in *H. mollis*; with the fibrous, not creeping, root, purplish larger panicle, and the rather blunt calyx-scales of *H. lanatus*, which are tipped with a small but very distinct thorn.

With respect to the well-known tall grass usually styled *H. avenaceus*, I am disposed to refer it to the genus *Avena*, and to resume the name of Linnæus.

The late Duke of Bedford made trial of *H. lanatus* upon a large scale, and the results proved that it is a very inferior species for either pasture or hay. This is mentioned by Mr. Sinclair, who adds, that it is disliked by cattle, is not an early grass, and when once in possession of the soil, can scarcely be extirpated. It has, however, the merit of growing readily and luxuriantly upon all soils, particularly those of a peaty nature; and it produces seed in abundance.

Holcus mollis is a troublesome and injurious weed. Its large creeping roots (said sometimes to grow to the length

of five feet in a few months only) draw away no small quantity of nourishment, and when once introduced, they are got rid of with great difficulty; while Mr. Sinclair thinks cattle dislike its herbage, more than that of *H. lanatus*. This author mentions that pigs eagerly dig up the roots, which contain a very considerable quantity of nutritious matter, having the flavour of new-made meal; and he hints at the advantage of cultivating the grass upon naked sands for the sake of the roots.

GENUS XVIII. HIERÓCHLOE.

Panicle loose. Calyx of two ovate, acute, membranous, awnless scales, containing three florets; the central of which is perfect, its stamens two; the lateral ones barren, having three stamens and no pistil. Corolla of two unequal, permanently membranous scales. Seed loose.

SPECIES.

1. *Hierochloe borealis*. *Northern Holy-grass*.

Holcus odoratus. Linn.

Root creeping extensively. Stems twelve to eighteen inches high, erect, leafy. Leaves rather broad, flat, rough at the edges. Panicle brownish, glossy, a little directed to one side. Flower-stalks smooth. Flowers broadly ovate, tumid, greenish-yellow, variegated with purple or brown. "Nectary in two deep, unequal, linear segments."

Said to have been found in a narrow mountain-valley, called Kella, in Angus-shire, by the late Mr. George Don.*

Perennial—flowering in May and June.

OBS.—The words regarding the nectary are from Smith; and, indeed, the writer of these remarks having no perfect specimens of *Hierochloe borealis*, has mostly trusted to others for the preceding account. The name of the genus is from *ἱερος*, *sacred*, and *χλόα*, *grass*.

GENUS XIX. MÉLICA.

Calyx of two awnless, nearly equal scales, about as long as the florets. Corolla of two unequal, awnless scales, at last hardened, and covering the loose seed. Spikelet of one or two perfect florets, with another imperfect and stalked.

* No other British station has ever been given for this plant; but in some parts of the Continent it is common enough. It grows in moist meadows in Germany, and it is said to be used, at high festivals, for strewing the churches in Prussia. Dr. Hooker mentions that, in Iceland, it is used by the people for scenting apartments and clothes.

SPECIES.

1. *Melica nutans*. *Mountain Melic-grass*.

Melica nutantis varietas. *Lightfoot's Flora Scotica*.

Root creeping. Stem more than a foot high, the upper part naked, with long leaves and a very short stipule. Panicle close, drooping, its spikelets upon mostly undivided stalks, becoming pendulous and directed towards one side. Scales of the calyx convex and purple without, each having in its inside a perfect floret, with its corolla finally cartilaginous; and between these two florets, a single, long-stalked, imperfect one.

In upland stations, but rather rare; as on the hill adjacent to Ballater House.

In the neighbourhood of Upper Banchory. *Mr. W. P. Walker*, surgeon, Grenada. — Corrymulie, Braemar. *Mr. Cowie*. — Head of Banffshire, at Loch Builg. *Mr. Proctor*. — And in the same county, at Millwood, near Keith. *Mr. Craigie*. — In the province of Moray. *Mr. Stables*; who does not design it as rare.

Perennial—flowering in June.

2. *Melica uniflora*. *Wood Melic-grass*.

Melica nutans. *Lightfoot's Flora Scotica*.

Similar to the preceding, but with an essential difference in each spikelet containing but a single perfect flower, to which an imperfect one is attached by a bent stalk.

Rare.

Near Forfar. *Mr. G. Don*. About the Dream, Kilmorack. *Mr. Stables*.

Perennial—flowering in June.

OBS.—These singular and elegant grasses are in a general way indicated by the variegated spikelets, with the broad, convex, auburn calyx, and the panicle ultimately more or less unilateral and drooping. *M. uniflora* has the panicle more branched and the spikelets more erect than *M. nutans*, with broader, rougher leaves, and a taller stem. But the best distinction resides in the spikelets, which in No. 2. contain but a *single* perfect flower, together with the stalked imperfect one; and not *two* perfect flowers as in No. 1; a difference which is very obvious upon an inspection made with the least attention. The author of these observations has examined not a few specimens of *Melica* gathered by himself, and presented by others, which have invariably possessed two complete flowers in every spikelet; and, *Mr. Don's* station being scarcely within the range of this publication, he has introduced *M. uniflora* from a reliance upon *Mr. Stables*, particularly as another accurate observer (*Rev. G. Gordon*) also appears, from *Mr. Watson's "Outlines,"* to have found this species in Moray.

GENUS XX. MOLINIA.

Calyx-scales unequal, much shorter than the florets ; those of the corolla nearly equal and awnless. Spikelets containing two or more perfect florets, with one or more imperfect.

SPECIES.

1. *Molinia cærulea*. *Purple Melic-grass*.

Aira cærulea. Linn.

Melica cærulea. *Lightfoot's Flora Scotica*.—*Smith's Flora Britannica*.—*English Botany*.—*Hooker's Flora Scotica and British Flora*.—*Smith's English Flora*.

Root of long twisted fibres. Stem about a foot high, bulbous at the base, with a single knot a little way up. Leaves rough, pointed, channelled, confined to the lower part of the plant. Panicle dull violet, erect, branched, not spreading. Calyx shorter than the florets, of which the two lowest are perfect and the upper imperfect. Anthers deep purple.

Moors ; but in many places not abundant.—Near Aberdeen, at Rubislaw, &c. Upper Banchory. Braes of Forbes and other moors in Alford, but not common there. More frequent in Lumphanan ; and abundant in Coldstone, at the foot of Morven.

Angus-shire. Mr. Don.—Wet moors in Benholm, Kincardineshire. Mr. Chrystall.—Near Aberdeen, at Nigg. Mr. John Henderson.—And in the Hazlehead woods. Mr. Dickie.—Between Ballater and Mill of Dennet. Mr. W. Middleton White.—Glentanner, Strathdon ; and Benavon. Mr. Proctor.—Buchan. Anonymous.—Middle of Banffshire. Mr. Craigie.—Binhill, Cairney ; common. Mr. Cowie.—And Banff parish. Mr. G. C. Smith.—In Moray.

Mr. H. C. Watson observed this species in Clova, Braemar, and Sutherland—at an elevation of about 800 yards in the Aberdeenshire stations.

Perennial—flowering in August.

OBS.—A considerable time ago it occurred to the writer of these remarks, when but a young botanist, unacquainted with the history of this species, that it was an unfit associate for *M. nutans*, having, in appearance, more of a similarity to the members of some other genera ; while, even with considerable attention to technical characters, the botanist may fail in tracing any essential relation between these species. The opinion of Dr. Lindley and others, who place them in different genera, is, therefore, readily here followed. The purplish close panicle, the wiry stem which is bulbous at the base, with a knot a short way up, are, perhaps, sufficient indications of *Molinia cærulea*.

With *M. depauperata* of Lindley there is some difficulty in dealing, as it is not easy to believe that a plant to which this author alludes as a remarkable addition to the Botany of Britain, communicated in his Synopsis as found upon the Clova mountains, can be the not uncommon plant (a *variety*, as it is usually considered of *M. cærulea*) with which I am well enough acquainted, as growing among the rank grass of Sutherland, and even in some of the Aberdeenshire woods. The plant in view has also been communicated by various friends, as Dr. Balfour of Edinburgh and *Mr. Proctor*; the latter sending it from "the petrifying spring at Inchrory, on the head of Don," and the former observing "*Melica cærulea* β . or *Molinia depauperata*, on rocks to the west of Glen Fee, not far from the station for *Oxytropis campestris*; also on rocks on the north side of Canlochan Glen, at the head of Glen Isla." This *variety* or species is characterized by long leaves, a slender, long, and pale panicle, and by the spikelet containing but a single long perfect flower. It deserves to be added that Dr. Lindley's view as to *Molinia depauperata* being specifically distinct from *M. cærulea*, probably deserves more attention than it seems to have received.

The stems of *M. cærulea* have been used for brooms, baskets, &c.; and it is mentioned by Lightfoot that, in Skye, the fishermen make ropes for nets from this grass. It has also been said that the milk of cows which feed upon it, is very rich and highly coloured.

GENUS XXI. POA.

Calyx of two short, unequal, awnless scales, usually containing several florets. Corolla of two unequal, awnless, blunt scales. Flowers in a loose panicle, sometimes connected at the base by a cottony web. Seed loose, covered with the unchanged corolla, occasionally woolly at the base.

SPECIES.

1. *Poa aquatica*. *Reedy Meadow-grass*.

Glyceria aquatica. *Smith's English Flora*.

Hydrochloa aquatica. *Lindley's Synopsis*.

Stem erect, from three to six feet high, with very large leaves. Panicle also of great size, and much divided, with long, narrow spikelets, which are composed of six or eight seven-ribbed flowers, and have at the base a small, two-scaled calyx.

In a pond at Breda, in Alford; but probably introduced.

Loch of Forfar, in Angus-shire. In Moray, in a burn east of Findhorn; and in ditches east of Birkenhill. *Mr. Stables*.

Perennial—flowering in August.

2. *Poa fluitans*. *Floating Meadow-grass*.*Festuca fluitans*. Linn.*Glyceria fluitans*. *Smith's English Flora*.—*Lindley's Synopsis*.

Stem juicy, tender, one or two feet long, not erect, usually in part floating. Leaves large, with long, smooth sheaths. Panicle long and narrow, strongly divaricated while flowering, composed of erect, very long, close-pressed spikelets, which consist of ten or twelve rather remote flowers, and have a tendency to one side. Calyx of two small, unequal scales, placed at the base of the spikelets. Corolla seven-ribbed, having at the base shorter intermediate ribs.

Ditches and slow streams; abundant.—Frequent in the Canal near Aberdeen, &c. &c.

Caithness; Sutherland; Castleton, Braemar; and Kirkton, Clova. Mr. Watson.

Perennial—flowering in August.

3. *Poa maritima*. *Creeping Sea Meadow-grass*.*Glyceria maritima*. *Smith's English Flora*.*Sclerochloa maritima*. *Lindley's Synopsis*.

Root creeping to a considerable extent. Stem about a foot long, not erect; with rolled, sharp-pointed leaves, and long rather tumid sheaths. Panicle erect and close, except in the flowering state, when it is spreading. The spikelets are long and narrow, composed of about five firm purplish flowers, which are indistinctly five-nerved.

In salt marshes or brackish water; not uncommon.—At Aberdeen, between Craiglug and the sea. Old-town Links. Also, on the Aberdeenshire coast, south of Ythan; and at Montrose, in considerable quantity.

Kincardineshire, at the Cove and Brotherton. Not uncommon on the coast of Buchan. Anonymous.—In Moray; not rare. Mr. Stables.

Perennial—flowering in August.

Obs.—The long and narrow spikelets of these three species sufficiently separate them from the succeeding members of the same genus. The 1st *sp.* very rare with us, though common enough in the south of Britain, and in the fens of England particularly abundant, may be distinguished from most other grasses, and with certainty from every other *Poa*, by its great size. It would be superfluous to detail distinctions between this tall, stout, erect grass, and the feeble, floating or creeping *P. fluitans*. Lightfoot conjectured that the 3d *sp.* might prove a *variety* of the 2d—the difference prob-

ably arising from the former growing in sea-water—but that they are very different species becomes abundantly evident to any one, who considers the soft, flat leaves, and very long whitish spikelets of *P. fluitans*, in comparison with the rolled leaves and purplish, rigid panicle of the *maritima*.

4. *Poa alpina*. *Alpine Meadow-grass*.

Stem erect except at the very base, from six inches to a foot high. Leaves short and bluntish, with a small point. Inferior stipules short and blunt; the superior longer and more acute. Panicle short and spreading. The spikelets broad and short, slightly heart-shaped, usually viviparous, composed of four or five flowers, which are hairy at the base, but without a web.

On the higher mountains; generally viviparous.—Benmore, Assynt, in Sutherland.

Glen Isla, in large quantity, and not in a viviparous state.—*Edinburgh Philosophical Journal*, Oct. 1832.—Den of Airly, Angus-shire. Mr. Chrystall.—Banks of the Esk. *Smith's English Flora*.—Braemar mountains. Mr. H. C. Watson.—Abundant on rocks on the north and west side of Canlochan Glen, head of Glen Isla. I have also gathered it in a viviparous state on Ben-na-buird, and on some of the mountains of Clova. Dr. Balfour.

Perennial—flowering in July and August.

5. *Poa pratensis*. *Smooth Meadow-grass*.

Root creeping, sending out runners. Stem variable, sometimes more than a foot high. Leaves quite smooth, as well as their sheaths and the stem. Stipules short and blunt. Panicle large, spreading, and consisting of spikelets, which contain four five-ribbed flowers, connected, at the base, by a whitish web.

Fields and meadows; common. Rubislaw Quarry, &c. &c.

Perennial—flowering in June and July.

6. *Poa scabra*. *Roughish Meadow-grass*.

Poa trivialis (omnes).

Root fibrous. Stem from one to two feet in height. Leaves deep green; their sheaths with a manifest roughness, like the stem especially its upper part, and the branches of the panicle. Stipule rather long and pointed. Panicle spreading; the spikelets of three flowers, which are five-ribbed, and connected, at the base, by a web.

Stations same as the preceding.

Perennial—flowering in Midsummer.

7. *Poa annua*. *Annual Meadow-grass*.

Root fibrous. Stems a little compressed, sometimes prostrate, but more frequently rising up in an oblique manner. Leaves numerous, chiefly found below, soft, and often crumpled here and there. Upper stipules longish, acute; those below, short, blunt, and jagged. Panicle with diverging branches; the spikelets containing about five webless and rather remote, five-ribbed florets.

Roadsides, pastures, and, as a weed, in gardens.

Mr. H. C. Watson observed this species in Caithness and Sutherland; and at considerable elevations throughout the north.

Annual—flowering in spring and all summer.

8. *Poa nemoralis*. *Wood Meadow-grass*.

Plant slender and delicate. Leaves long and pointed, mostly upon the stem. Stipule very short and notched. Panicle spreading, with fine, but rough branches. Spikelets small, each composed of two or three greenish-white, obscurely ribbed flowers, which are webless, but hairy at the base. Calyx-scales narrow, pointed.

Woods and moist shaded places; but probably rare.

Angus-shire. Mr. G. Don.—Den of Davo, Kincardineshire; Aberdeenshire woods. Anonymous.—In the province of Moray.

Perennial—flowering in June and July.

OBS.—The comparatively short and broad spikelets of this section sufficiently distinguish it from the preceding, and the existence, in several of its species, of a web, connecting the flowers, is another notable distinction. The difference, indeed, is so great that Sir. James Smith has placed the first group, consisting of species with long narrow spikelets and webless flowers, in a new genus (*Glyceria*); yet there is so much of an affinity between some species of *Poa* and *Glyceria* of this author, that the separation is of doubtful propriety.

Without repeating other characters, it may be observed that *P. alpina* will usually be distinguished from any other *Poa*, by its viviparous condition. Between the *sp.* 5 and 6 no little similarity exists; but, in an agricultural point of view, it is of importance to make the distinction, which, indeed, may, with moderate care, be readily effected. *P. pratensis* is a smooth grass, whereas the roughness of *P. scabra*,* particularly in the upper part of the stem, becomes evident

* This name used, I believe, upon the Continent for the species usually called *P. trivialis*, has been here adopted.

enough, upon drawing the plant through the fingers. But the best distinction resides in the stipule, which, in the former, is very short and blunt; while, in the latter, it is longer and pointed. As to *P. nemoralis*, perhaps, there is no readier mark of it than the very small size of the spikelets, each composed of two or three flowers. *P. annua* is well characterized by the compressed and nearly prostrate stem, crumpled leaves, and the ultimately diverging or even turned down branches of the panicle. Farther, each flower is quite separate from the others—a mark, it is to be observed, which can be well applied only in the most expanded state, in which, however, it is very manifest. In contrast with this circumstance, it may be observed that, in *P. pratensis*, the web connecting the flowers is so copious as usually to be evident, even without any pains to effect a separation, for the purpose of bringing it into view. In *P. scabra* it is less distinct, but still perceptible enough; while, in the *nemoralis*, its existence can scarcely be demonstrated.

It is to be observed that the Poas called *glauca* and *cæsia*, are considered, by Hooker, to be alpine varieties of *P. nemoralis*. Dr. Balfour observes “*Poa nemoralis*, var. β . *glauca*; abundant in many mountains in Clova and Braemar.”

It is not unlikely that other species of *Poa*, particularly *P. distans*, *rigida*, and *procumbens*, may occur in the north; and should any satisfactory accounts of them be afterward procured, they will be inserted in an Appendix, which it is intended to devote to additional species and stations.

Sir James Smith says, *Poa aquatica* makes a great part of the hay in marshy places (in England); and Lightfoot observes, that cattle are very fond of this grass, and, in deep muddy places, sometimes run the risk of suffocation to get at it. Mr. Sinclair's opinion is not very favourable to *P. pratensis*. It is of early growth, but the produce is comparatively inconsiderable, and after Midsummer it comes up but slowly, after being cropped. Its creeping roots impoverish the soil, and Mr. Sinclair shows that *Anthoxanthum odoratum* and *P. trivialis*, equally early grasses, and not liable to the same objection as they have fibrous roots, are superior in point of productiveness. Mr. Lawson, the Highland Society's seedsman, considers the last-named species “a superior pasture grass.” Mr. Curtis also observes that *P. trivialis* “is a principal grass in that uncommonly productive meadow, near Salisbury, mentioned by Stillingfleet, and more particularly described in the Memoirs of the Bath Agricultural Society”; and this excellent authority says of *P. pratensis*, “that its creeping root is almost as difficult to extirpate as that of *Triticum repens*, and that it ought, therefore, to be cautiously introduced, where the pasturage is not intended to be permanent.” Upon this subject it has been

observed, that a root even slightly creeping may seem to forbid any recommendation of the species for the alternate husbandry. For permanent pasture, however, the root creeping to a slight extent is of advantage, by securing the extension and continuance of the plant, without the serious objection of impoverishing the soil, by the unprofitable production, under ground, of vegetable matter.

GENUS XXII. TRIODIA.

Calyx of two nearly equal, awnless, concave, acute scales, about the same length as the spikelet, which contains several florets, hairy at the base, but without any complicated web. Corolla of two unequal, rigid, concave pieces; the outer of these the larger, with three teeth at the summit; the inner fringed, lining the cavity of the outer.

SPECIES.

1. *Triodia decumbens*. *Decumbent Heath-grass*.

Festuca decumbens. Linn.—*Lightfoot's Flora Scotica*.

Poa decumbens. Smith's *Flora Britannica*. — *English Botany*.—*Hooker's Flora Scotica*.

Stem much inclined, indeed lying upon the ground, except when in flower. Leaves somewhat glaucous, mostly at the lower part of the stem, hairy like their sheaths, with a tuft of hairs for a stipule. Spikelets forming a panicle or loose spike, turgid, of a violet tinge, containing four florets. The corolla has two or more dense tufts of shining bristles at its base; its teeth three in number, the middle one shortest.

Boggy or moist ground; rather common.—Near Aberdeen, at the Stocket, Nigg, and Old-Town Links. Ascending to a considerable height upon the hills in the Alford district; and in Braemar, as high as Castletown.

North of Sutherland. Mr. Watson.—Abundant in Ross-shire. Mr. G. C. Smith.

Perennial—flowering in July.

OBS.—This grass though often referred to the genus *Poa*, and having a good deal the aspect of an awnless *Avena*, is essentially unlike all our other species, and has been therefore put in the present genus, the name of which is derived from *τρεις*, three, and *ὀδους*, a tooth.

Mr. Sinclair says this grass is little susceptible of improvement by being transplanted to a richer soil, and that it never appeared to be cropped by the deer in Woburn Park.

He adds, that it is late in the production of foliage in the spring, and produces little after-grass, and is not, therefore, to be recommended for cultivation. Mr. G. C. Smith, however, ingeniously remarks regarding it—"I am of opinion that this, by cultivation, would be improved, and become of consequence as a grain crop, particularly in the Highlands, where it is common."

GENUS XXIII. BRIZA.

Panicle loose. Calyx of two equal, awnless, roundish scales, containing a compressed spikelet of two-ranked perfect florets. Corolla of two awnless scales, the inner one minute. Seed united to the corolla.

SPECIES.

1. *Briza media*. *Quaking-grass*. *Maiden's-hair*.

Stem erect, from one to two feet high. Leaves mostly at the bottom, rather short, with a sharp point, and a blunt stipule. Panicle tremulous, the branches slender, tortuous, diverging; its spikelets compressed, roundish-ovate, containing about seven flowers, which are longer than the calyx.

Dry upland pastures; not uncommon.—Rare at Aberdeen. Sparingly upon Donside, in Alford; and upon the islet in the river at Smithyhill. More common in Towie. Abundant upon Morven, in Cromar, particularly near its base. Gairnside; Glenmuick; Charlestown. Banffshire.

Near old bridge of Dee, at Aberdeen. *Mr. Dickie*.—Auchallader, above Castletown. *Mr. A. K. Clarke*.—Lochlee. *Anonymous*.—"Betwixt Auchindore and Clova, on the Conlach side." *Dr. D. Skene*.—Moray, not rare.—Glen Clova and Castletown. *Mr. Watson*; who found this species more than 500 yards high, in Forfarshire and Aberdeenshire.

Perennial—flowering in June.

Obs.—This singular and elegant species has an aspect quite unlike that of the ordinary grasses, and is remarkable for the tremulous panicle, and the broad, ovate, greenish spikelets, which, like the whole upper part of the plant, become of a violet hue, in an advanced stage.

The result of *Mr. Sinclair's* experiments shows this grass to be best fitted for poor soils, and affords one instance that manure is even hurtful to some grasses. Its nutritive powers are considerable when compared to other grasses affecting a similar soil. It is eaten by horses, cows, and sheep. These

merits, therefore (adds he), demand attention, and though it is unfit comparatively for rich permanent pasture, yet, for sandy, and also for poor tenacious soils, the *Common Quaking-grass* will be found of value.

GENUS XXIV. DACTYLIS.

Calyx of two unequal, pointed scales, containing several florets. Corolla of two unequal scales, the outer awned, and membranous at the edges, the inner narrower. Seed, with a longitudinal furrow, loosely covered by the unaltered corolla.

SPECIES.

1. *Dactylis glomerata*. *Rough Cock's-foot-grass*.

Stem about two feet high. Leaves harsh, rough-edged, with angular scabrous sheaths. Branches of the panicle stiff and rough, each bearing a dense globular tuft of bristly crowded spikelets, turned to one side. Calyx-scales very unequal. Outer scale of the corolla five-ribbed, with a short awn. Anthers purplish, pendulous.

Waysides and shaded places; but not always common.—At Aberdeen, on the banks of the Canal, and at the sides of the road between the Broadhill and Canal, &c. Occasionally in the Alford churchyards, but not frequent in that district.

Perennial—flowering all the summer.

OBS.—The characters of this genus are akin to those of *Festuca*, though the general aspect is very different. The present species is a harsh coarse grass, distinguished by the round somewhat bristly tufts of the panicle, which has stiff rough branches, and a tortuous central stalk.

Mr. Sinclair is of opinion that this grass is more valuable for pasture than for hay, and that even for this latter purpose it will be found more valuable than *Rye-grass*; for a knowledge of which superiority the agricultural world is indebted to Mr. Coke of Norfolk. Mr. Sinclair found this grass, in every instance, to constitute a portion of the herbage in the most celebrated pastures in Devonshire, Lincolnshire, and the Vale of Aylesbury.

GENUS XXV. CYNOSURUS.

Spikelets of two or more flowers, resting upon pinnate bracteas. Calyx of two equal, taper-pointed, awned scales. Corolla of two unequal scales, the outer more or less awned. Seed loose.

SPECIES.

1. *Cynosurus cristatus*. *Crested Dog's-tail-grass*.

Stem one foot high and upwards. Leaves short and flat, but sometimes rolled up; their sheaths long. Spike from one and a half, to two inches long, with a rough, wavy, middle stalk. Spikelets composed of two or more flowers, and accompanied by pinnate bracteas. Calyx of two equal, awned scales; those of the corolla unequal, the outermost having a short awn.

Dry pastures and parks; common.--Near Aberdeen, on the Links, Stocket, and Kincardine coast.

Perennial—flowering in July.

Obs.—This grass is remarkable for remaining upon lawns, with a withered and desolate aspect, through the autumn, or even most of the winter; and likewise for the pinnate or comb-like bracteas, which appear to be, in reality, imperfect spikelets, composed of nothing but calyx-scales, arranged in two rows. These are awned in *C. echinatus*, a species unknown in this quarter.

Mr. Sinclair considers this an inferior grass for hay, but admirably adapted for permanent pasture; and it constituted a very considerable portion of all the most celebrated pastures examined by this accurate observer.

GENUS XXVI. FESTUCA.

Calyx of two unequal, lanceolate scales, containing a spikelet of many florets, placed in two ranks. Corolla of two unequal scales, the outer terminating in an awn, more rarely in a point; the inner, two-ribbed, folded in, and mostly downy at each rib. Seed oblong, loose, though closely enveloped in the corolla.

SPECIES.

1. *Festuca ovina*. *Sheep's Fescue-grass*.

Stems from four to eight inches high, square, numerous, almost thread-like, naked above. Leaves numerous, rolled into a bristle-form, and composing dense radical tufts; their stipules very short. Panicle rather close and small, tending to one side. Calyx containing four or five florets, sometimes only pointed, but more frequently with a very short awn.

Sea coast; dry elevated woods and other places; rather common.—At Aberdeen, on the moors in Newhills, Stocket, &c.; and on the bent-hills both south and north of Don. Frequent in the woods of Alford, where are several *varieties*, differing mainly in the degree in which the flowers are awned or pointed, and in the colour and size of the plants. Buchan. Banffshire coast, and other parts of the county.

Clova; Braemar. Caithness, and Sutherland. Mr. Watson; who observed it at the height of 1000 yards in Sutherland; and 950 yards in Angus-shire.

Perennial—flowering in June and July.

2. *Festuca vivipara*. *Viviparous Fescue-grass*.

Festuca ovina β . Linn.—*Hooker's Flora Scotica and British Flora*.

Leaves bristle-shaped. Panicle close. Flowers compressed, awnless, downy, ribbed; the lowest in the spikelets elongated, the highest changed into green leaves.

Alpine situations frequent.—At Aberdeen, on Deeside, a little above the bridge, along with other species, all probably brought down by the river. Glentanner and Glenmuick. Sutherland-shire. Not yet observed in the Alford district, or any part of Donside.

Common in Glen Clova, and on all the mountains of Glen Dole, Glen Isla, and Braemar. Dr. Balfour.—Lochlee. *Anonymous*.—On the very summit of Ben-na-muic-dhui. Mr. H. C. Watson; who found the altitude to be 4320 feet, but suspects this may be an over-estimate.

Perennial—flowering in June.

3. *Festuca duriuscula*. *Hard Fescue-grass*.

Root fibrous. Stem round, larger than in *F. ovina*. Upper leaves usually flat, those of the root folded and bristle-like. Panicle directed to one side, large, and in the flowering stage much spread out; its branches roughish. Spikelets of about six flowers, the uppermost often imperfect. Corolla with a distinct awn, much shorter than itself.

Woods and dry places; common.—Aberdeen on the Banks of Dee, Inch, &c. Frequent in the Alford woods.

Perennial—flowering in June and July.

4. *Festuca rubra*. *Creeping Fescue-grass*.

Festuca duriuscula β .—*Hooker's Flora Scotica*.

Root creeping, said sometimes to extend to many feet or even yards. Leaves downy above, more or less rolled up especially the lowest. Panicle spreading, unilateral; the spikelets containing about six shortly-awned flowers, covered with fine whitish down.

On every part of the sandy coast, forming the best part of the vegetation of the bent hillocks.

Perennial—flowering in July.

Obs.—The small size, very short awns, and the bristle-like leaves sufficiently point out *F. ovina*. Upon the Kincardineshire coast, this species occurs with glaucous leaves—the *F. casia* of some

authors—and, in Braemar, I have gathered a *variety* with the spikelets densely downy, perhaps the form to which Hooker alludes as *Festuca hirsuta*. Host. Both these modifications might have a claim to rank as species in a genus the members of which often tread closely upon one another. *Sp.* 2 is abundantly evident from the germinating tendency, which is the origin of the specific name, and, though usually considered a *variety* of the 1st, it seems rather to be a distinct species. *F. duriuscula* is best distinguished from *ovina* by its much greater size and more distinct awns, although its usually flat upper leaves may also be taken into account. It makes, however, a nearer approach to the *rubra*, from which, indeed, it has been sometimes viewed as not specifically different; for the creeping root of the last-mentioned plant is scarcely to be considered a real difference. At least, I have some reason for thinking that other species assume the same condition when growing among loose sand, which readily permits the roots to extend themselves widely. Considering the downy flowers of this species, it might be said to bear the same relation to the *duriuscula* as the downy form of *F. ovina*, already referred to, does to the more ordinary state of that species. It deserves to be added that Mr. Dickie has observed a hairy *variety* of *F. ovina*, upon the sea-coast; while I have seen some specimens, from Lochlee, of a glaucous, somewhat downy, pale green, *F. duriuscula* (*rubra*? *Cambrica*?); so that we seem entitled to conclude that there is a hairy *F. ovina*, found both in alpine and maritime *habitats*, as there also seems to be a hairy alpine and maritime *variety* of *F. duriuscula*. It is, however, expedient to retain *F. rubra* as the name of a plant precisely enough defined by its extensive root, downiness, and pale colour, as well as by its usually growing in sand.

5. *Festuca calamaria*. Reed Fescue-grass.

Schedonorus sylvaticus. Lindley's Synopsis.

Stems erect, two or three feet high. Leaves narrow, lanceolate, ribbed, rough; the upper ones with very long sheaths. Panicle erect, spreading when in flower, afterwards close; its branches slender and numerous. Spikelets oblong, awnless, containing from two to five flowers.

Woods; rare.

Cawdor Woods, Moray. Mr. Stables.

Perennial—flowering in July.

6. *Festuca elatior*. Tall Fescue-grass.

Schedonorus elatior. Lindley's Synopsis.

Root somewhat creeping. Stem stout, erect, three or four feet high. Leaves large, but not numerous. Panicle branched, spreading loosely every way, but differing in this

respect, according to the stage, ultimately drooping. Spikelets between ovate and lanceolate; their florets about six, pointed or shortly awned.

Not very uncommon; usually either near the coast, or many miles inland on banks of rivers.—Near Aberdeen, on the Kincardine coast, in many places, as between Skettraw and Findon; and at White Cairns, in Belhelvie. Near Huntly. Unknown in the Alford district.

Forfarshire. Mr. G. Don.—Not uncommon in Kincardineshire. Mr. Chrystall.—Near Upper Banchory. Mr. Adams.—Banks of Ythan, Aberdeenshire. Mr. W. M. White.—Banks of Bogie, about half a mile south from Manse of Rhynie. Mr. John Minto.—Burn of Cairney, Banffshire. Messrs. Cowie and Craigie.—In Moray; rare. Mr. Stables.

Perennial—flowering in June and July.

7. *Festuca pratensis*. *Meadow Fescue-grass*.

Schedonorus pratensis. *Lindley's Synopsis*.

Root fibrous. Leaves rather narrow. Panicle branched, nearly upright, with a tendency to one side. Spikelets linear, compressed, containing many awnless flowers.

Angus, by the sides of streams. Mr. G. Don.—Province of Moray. Mr. Stables.

Perennial—flowering in June and July.

Obs.—*Festuca calamaria* is a tall species, with a very branching panicle and flat leaves; and, judging by the few specimens in my possession, it might be called an elegant grass, with the panicle comparatively of small size; the spikelets small, awnless, and making some approach to those of *F. ovina*. The 6th species will be detected by bearing in mind its great size, flat leaves, and ovate spikelets, which are shortly awned. From this species, the succeeding one (*pratensis*) differs, in being smaller, with less pointed spikelets. It ought, however, to be recollected that every variety in the size of *F. elatior* and the length of its awn is to be met with in this quarter; and I venture to suggest that a grass agreeing with the characters of *F. pratensis*, and at the same time truly different from the *elatior* is seldom or never wild in the North-east of Scotland. A French author observes that Smith's *F. pratensis* is not Lamarck's plant of the same name; and he agrees with some of our own botanists that it is but a variety of *F. elatior*. Notwithstanding all this, it may be concluded that the former of these, which is common in the south of Britain, is a true species, and it has been observed to differ from the latter (*elatior*) in being but half its height, with leaves only half as broad; the panicle more erect, less branched, with the spikelets more compressed and blunt.

8. *Festuca bromoides*. *Barren Fescue-grass*.*Vulpia bromoides*. *Lindley's Synopsis*.

Stem erect, from four to twelve inches high, naked above, the lower half carrying leaves, which are narrow, often rolled up into a bristle-shaped form. Panicle nearly erect, directed to one side, two or three inches long; the spikelets containing about six florets, each terminated by an awn, twice its own length.

Walls and dry places; not uncommon.—At Aberdeen, on walls about the Old Town, banks of Don, Rubislaw, &c. Alford; Methlic; Buchan.

Abundant about Aberdeen and the Banks of the Dee. Mr. G. Anderson, in *Linnæan Transactions*, Vol. XI.

Annual—flowering in June.

9. *Festuca sylvatica*. *Slender Wood Fescue-grass*.*Bromus sylvaticus*. *Smith's Flora Britannica*.—*English Botany*.—*Hooker's Flora Scotica*.*Brachypodium sylvaticum*. *Hooker's British Flora*.—*Lindley's Synopsis*.

Stem from one to two feet high. Leaves green, at last yellowish, lasting long, hairy, especially near the sheaths which are likewise clothed with spreading hairs. Spike two-ranked, slightly drooping at the top, composed of six or eight stalkless, hairy spikelets, which are about an inch long, and incline more or less to one side, with awns longer than the flowers. Outer scale of the corolla terminated by the awn; the inner fringed at the base, abrupt, and blunt.

Not very uncommon. Usually near the coast, or in high inland stations.—In the vicinity of Aberdeen, on the north side of Don, a little above the Old Bridge, and at the Cove; also, in Drumoak, on the north bank of Dee. Pretty common on the Kincardineshire coast, between Dunnottar and Muchals. On a wooded hill adjacent to Ballater.

Frequent in the South of Kincardineshire. *Mr. Chrystall*.—Woods behind Aboyne Castle, and near "the petrifying spring," Inchrory, head of Don. *Mr. Proctor*.—Banffshire, at Millo-wood, near Keith. *Messrs. Cowie and Craigie*.—Province of Moray. *Mr. Stables*, who does not call it rare.

Perennial—flowering in July.

OBS.—The plants in the two first sections of *Festuca* have the awn mostly wanting; if present, short, and never equal to the flowers in length. From these, the two last-described species differ, in having long, conspicuous awns; and they may be said to agree between themselves in no other feature. *F. bromoides* is known

at once by the very long awn, attached, as is usual in this genus, to the very point of the corolla. It cannot be distinguished, by these marks, from a neighbouring species, a native of the south, which may be possibly found with us—though I have never yet here met with the unequivocal *Myurus* of England—known by the very long panicle or spike, and the stem being leafy to the top; whereas *F. bromoides* is without leaves on its upper part, at least when the plant has shot up to its full height. *F. sylvatica* has no great similarity to any of our other grasses, and has at different times been reckoned a member of each of the following genera:—*Festuca*, *Bromus*, *Triticum*, and *Brachypodium*. The awns terminating the corolla, and, as Smith observes, the loose seed, correspond with the genus *Festuca*, while the species (which has the aspect of a *Triticum*) is readily detected by the stalkless, two-ranked spikelets, with long awns, the inner scale of the corolla being blunt, abrupt, and fringed.

Mr. Sinclair is of opinion that *Festuca ovina* does not possess the nutritive powers generally ascribed to it, though it may make a tolerable pasture for sheep. It is affirmed, on the authority of Linnæus, that sheep have no relish for hills and heaths that are destitute of this grass, and the Tartars are said to fix their summer abodes where it is in greatest plenty, because it affords excellent food for their animals. This species is, doubtless, entirely unfit for hay, though Dr. Anderson, at one time well known in Aberdeenshire, declared that it is capable of affording an uncommon quantity of it; an opinion which was combated by Mr. Curtis, a still better judge of these points. *F. duriuscula* does not appear to be either a very productive or remarkably nutritive grass; but it is well adapted for the food of sheep, and Mr. Sinclair thinks it entitled to a place in the composition of the best pastures, though in a small proportion. Hares are fond of this grass, and have been known to crop it close, neglecting the contiguous *F. ovina*. *F. pratensis* is a valuable grass, but as it is scarcely one of our natives, its merits need not be discussed; and it is only to be added that the cultivation of *F. elatior*, upon a deep, moist soil, appears to be an experiment deserving of trial. No doubt the herbage is coarse, but this is an objection which would lie against all very productive grasses.

GENUS XXVII. BROMUS.

Calyx of two unequal, awnless scales, containing a many-flowered, usually compressed spikelet. Corolla of two unequal scales, the outer concave, longer than the calyx, with an awn inserted rather below the notched summit; the inner narrower, united to the seed, two-ribbed, folded, and bristly at the ribs.

SPECIES.

1. *Bromus giganteus*. Tall Brome-grass.

Festuca gigantea. *Smith's Flora Britannica and English Flora*.—*English Botany*.—*Hooker's Flora Scotica*.

Stem several feet high, round and strong, with blackish knots. Leaves dark-green, ribbed, taper-pointed, sometimes a full half inch broad; their stipules short, brown or purplish, with an acute auricle at each side clasping the stem. Panicle large, drooping, very much divided, its branches rough and somewhat twisted. Spikelets consisting of from three to six flowers, and far shorter than the often wavy awn, which is attached to the outer scale of the corolla, a little below the summit; inner scale not fringed, but downy at the edges under a magnifier.

Rather rare.—Aberdeenshire. Banks of Don, at Haughton.

Near Forfar. Mr. G. Don.—St. Cyrus, Hareden, Kincardineshire. Anonymous.—Bervie. *Mr. Chrystall*.—Alford. *Mr. John Minto*.—Banffshire, at Millowood, near Keith. *Mr. Craigie*.—In Moray; rare. "The Island," Inverness. Mr. Stables.

Perennial—flowering in July and August.

2. *Bromus asper*. Hairy Wood Brome-grass.

Stem erect, four or even five feet high, smooth in the upper part, hairy below. Leaves uniform, very long and broad, harsh, hairy towards the base, particularly the lower ones, with long, rough, more or less hairy sheaths. Panicle of great length, very much spread out and drooping, with many rough subdivided branches. Spikelets drooping, compressed, about an inch long, of eight or nine rather remote downy flowers. Outer scale of the corolla having a rough awn, shorter than itself, inserted near the summit; inner scale with a fringe, which is very short, but usually distinct under a magnifier.

Woods; rare.

South side of Kincardineshire. *Mr. Chrystall*.—Same county, in Dens of Fenella and Brotherton. Anonymous.—Formartin, in Aberdeenshire. *Earl of Aberdeen*.—Millowood, near Keith. *Mr. Craigie*.—Moray. Mr. Stables.

Annual (some say biennial or perennial)—flowering in June.

3. *Bromus sterilis*. Barren Brome-grass.

Stem from one to two feet high, slender, scarcely erect, clothed with downy or hairy leaves. Panicle large, drooping, composed of narrow spikelets, about an inch long, containing six or seven rather distant, strongly ribbed flowers, shorter than the straight awn, which is purplish and attached to the outer scale of the corolla, a little below the point;

inner scale fringed, with bristles distinctly seen by a moderate magnifier. Stalks of the spikelets rough and long, usually undivided, sometimes, however, branched and carrying more than one spikelet.

Rather rare. Adjacent to Crown Street, Aberdeen.

In the neighbourhood of Banff. *Mr. Gardiner*, Melrose.—In Moray; not indigenous. *Mr. Stables*.

Annual—flowering in June and July.

OBS.—These three species, though not always placed in the same genus, have various points of resemblance, and they follow naturally enough the last member of the preceding genus, wherein the corolla has the fringed inner scale of a *Bromus*; while the 1st of the present group is without the fringe alluded to, and, indeed, the 2d has it in no complete manner; so that these two are thus so far akin to the *Festucæ*.

B. giganteus—which, with us, is not a “sea-side grass,” as an eminent botanist calls it—is characterized by its great size, smooth stem and sheaths,* with broad, bare, ribbed, glossy, green leaves, much divided panicle, and long, usually tortuous awn, which far exceeds the valve to which it is attached, and is, indeed, several times the length of the rather small spikelets. *B. asper* is a still more gigantic grass, comparatively harsh and hairy, with an awn shorter than the florets, seldom one-fourth the length of the spikelets, which are fully an inch long, while those of *B. giganteus* scarcely exceed the half of that size. *B. sterilis* is distinguished from the two preceding species by being a smaller, feebler grass, the branches of its panicle mostly undivided, with awns far exceeding the flowers, and fully equal to the long spikelets. We might say of these three species comparatively, that the 1st has short spikelets and long awns; the 2d, long spikelets and short awns; while the 3d, in a manner, combines the long awn of the 1st, with the long spikelet of the 2d. It is also to be recollected that, in the more expanded stage, both *B. asper* and *sterilis* have the flowers distinctly separate.

There is a few flowered, pale variety of *F. gigantea*, called at one time *F. triflora*, which *Mr. Cowie* has observed in Banffshire; not common in Scotland, but probably far from rare in adjacent portions of England, as I have noticed it in several parts of Cumberland.

4. *Bromus mollis*. *Soft Brome-grass*.

Stem about two feet high. Leaves as well as their sheaths, soft and downy. Panicle, for the most part, erect and close, though spreading when in full flower; the branches variable, but never of great length, either simple or divided, occasionally in pairs, the lowest often in a whorled form. Spikelets downy, oblong, ovate, consisting of, from five to ten, rib-

* Foreign writers, however, mention one variety in which the sheaths are downy, and another wherein they are hispid.

bed, closely set flowers, with straight awns about their own length.

Meadows, hay-fields, and waste places; abundant. Various parts of the sea coast.

Biennial—flowering in June.

5. *Bromus secalinus*. *Smooth Rye-brome-grass*.

Stems two or three feet high. Leaves large, slightly hairy. Panicle at first erect, afterwards spreading, and ultimately drooping; its branches seldom divided. Spikelets large, bare, ovate; the flowers about ten, cylindrical and remote. Outer scale of the corolla with a short and not quite straight awn; the inner one fringed, with very distinct bristles.

Among grain-crops, especially wheat; but not common.

Frequent among wheat in Kincardineshire. *Mr. Chrystall*.—On the farm of Mondurno, about $4\frac{1}{2}$ miles from Aberdeen. *Mr. John Henderson*, surgeon.—Corn fields in Drainy and at Spynie; scarcely a native of Moray. *Mr. Stables*.

Annual—flowering from July through the autumn.

OBS.—The last of these species is indicated by the short awns and the cylindrical, compact, smooth, or minutely-downy flowers, which are at first close, but afterwards distinctly separate, their mid-stalk appearing between them. The inner scale of the corolla, too, is remarkable for strong, bristly teeth. *B. mollis*, known to every one as a sown grass, is an undoubted native, and may be usually recognized by the erect, close panicle, with the spikelets, leaves, and sheaths downy. This species, however, differs much as to downiness and the branching of the panicle, while the height, too, is very variable, being sometimes fully two feet; whereas, in very dry and exposed situations, it scarcely reaches more than a couple of inches. In short, the name is here used to comprehend no little variety of appearance, but, as is believed, only one distinct species. There was at one time an intention to introduce in this place two other species, viz. *B. velutinus* (characterized by large but few spikelets, composed of numerous, crowded, downy flowers) and *B. arvensis* (a species known by the smoothish and often purplish spikelets), but it was afterwards concluded that some of the specimens in view might be referred to *B. mollis*; while a few were mere *varieties* of the *secalinus*; and others, found on the Aberdeen Inch, were so probably brought along with ballast,* as not to entitle them to be described as native species. In fact, *B. secalinus* is not properly indigenous, but brought from the south with seeds, particularly wheat.

* Probably from the source alluded to, several grasses, as *Panicum viride* and *Crus Galli*, and *Alopecurus agrestis*, as well as other unexpected plants, have been met with upon this spot, the botanical merit of which has been lessened by the recent improvements. Alpine species, too, have been observed upon it, carried down by the Dee.

The species of *Bromus* are generally disliked by cattle. *B. mollis* is the best of them, and forms no inconsiderable portion of the hay-field in many parts of the north; but of this grass Mr. Sinclair has a poor opinion indeed. It is at least liable to the objection that, being strictly annual, it does not appear again, if cut at an early stage; whereas, if allowed to stand so long as to sow itself, the existing crop is of little value. There is, I understand, an opinion, in the counties of Angus and Kincardine, that *B. secalinus* communicates deleterious properties to the grain crop with which it may be mixed.

GENUS XXVIII. AVÉNA.

Calyx of two thin, awnless scales. Corolla of two unequal scales, the outer cloven at the summit, with a twisted awn on its back, near the middle; inner scale smaller, awnless. Seed with a narrow channel along its upper side, closely covered by the hardened outer scale of the corolla, which retains its awn.

SPECIES.

1. *Avena strigosa*. *Bristle-pointed Oat-grass*.

Stem strong, two or three feet high. Branches of the panicle directed to one side. Calyx ribbed, containing two flowers, each of which has the outer scale of the corolla terminated by a pair of bristles, and, upon the middle of its back, the usual spiral awn of the genus. One of the flowers is on a short stalk, which has, at the top, a very small hairy tuft upon one side.

Corn fields.—Sutherland, in the tract between Bonar Bridge and Loch Shin.

Deeside, above Mar Lodge. *Hooker's British Flora*.

Annual—flowering in June and July.

2. *Avena pubescens*. *Downy Oat-grass*.

Root strong, somewhat creeping. Stem eighteen or twenty inches high, clothed with leaves, which are flat and more or less hairy, like the lower sheaths. Flowers in an erect panicle, purplish, longer than the calyx, mostly two, with an imperfect one in each spikelet, all on a bearded stalk.

Forfarshire. Mr. G. Don.—In the Province of Moray. Knock of Alves; Ducat-hill; Boath. Mr. Stables.

Perennial—flowering in June.

3. *Avena pratensis*. *Narrow-leaved Oat-grass*.

Stem from twelve to eighteen inches high, erect, leafy only in the lower part. Leaves rolled up, finely serrated,

with broad, smooth sheaths. Panicle for the most part spike-like, brownish, erect; the spikelets upon undivided branches, the highest almost sessile, composed of four or five flowers, arranged upon a hairy stalk.

Dry pastures, chiefly near the sea.—Occasionally near Aberdeen; as at the Cove, Bank of Dee in Drumoak; and in Belhelvie, along with *Festuca elatior*, at the foot of the rocks, near which *Schoenus nigricans* grows.

Forfarshire Mr. Don.—Peterhead. Mr. John Shier.—Banff parish. Mr. Smith.—Cullen and Boyne. Mr. Craigie.—Moray.

Perennial—flowering in July.

4. *Avena alpina*. *Alpine Oat-grass*.

Leaves rough-edged, flat, sometimes of considerable breadth, with long, ribbed, rough, sheaths. Panicle of a pale silvery-brown, its lowest stalks subdivided. Spikelets of about five flowers, with a remarkable tuft at the base of each, their stalks not being uniformly hairy.

Elevated upland situations.

Glen Fee. Mr. White.—“Crater” of Craignacoynach. Rev. James Farquharson.—Inch Marnoch, on Deeside; and Inch Rory, above the source of Don, plentifully. Mr. Proctor.

Perennial—flowering in July.

5. *Avena elatior*. *Tall Oat-grass*.

Holcus avenaceus. Smith's *Flora Britannica*.—*English Flora*.—*English Botany*.—*Hooker's Flora Scotica*.

Arrhenatherum avenaceum. *Hooker's British Flora*.—*Lindley's Synopsis*.

Root of several knots or bulbs, placed one above the other. Stem erect and tall. Leaves rather large. Panicle of a greenish-brown hue, spreading when in flower, very long, with branches that are in some degree whorled, especially below. Calyx-scales unequal, shorter than the two contained flowers, the upper of which is perfect and barely awned, the lower imperfect, with a long, conspicuous awn. Seed coated with the hardened corolla.

Corn fields, hedges, &c.; common.

Perennial—flowering in July.

OBS.—The 3d and 4th species border closely upon one another; and without venturing upon a general opinion regarding *A. pratensis* and *alpina*, it may be suspected that the plants above alluded to under these names are but alpine and maritime varieties of the same species. We have various instances, in Aberdeenshire, of plants (I allude to species regarding which the same observation has not

been made in other places) occurring both on the coast and in elevated parts of the interior, but entirely wanting for many intervening miles. Between Nos. 3. and 4. the readiest distinction will be derived from the subdivided and larger, though close panicle of the *alpina*, with its flat, broad, rough-edged leaves. From these two, *A. pubescens* (not to mention other marks) is sufficiently distinguished by the hairy or downy leaves. Should *A. flavescens* be met with in this part of the kingdom, of which I have as yet no satisfactory evidence, it will be detected by the numerous, yellowish, small spikelets. The wild oat (*fatua*) has not been here introduced, and, indeed, *A. strigosa*, well characterized by the bristles or short awns terminating each floret, is but a doubtful denizen.

The last species (*elator*) has, by some, been recently placed in a genus (*Arrhenatherum*), of which we have no other example; but it has, commonly, been put in the genus *Holcus*. As the technical characters, however, do not quite accord with the *Holci*, but approach just as near to the *Avenæ*, with which the aspect of the plant well corresponds, I am disposed to rank it with the present genus, and to recur to the name of Linnæus.

These *Avenæ* deserve no comment upon their agricultural properties, with the exception, perhaps, of the last species (*elator*), the produce of which is great, though its nutritive qualities are rather of an inferior order; and, upon dry soil, the roots become large bulbs, and prove a troublesome weed. Mr. Sinclair is of opinion that this grass should have a place in permanent pastures, though the proportion ought to be very limited.

GENUS XXIX. ELYMUS.

Main stalk of the spike toothed alternately at each side.

Spikelets, two or more together, at each tooth. Calyx of two scales, containing a spikelet of several florets.

Corolla also of two scales.

SPECIES.

1. *Elymus arenarius*. Upright Sea Lyme-grass.

Root creeping extensively. Stem several feet high, round, and hollow. Leaves mostly upon the lower part of the plant, long, and spinous at the points. They have a tendency to roll inward, and are remarkable for their glaucous hue, particularly upon the upper surface, which is strongly furrowed. Stipule short. Spike upright, rather long and dense; its three-flowered spikelets arranged in pairs at each tooth of the mid-stalk. Calyx of two pointed scales, membranous at the edges, scarcely longer than the included downy florets.

Sandy sea shores; not very common.—Rare at Aberdeen; at

least, I have only observed it in the space between the south end of Footdee Square and the Pier, and on the north side of Don, not far from the sea; at both places in small quantity. Montrose, Fraserburgh, and in the north of Sutherland.

Sandy shores of Forfarshire; and at St. Cyrus, in Kincardineshire. *Dr. Balfour*.—Aberdeenshire, on the bents at Ugie Mouth; and in Peterhead Bay. *Mr. Alex. Murray*.—Stotfield, west of Burghead; but rare in Moray. *Mr. Stables*.—North of Caithness. *Mr. H. C. Watson*.—John o'Groat's. *Dr. Balfour*.

Perennial—flowering in July.

Obs.—The downy flowers, the spikelets in pairs, the rather dense and somewhat lobed spike, the short stipules, and the large leaves, remarkable for the greyish or bluish hue styled glaucous; form a combination which, with moderate care, cannot be mistaken. Authors concur in mentioning that the plant is frequent, though rarely flowering; but so far as the writer can form an opinion of it on the east and north-west coasts, he would say that it usually flowers, but is, in general, rather uncommon.

My friend, *Dr. Balfour*, informs me that *Dr. G. M'Nab*, in 1835, met with an *Elymus*, in Forfarshire, "resembling much *E. geniculatus*." Regarding *Dr. M'Nab's* plant I can give no opinion, but it is certain that his father and myself, several years ago, met with an *Elymus*, in Durness, Sutherland, which was then taken for the veritable *E. geniculatus*—an extremely rare species, hitherto said only to occur at Gravesend—and I continue to be of the same opinion. The characters of *E. geniculatus* are the following, well entitling it to rank as a distinct species:—"Spike bent perpendicularly downward, lax; main stalk winged. Calyx awl-shaped, longer than the spikelets." The Sutherland specimens did not exhibit the first of those characters (from which the species derives its name), but this may have been owing to the stage.

Elymus arenarius has been considered "the sugar-cane of Britain," as the nutritive matter afforded by it is remarkable for a large quantity of saccharine matter, amounting to more than one-third of its weight. This information is given by *Sinclair*, who adds, "the saccharine matter must render the hay made from this grass very nutritious, particularly when cut into chaff and mixed with corn or common hay." The same author found that sand-hills which he examined in Lincolnshire "were formed by *E. arenarius* and *Arundo arenaria*; the latter with its tufty habit of growth formed the summit of the hill, while the broad, spreading roots and leaves of *Elymus arenarius* secured the base and sides. These two grasses, when combined, seem admirably adapted, by Nature, for the purpose of forming a barrier to the encroachment of the sea. What sand the *Arundo arenaria* arrests and col-

lects about itself, the *Elymus arenarius* secures and keeps fast." This species, however, is not to be taken into any practical account in this quarter. At least, I have never seen a great quantity of it, except on a portion of the desolate tract which lies between Manse of Durness and Cape Rath. It has been suggested that *E. arenarius* is capable of being formed into ropes, as *Stipa tenacissima* is in Spain.

GENUS XXX. HORDEUM.

Flowers in threes at each tooth of the central stalk; the two lateral being often stalked, and with stamens alone, the intermediate one sessile and perfect. Calyx of two slender, pointed or awned pieces. Outer scale of the corolla ending in an awn, which extends beyond those of the calyx; inner smaller, and in the lateral flowers having often, at its back, a bristle-like body. Seed pointed at each end, with a narrow channel along the upper side, firmly coated with the corolla.

SPECIES.

1. *Hordeum murinum*. Wall Barley.

Stem reclining at the base, then becoming erect. Leaves long, flat, bright-green, with rather loose, long sheaths. Spike two or three inches long, close, and brittle. Of the three florets placed together, the central is perfect and almost sessile; with the scales of its calyx narrow-lanceolate, fringed with hairs, and ending in a long awn; the two lateral ones stalked, and without pistils, their calyx-scales all bristle-like and rough.

Rare.—Not known to occur North of Moray, or in any part of the counties of Aberdeen and Banff.

Montrose, Johnshaven, &c. Anonymous. — Kincardineshire coast, plentifully, near Gourdon, a mile from Bervie. Mr. H. R. Scott, advocate, and Mr. Chrystall.—Friars' Park, Elgin. Mr. Bremner.—Alves Churchyard and at Spynie. Mr. Stables.

Annual—flowering in midsummer.

Obs.—This rather rare grass is distinguished from any other *Hordeum*, by the calyx-scales of the intermediate flower having a fringe, which is very distinct, particularly when slightly magnified. By the want of this fringe, with the rougher awns and half-ovate form of the inner calyx-scales of the lateral flowers, we may detect *H. maritimum*, a species having considerable similarity to *murinum*, but smaller and more glaucous; which, though included in Don's list of Forfarshire plants, I do not venture to insert as a proper native. *H. pratense*, frequent in England, but scarcely wild in any

part of Scotland, is a much more slender and tall species, with all the calyx-scales bristle-like.

GENUS XXXI. LÓLIUM.

Spikelets in two rows, placed alternately in the channels of the main stalk, composed of numerous florets. Calyx of a single scale, at the outside of the spikelets; rarely a small one at their inside. Corolla of two unequal scales; the outer often more or less awned, the inner smaller.

SPECIES.

1. *Lolium perenne*. *Perennial Darnel*. *Rye-grass*.

Stem one foot high or more. Leaves rather large, with short stipules. Spike of variable luxuriance; of numerous alternate, compressed spikelets, which are far longer than the calyx, each consisting of from six to ten usually awnless flowers.

Fields, pastures, and waste places.

Glen Clova; Castletown of Braemar; Caithness, and Sutherland. Mr. H. C. Watson.

Perennial—flowering in June and July.

2. *Lolium temulentum*. *Bearded Darnel*.

Stem about two feet high, slightly rough, especially at the top. Leaves bright-green. Spike several inches long, with a rough main stalk. Spikelets alternate, of about six long-awned flowers, with the calyx of a many-ribbed, broad, single scale at the outside of each spikelet, and rising above it.

Rare, and not indigenous.

Angus. Mr. G. Don.—On the farm of Blackhouse, near Peterhead. Mr. Alex. Murray.—In Buchan, at Philorth. Dr. D. Skene.—Cairnbulg. Anonymous.—Near Springfield, Elgin; Birnie; east of Nairn. Mr. Stables.

Annual—flowering in July.

OBS.—Moderate care will ascertain the present genus, which is well characterized by the two-ranked spike, the inner margin of each spikelet lying in a channel of the stalk, with the calyx of a single scale at the outer margin; although, no doubt, there is, occasionally, at least, in *L. temulentum*, a small calyx-scale at the inner edge of the spikelet. The genus settled, little difficulty can occur with any *Lolium*; as nothing can be more distinctive than the very evident awns of *L. temulentum*, with the calyx fully as long as the spikelet, when compared with the well-known points of *common Rye-grass*.

Lolium arvense—common enough in the southern parts of Britain, and mentioned in the *Flora Britannica*, as occurring in fields to the north of Forfar—may be considered as a *variety* of *L. temulentum*,

characterized by short, soft awns, smooth stem, and spikelets as long as the calyx.

Rye-grass is said to have been cultivated, in England, in the seventeenth century, and it was long before any other grass was put to the same use. Forty or fifty years ago, *Phleum pratense* was probably introduced; and, about the same time, seeds of *Dactylis glomerata*, though a native species, are said to have been brought from Virginia. No trial of it was, however, made at that time, but more recently its cultivation has been practised and recommended by Mr. Coke; so that, according to Mr. Sinclair, it has superseded the *Rye-grass*, in some districts of England. It is but lately that *Alopecurus pratensis* has been tried for similar purposes, upon an extensive scale, chiefly by the praises of Mr. Curtis, an excellent judge of the botanical and economical qualities of grasses.

The properties of *Lolium perenne* are well known. It may, however, be doubted whether it ought to hold, among sown grasses, the prominent place that it does in this quarter. Regarding this important grass a few quotations may be given.

Professor Martyn says, in his *Flora Rustica* (1792), "How long this grass may have been in cultivation I am not able to ascertain. Neither Gerard (1597), nor his republisher, Johnson (1636), nor Parkinson (1649), give the least hint of any use to which it is applied. None of the writers on husbandry, of the last century, say a word in its commendation, or insinuate that any particular species of grass was sown in laying down land. * * * How the *Rye-grass* came to have been originally selected from all the rest we cannot say. Probably it was accident, or because it is common, and the seeds are easily collected. * * * That the *Rye-grass* should still be the only sort whose seed is to be had in any quantity in the shops is a disgrace to this age and nation."

The following observations are from Sinclair's *Hortus Gramineus*:—"There has been much difference of opinion respecting the merits and comparative value of *Rye-grass*. It produces an abundance of seed, which is easily collected, and readily vegetates on most kinds of soil. It soon arrives at perfection, and produces, in its first years of growth, a good supply of early herbage, which is much liked by cattle. These merits have, no doubt, upheld it till the present day in practice, and will, probably, for some time to come, continue it a favourite grass with many farmers. But the after-

math of Rye-grass is very inconsiderable, and the plant impoverishes the soil in a high degree, if the culms, which are invariably left untouched by cattle, are not cut before the seed advances towards perfection. Let the produce and nutritive powers of Rye-grass be compared with those of the Cock's-foot-grass, and it will be found inferior nearly in the proportion of 5 to 18, and also inferior to the Meadow Fox-tail in the proportion of 5 to 12, and inferior to the Meadow Fescue in the proportion of 5 to 17.* Sir J. Smith says of this species, "It yields an early crop of hay upon high or sandy lands, and makes a fine turf, which, however, is said not to be lasting, except on a rich soil. Much valuable information concerning its cultivation and merits is collected by Professor Hooker, in his *Continuation of the Flora Londinensis*. The result seems to be that this grass is best suited to the light land of Norfolk, where it first obtained its reputation."†

From this common and useful species of *Lolium* we pass to *L. temulentum*, which is interesting for qualities of a different kind—namely, for being rare, indeed, scarcely indigenous, and the only one of the true grasses which can be said to be possessed of decidedly deleterious qualities. That *Darnel* is possessed of intoxicating qualities, both ancient and modern writers agree. It was observed by Linnæus, of this species, that, if malted with barley, the ale soon produces giddiness; and, baked into bread, it is known to occasion deleterious effects. A considerable extent of ground has been observed to be cultivated with *Darnel* in the neighbourhood of London, perhaps, with the view of its being added to fermented liquors, to increase their intoxicating effects. Cases illustrating the symptoms produced by this species are recorded in Stephenson and Churchill's *Medical Botany*, from which work these remarks upon it are mainly culled.

Lolium temulentum is the Aira of the Greeks, and the "infelix lolium" of the Roman poet:

" — interque nitentia culta,
Infelix lolium et steriles dominantur avenæ."

* For the purpose of ascertaining the comparative value of the produce of different grasses, it has been recommended to submit the same quantity of each, either in a green or dry state, to the action of hot water for some time. The liquid part is afterwards to be separated by filtration, and, lastly, evaporated to dryness. The solid product is to be considered the nutritive matter of the grass.

† Many new, and it is thought improved, varieties of *L. perenne* have of late been observed. Mr. Whitworth's collection, in 1823, amounted to sixty. A variety distinguished from common Rye-grass, by greater size and a deeper green colour (*Lolium perenne Italicum*, *Italian Rye-grass*), is cultivated in Italy and Germany. Mr. Thomson of Banchoory procured a few seeds of it, at Munich, and communicated these to Mr. Charles Lawson, Edinburgh, who gives a report on the plant in

It is considered the *Zizania* or *Zinzania* of the Arabians; and it has been thought probable that the meaning of *Zizania*, occurring in the following and other parts of the 13th chapter of St. Matthew's Gospel, would have been better translated by *Darnel* than by *Tares*: "ἦλθεν αὐτοῦ ὁ ἐχθρὸς καὶ ἐσπείρε ζίζανια ἀνά μεσὸν τοῦ σίτου."

GENUS XXXII. TRITICUM.

Flowers in a spike; a single spikelet at each tooth, presenting one of its faces to the tortuous, compressed, main stalk. Calyx of two nearly equal scales, with or without awns, and containing three or more florets. Exterior scale of corolla pointed or awned, the inner awnless. Seed loose.

SPECIES.

1. *Triticum junceum*. *Sea Rushy Wheat-grass*.
Agropyrum junceum. *Lindley's Synopsis*.

Root widely creeping. Stem smooth, one or two feet high. Leaves, like the whole plant, glaucous, tapering to a point, with a tendency to be rolled up; their stipules very short. Spike long; spikelets rather distant. Calyx of two many-ribbed, bluntish scales, containing four or five smooth, awnless florets.

Frequent on sand-hills near the sea.—Rather common at Aberdeen, both to the south and north of Donmouth. Buchan; Sutherland; and, probably, on all sandy parts of the coast.

Perennial—flowering in July.

2. *Triticum repens*. *Creeping Wheat-grass*. *Couch-grass*.
Agropyrum repens. *Lindley's Synopsis*.

Root creeping wide and deep. Leaves flat. Spike two or three inches long, its central stalk channelled on each side alternately, with slight projections where the rather close spikelets are attached. Calyx of two many-ribbed scales, tapering to a point, enclosing from four to eight florets. Corolla of two unequal scales; inner awnless, the outer pointed or with an awn, which seldom extends beyond itself.

Frequent in hedges, sides of roads, and fields.—Common around Aberdeen.

Perennial—flowering through the summer.

the 20th No. of the *Quarterly Journal of Agriculture*. This grass is represented as an early and late grower, more luxuriant, hardier, and more relished by cattle than our common *Lolium perenne*. It is, I understand, cultivated, to some extent, in Kincardineshire.

3. *Triticum caninum*. *Fibrous-rooted Wheat-grass*.
Elymus caninus. Linn.
Agropyrum caninum. Lindley's *Synopsis*.

Root fibrous, not creeping. Leaves long and flat. Spike three or four inches long, but sometimes of a far greater length. Calyx slightly awned, with three, sometimes five ribs, containing about four florets, with long, rough awns.

Perhaps not uncommon; but, probably, often confounded with the preceding.

Perennial—flowering in July.

OBS.—Though, in general, the aspect of the 1st species is sufficiently marked, a small *variety* of it makes no slight approach to the more awnless state of *T. repens*; but the distant spikelets and blunt calyx of the former is different enough from the closer spikelets and pointed calyx of the latter. It ought, however, to be observed that, though authors call the leaves of *T. junceum*, *involute*, as well as those of *Elymus arenarius*, both these species have here been described as only having a *tendency* to be rolled up; for the fact is that, though they assume this form in an advanced stage, or after the plant is detached from the ground, they will be found quite flat, in both species, in the young, growing condition. It is also to be recollected that there is, at least upon the English coast, and probably also upon that of Scotland, a *variety* of *T. repens*, sometimes confounded with *junceum* and even with *Elymus arenarius*; having a broad, close spike and long spikelets; wherein, according to the specimens that I have seen, the leaves are rolled up. As to *T. caninum*; it is sufficiently distinguished by the absence of a creeping root, and by the long, slender spike, with very conspicuous awns, the spikelets having, in no small degree, the aspect of a long-awned *Festuca* or *Bromus*.

It may be added, that it is just possible for a doubt to exist, in some cases, between the genera *Lolium* and *Triticum*; and though the mostly single calyx-scale of the former may be conclusive enough, the arrangement of the spikelets will be found, in general, a good practical distinction. These lie, in *Lolium*, as already mentioned, with their inner edges in the channels of the mid-stalk, whereas, in *Triticum*, the middle of the flat surface is over the channel; so that, in the former genus, the central stalk of the spike is quite uncovered from end to end, while in *Triticum* it is mostly concealed by the spikelets.

Triticum junceum may be alluded to as one of the species which perform the important effect of binding the loose sand upon our coasts. *T. repens* is a most troublesome weed, conspiring with *Avena elatior*, *Holcus mollis*, and others, to become the pest of corn fields. In gardens, it is still more common, forming the main part of the *Squitch* or *Couch* of gardeners—corruptions of *quick* (living), referring to the strong, vital properties of the roots. Authors mention that

at Naples, these roots are collected in large quantities and sold in the market to feed horses, and that they have a sweet taste, approaching to that of liquorice, and, when dried and ground to meal, they are said to have been made into bread, in years of scarcity; also, that Boerhaave recommends the juice of these roots in jaundice and scirrhus liver; and that cattle are frequently found to have scirrhus liver in winter, which is cured soon when turned out to grass in the spring. It is well known that dogs, by means of these leaves, excite vomiting; an effect, perhaps, mechanically produced by their roughness.

The long, articulated roots of this grass are known under the name of *Chiendent*, in France, where they extract sugar from this substance, and frequently employ it in the formation of a diluent, diuretic decoction. I observe, too, in a recent French medical work, the decoction of bruised *Chiendent* extolled in "*urethrite*"; and also in a febrile affection, which may be considered similar to our common fever—a practice which might be occasionally worth adopting in remote country parts. The leaves of *T. repens* are so rough that horses and cattle scarcely touch them. Mr. Sinclair, however, thinks *T. caninum* of considerable value, particularly as affording early herbage, in a degree superior to *Lolium perenne* or even *Anthoxanthum odoratum*; and that, on soils of inferior quality, it might be cultivated to advantage instead of *Rye-grass*.

ORDER III. TRIGYNIA. Three Pistils.

GENUS XXXIII. MONTIA.

Calyx of two concave, permanent leaves. Petals five, cohering at the base, three smaller than the rest and bearing the stamens. Capsule of one cell, in three pieces. Seeds three.

SPECIES.

1. *Montia fontana*. *Water Chickweed*. *Blinks*.

Stem branched, not erect, a few inches long. Leaves opposite, oval, entire, blunt, tapering into short stalks. Flowers small, white, upon short stalks, drooping before flowering.

Wet places; common.—Near Aberdeen, in Nigg, &c. &c.

Clova mountains. Mr. Watson.

Annual—flowering in May.

Obs.—This smooth, juicy plant is easily detected by the above characters. It may be added that it appears both Linnæus and De Candolle have observed the stamens to be sometimes five in number.

CLASS IV. TETRANDRIA. Four Stamens.

ORDER I. MONOGYNIA. One Pistil.

GENUS I. SCABIÓSA.

Common calyx of many leaves, the outer ones largest. Proper calyx double, at last enlarged and crowning the naked, solitary seed. Corolla tubular; the limb in four or five segments. Common receptacle convex, chaffy or bristly or naked.

SPECIES.

1. *Scabiosa succisa*. *Devil's-bit Scabious*.

Root ending abruptly. Radical leaves oval, entire, and upon long stalks; those of the stem variously toothed, and upon shorter stalks; the highest much narrower, and almost sessile. Flowers dark-purplish blue, sometimes white, in globular heads, which are usually two in number. Corolla in four equal segments.

Pastures, moors, and woods; common.—Frequent in Nigg, and everywhere around Aberdeen.

Fordoun, in the Mearns. *Mr. David Johnston*, surgeon.—Noranside, upper part of Angus; and Buchan. Anonymous. But, indeed common everywhere throughout the north.—In Forfarshire, *Mr. Watson* met with it, at a height of more than 500 yards.

Perennial—flowering in autumn.

2. *Scabiosa arvensis*. *Field Scabious*.

Knautia arvensis. *Hooker's British Flora*.—*Lindley's Synopsis*.

Stem two or three feet high, bristly. Radical leaves lanceolate, stalked, serrated; those above sessile and pinnatifid, the terminating segment far the largest. Flowers pale-purple; the inner with four nearly equal segments, the outer or marginal larger, and their four segments unequal.

In fields and cultivated places; not common. At least, I have never gathered it in the north, but in Ross-shire—where several other species are met with, which are seldom or never seen with us, though common enough in the south.

Angus-shire. Herbarium of *Dr. Harvey*.—Near Montrose. *Mr. W. Smith*.—Not uncommon in the Mearns. *Mr. Chrystall*. Alford; but very rare. *Mr. John Minto*.—Buchan. Anonymous.—Urquhart, near “the Bow Bridge,” Elgin; field near Lethen. *Mr. Stables*.—North of Sutherland. *Mr. H. C. Watson*.

Perennial—flowering in July.

3. *Scabiosa columbaria*. *Small Scabious*.

Stem twelve to eighteen inches high. Radical leaves ovate or lyrate, notched; the rest pinnatifid, with linear segments. Corolla in five unequal segments.

Plentiful near Montrose. *Hooker's Flora Scotica*.

Perennial—flowering in July and August.

Obs.—The present genus is readily recognized by the dense heads of flowers, each with a double calyx; and as to the species, we cannot fail to distinguish the 1st by its almost entire leaves, as compared with the deeply-cut condition of at least some of the leaves in both the others. In the 3d *sp.* the leaves and flowers are more delicate than in the 2d; and, as a conclusive distinction, it is enough to repeat, that the segments of the corolla are five, in *S. columbaria*; and but four, in *arvensis*. I have never met with the 3d *sp.* in the neighbourhood of Montrose, nor do any of my friends appear to have been more successful; and some degree of error may therefore be suspected in the above account of its being plentiful near Montrose, although probably derived from the Curator of the Glasgow Botanic Garden. *Dr. Balfour* has, however, favoured me with a specimen from a more southern part of the same county, and writes that this species has been observed by *Dr. G. M'Nab*, to be common near Arbroath, where, indeed, *Mr. G. Don* had noticed it many years before.

Hooker notices that the term *Scabiosa* is derived from *Scabies*; the decoction or infusion of some of the species having formerly been employed in curing cutaneous diseases. In France, *S. arvensis* is still thought of use “*contre la gale, les dartres, et autres maladies de la peau*”; and a tea procured from this herb is there prescribed to be drunk hot, in slight attacks of Bronchitis. To *S. succisa*, many virtues were once attributed. Indeed, it is recorded that the Devil, envious of its qualities, bit off the root in his rage, and he must, it has been observed, have carried away with him the whole properties of the plant, no one in these latter times having observed any virtue in it.

GENUS II. GALIUM.

Calyx small, four-toothed, superior. Corolla wheel-shaped, four-cleft. Fruit dry, composed of two united globes.

SPECIES.

* *Flowers yellow. Fruit without bristles.*

1. *Galium cruciatum. Crosswort.*

Stem about a foot high, angular, hairy, undivided above, but occasionally a little branched at the base. Leaves four in a whorl, ovate, hairy, bent downwards, with a slender stalk springing from the bosom of each, and carrying a pair of minute leaves and about eight yellow flowers, of which some want the pistil. Fruit smooth.

Banks and fields; rare.—Said to have been met with in the neighbourhood of Montrose and of Aberdeen; but I have never seen it there.

Buchan. Anonymous.—In a hedge at Manse of Keith. Rev. Mr. Cowie.—Findhorn, near Forres (found by Miss Robertson). Mr. Shier.—Relugas. Mr. Stables.

Perennial—flowering in May and June.

2. *Galium verum. Yellow Bed-straw.*

Stem round and tough, from nine to eighteen inches high. Leaves in whorls of eight or more, bent down, linear, entire, channelled above, rough, but without hairs. Flowers of a golden-yellow, very numerous, in dense, tufted panicles, annexed to the stem in the manner of branches.

In dry places; very common.—Frequent at Aberdeen; as among the sand-hillocks along the coast.

Caithness and Sutherland. Mr. H. C. Watson; who found it also on the Aberdeen and Angus mountains, at an elevation of more than 500 yards.

Perennial—flowering in August.

OBS.—These two species are separated from the succeeding members of the genus by the yellow flowers and smooth fruit, while the ovate, hairy, comparatively broad leaves, four in a whorl, sufficiently distinguish *G. cruciatum* from *verum*. The former of these is one of the species in a list of plants given in *Anderson's Guide*, as rare or unknown in the north of Scotland; and it is remarkable that this species should be rather abundant throughout the southern parts of the island, but with us so rare, that it, perhaps, only occurs when the seeds have been transported from other quarters.

** *Flowers white. Fruit without bristles.*

3. *Galium palustre. White Water Bed-straw.*

Stem branched, weak, stretching out to a great length. Leaves from four to six in a whorl, blunt, long-lanceolate, tapering at the base. Panicles composed of white flowers. Fruit small and smooth.

Near streams, lakes, and in marshy ground; common.—Frequent in the vicinity of Aberdeen; as at Broomhill, Rubislaw Commonly, and near the Dee.

Perennial—flowering in July.

4. *Galium uliginosum*. *Rough Marsh Bed-straw*.

Stem weak, nearly a foot long. Leaves usually six in a whorl, lanceolate, somewhat tapering at the base, rigid, bristle-pointed; their edges, like the stem, rough with prickles. Flowers white. Fruit small and dotted.

Same kind of stations as the preceding; but less common.—Near Aberdeen, at Den of Rubislaw; Stocket Moor; Woodside; Belhelvie, &c. Not frequent in the Alford district.

Perennial—flowering in August.

5. *Galium saxatile*. *Smooth Heath Bed-straw*.

Galii uliginosi, varietas. *Lightfoot's Flora Scotica*.

Stem prostrate, much branched, smooth. Leaves in whorls of seldom more than six, inversely ovate, somewhat rough at the edges, obtuse, with a small point. Flowers white, but at first pink. Fruit reddish when young; in the last stage covered with minute granulations.

Everywhere, in dry woods, moors, and mountains.

Mr. Watson found it, in the north of Scotland, fully 1000 yards high.

Perennial—flowering throughout the summer.

OBS.—These three Galiums, like other three which immediately follow, are characterized by white flowers, and the fruit without bristles. *G. palustre* is known by the leaves being blunt without a bristle, rather long, and sometimes unequal; *G. uliginosum*, by the bristle-pointed leaves and rough stem; and *G. saxatile*, by the granulated fruit, smooth stem, and blunt, though bristle-pointed leaves, which are of an ovate form, and broader than in either of the others. It should also be recollected that the two first are usually found in wet, and the last in dry situations; and it may be added that *G. uliginosum* has not the same tendency to turn black in drying as the two others have.

It is necessary to allude to a *Galium* resembling *G. palustre*, but with the leaves and angles of the stem rough, from reversed prickles, which is *G. Witheringii* of *English Botany* and *English Flora*, though Hooker rather considers it a variety of *G. palustre*. Not having particularly examined the subject, I shall only add that the plant alluded to appears not to be uncommon, and has been observed by Mr. Dickie, in the vicinity of Aberdeen; by Mr. Shier, near Peterhead; and by Lord Aberdeen, in the vicinity of Haddo House.

6. *Galium Mollugo*. *Great Hedge Bed-straw*.

Stem from two feet to a much greater height, square, rather feeble, often a little downy below. Leaves, eight in a whorl, long-oval, tapering at the base, bristle-pointed, green, usually smooth, except at the margins, which are beset with small prickles, pointing forwards. Flowers milk-white, numerous, in loose panicles. Segments of the corolla with a tumid point.

Rather rare.

Angus. Mr. G. Don.—Near the Printfield, Aberdeen. Anonymous.—Province of Moray; but not common.—Ardgay and Pittendrich, Elgin; Pluscardine. Mr. Stables.

Perennial—flowering in July and August.

7. *Galium pusillum*. *Least Mountain Bed-straw*.

Stems numerous, a few inches high; like the leaves, rough from hairs, which become fewer towards the summit. Whorls very close, of six to eight or nine, linear-lanceolate, hair-pointed leaves. Flowers copious, milk-white, in panicles terminating the stem and branches.

Rocks on south side of Glen Dole and on west side of Glen Fee. In the latter station it grows along with *Oxytropis campestris*. Dr. Balfour.

Perennial—flowering in July and August.

8. *Galium aristatum*. *Bearded Bed-straw*.

“Leaves, six in a whorl, stalked, lanceolate, flat, reticulated with veins, bristle-pointed, with minute marginal prickles pointing forward. Stem much branched, spreading, smooth. Seeds smooth, kidney-shaped, separated. Corolla taper-pointed.”

Angus-shire. Mr. G. Don.

Perennial—flowering in July and August.

Obs.—These three species have the flowers and fruit like the preceding group; and have among themselves no other bond of union, except it may be their rareness. *G. Mollugo*, a scarcely indigenous species, may be detected by the very long stem, with the whorls of eight rather large, bristle-pointed leaves. As to *G. pusillum*; though it appears probable that this name has been given at times to *varieties* of more than one of our common species, there can be little or no doubt that it is a well-marked *Galium*, remarkable for hairy, close whorls, and for the numerous stems, which form large tufts, covered with innumerable milk-white flowers, conspicuous at a distance. This species is found also in Ireland and England; but some doubt has been entertained as to whether the Scottish and Irish specimens are identical with the species found in England. Dr. Hooker observes

that his specimens, "under this name, from Ireland, are totally free from pubescence, and have the leaves very closely imbricated all the way up, in which particular it does not accord with the E. B. figure." Linnæus particularly notices the closeness of the whorls in the *Species Plantarum*, 154, "Foliorum verticilli sæpe ita conferti, ut folia imbricatim digesta conspiciantur."* It is stated in the *British Flora*—but upon what grounds I know not—that foreign authors seem to be little, if at all acquainted with this species. Regarding *G. aristatum*, I know nothing, and I have copied the description of it from the *English Flora*; but I may venture to remark that it seems a good species, and is probably indigenous.

Owing to the uncertainty that hangs over them, three species belonging to this section, introduced into the *Flora Scotica* as natives of Forfarshire, are at present omitted, viz.: *G. diffusum*, *verrucosum*, and *spurium*. Judging from descriptions and the figures of Vaillant, these are species with which I have never met; nor is it certain that the Forfarshire plants alluded to may not have been of accidental and temporary growth. Moreover, it must be admitted that no little obscurity and even discrepancy among authors exists regarding the species above named; and, on the whole, it seems best to omit them, particularly as the stations given in the *Scottish Flora* can barely be said to come within the sphere of the present observations.

*** *Fruit bristly.*

9. *Galium boreale*. *Cross-leaved Bed-straw.*

Stem erect, square, branched. Leaves with three or more distinct nerves, but no hairs, lanceolate, tapering towards the point, four in each whorl. Flowers numerous, white, in a very branched panicle, with two small, ovate leaves at each of its divisions. Fruit clothed with hooked bristles.

Chiefly in alpine and maritime places, sometimes on river sides; far from general.—A little above the Bridge of Dee, at Aberdeen; and between this Bridge and Craiglug. Also, at Charlestown and Ballater, and probably to be found occasionally on most parts of Deeside; but absent or very rare upon Donside. (At least, I have never seen it there, and Mr. Proctor, better acquainted than any one with the highest parts of Don, cannot recollect to have ever seen *G. boreale* in that quarter.) Near Montrose.

Abundant on rocks at "the Burn," near Brechin; and common on all the Clova mountains. *Dr. Balfour*.—Lochlee. *Anonymous*.—Upper Banchory. *Rev. G. Gardiner*.—"In ripis siccis et arenosis fluviorum; Dee, &c.; Banchory-Ternan." *Dr. D. Skene*.—Plentiful on Deeside and Avonside. *Mr. Proctor*.—

* I have, however, met with *G. saxatile*, in the Alford woods, with the whorls crowded, exactly as represented in the *English Botany* figure of the *pusillum*.

Speyside. *Mr. Craigie*.—Moray. *Mr. Stables*.—Highlands of Ross; very common. *Mr. G. C. Smith*.—*Mr. Watson* observed this species, in the north, at the height of above 500 yards.

Perennial—flowering in June and July.

10. *Galium Aparine*. *Goose-grass* or *Cleavers*.

Stem angled, weak, supporting itself upon other plants, often several feet long. Leaves eight in a whorl, narrow-lanceolate, with hooked prickles on their margins and keels, as well as on the angles of the stem. Flowers whitish, or of a pale, buff-colour, two or three together, upon stalks, rising from the bosom of the leaves. The fruit is two, rather large, roundish lobes, covered with hooked bristles.

Common; chiefly in hedges.—At Aberdeen, between the Canal and Powder Magazine; Ferryhill, &c. &c.

Annual—flowering in June and July.

OBS.—These two *Galiums* are easily determined, being distinguished from all the other British species by the bristly fruit; and from one another, by the bare, three-nerved leaves of *G. boreale*, four in a whorl, as compared with the whorls of eight prickly leaves in *G. Aparine*.

The flowers of *G. verum* are said to coagulate boiling milk, and it seems that the quality of cheese made in this way, was at one time thought to be superior. One of our Herbalists, writing about 200 years ago, observes, “The people of Cheshire, especially about Namptwich, where the best cheese is made, do use it in their Rennet, esteeming greatly that cheese above other made without it.” The knowledge of the effect of this *Galium* upon milk was not confined to Cheshire. Sir John Hill says, “the flowers of this plant contain a latent acid; they will curdle milk. The country people call the plant *cheese-renning*.” *G. verum* is, moreover, the *caille-lait jaune* of the French, and there seems no doubt that the property alluded to was known to the ancients, from whom, like not a few other facts and opinions, it, perhaps, descended to the old Herbalists, and from them to our common people.* Our authors mention that the French prescribe the flowers of *G. verum* in epileptic and hysterical attacks; but beyond a single notice of the plant being antispasmodic, I have met with no allusion to its effect by modern French writers. The roots of this

* The term *Galium* is probably derived from this effect of *G. verum*; γαλα being the Greek for milk.

species dye a good brownish-red, and they are used for this purpose in the outer Hebrides, where the plant is very abundant, on sandy pastures.

An ointment, made of *G. Aparine*, bruised and mixed with lard, was considered, by the Greeks, to be useful in discussing glandular swellings; but Dr. Cullen relates that he tried the *Aparine* in some indurations of this kind, without any advantage. This plant has also been extolled in dropsies and the complaints termed scorbutic, either in the form of an expressed juice, or a tea prepared from the dried herb. The roasted seeds of *G. Aparine* are said to be no bad substitute for coffee, and it has been observed that, if raised for a crop, they might, perhaps, have the additional recommendation to some people, of being very much dearer.

GENUS III. ASPERULA.

Calyx of four small teeth, superior, falling off. Corolla of one petal, funnel-shaped, four-cleft. Fruit two, naked, united, globular seeds, not crowned by the calyx.

SPECIES.

1. *Asperula odorata*. *Woodruff* or *Woodroof*.

Stem unbranched, six or eight inches high, clothed with four or five whorls of about eight leaves, which are oval, tapering at the base, with a minute thorn at the point. Flowers very white, at the top of the stem, upon rather long stalks, which branch into a panicle-like form.

Shady places; but by no means abundant.—Near Aberdeen, at the Corby Den, Maryculter. Vale of Alford, on the banks of the burn of Linturk. Lochmuik. Buchan, in the Den of Auchmedden and other places. Ardo, near Oldmeldrum.

Shady rocks and ravines in the Mearns. Mr. Chrystall.—Near Haddo House. *Earl of Aberdeen*.—Among juniper, plentifully, between Inchrory and Loch Builg. *Mr. Proctor*.—Stretinnon wood, Glass, Aberdeenshire; Millowood, Banffshire. *Rev. Mr. Cowie*.—Craigs of Alva. *Mr. Gardiner*.—Province of Moray. *Mr. Stables*.—Sutherland. *Mr. Watson*.

Perennial—flowering in the early part of summer.

Obs.—It is remarked, in the *English Botany*, that the name, *Woodruff*, alludes to the whorled position of the leaves, like an old-fashioned ruff, and that *Woodroof* is a corruption of it; also, that the fresh herb has no smell; but as soon as it begins to dry it exhales a pleasant and lasting fragrance, like that of new hay, verging towards the flavour of bitter almonds. It is not impossible

that there may be a minute formation of Prussic acid both in this plant and *Anthoxanthum odoratum*, when in a drying state. The smell countenances this opinion; and I have often felt headach and giddiness from being in a hay-field upon a hot day.

Asperula odorata has been used for giving a flavour to wine, though, considering the above conjecture, the practice may not be entirely without risk. "It is reported to be put into wine to make a man merry." So it is said in an old Herbal; and if the combination be liberally enough made use of, it will doubtless lead to the specified effect!

GENUS IV. SHERARDIA.

Calyx permanent, of one leaf with six teeth. Corolla of one funnel-shaped petal. Fruit of two, united, naked seeds, each crowned with three teeth from the calyx.

SPECIES.

1. *Sherardia arvensis*. *Blue Sherardia*.

Stems several, not erect, a few inches long. Leaves about six in a whorl, entire, oval, pointed, tapering at the base. Flowers small, pale-blue, in a kind of sessile umbel at the extremity of the plant. Fruit of two oblong, united seeds, each marked with three green lines, corresponding to the teeth of the calyx, by which the summit is crowned.

Not uncommon in dry fields; but probably never remote from cultivation. In the neighbourhood of Aberdeen and Stonehaven. Rather rare in the district of Alford.

Annual—flowering in the summer months.

OBS.—I shall only refer to the small, pale-blue flowers, placed at the end of the plant, with the nearly prostrate stem and the leaves in whorls, whereof the upper form a kind of collar to the heads of flowers. The genus is named "in honour of James Sherard, an English Botanist, and Patron of Botany."

GENUS V. PLANTAGO.

Calyx of one leaf, in four permanent segments. Corolla tubular, four-cleft, ultimately membranous, the segments reflexed. Filaments capillary, very conspicuous, twice as long as the style, at first folded, then erect, lastly flaccid. Capsule thin, bursting all round, of two cells, each with one, two, or more seeds.

SPECIES.

1. *Plantago major*. *Greater Plantain*.

Leaves all from the root, large, ovate, somewhat toothed,

with seven ribs or more, seldom or never hairy, upon stalks often as long as themselves or longer. Spikes tapering, very long and dense, with a few distant flowers at the base; their stalks round, naked, and radical. Capsule membranous, with two cells separated by a green longitudinal partition, which ultimately becomes loose; each cell containing several seeds.

Sides of roads and fields; common.

Perennial—flowering in June, &c.

2. *Plantago media*. *Hoary Plantain*.

Leaves ovate, with five to seven ribs, downy, upon short, broad stalks. Flower-stalks tall, hoary, round. Spikes cylindrical, with silvery corollas, and long, permanent filaments. Capsule of two cells, with a single seed in each.

Very rare.

Deeside, a few miles from Aberdeen (found by Miss Ferguson). *Mr. F. Adams*.

Perennial—flowering in June and July.

3. *Plantago lanceolata*. *Ribwort Plantain*.

Leaves lanceolate, mostly entire, tapering at the base into a stalk, upon which, as well as on the lower part of the flower-stalk, there are often tufts of woolly hairs. Flower-stalks long, angular, twisted, smooth or slightly downy; each bearing a short, brownish, ovate spike. Cells of the capsule one-seeded.

Very common; occasionally wild, though oftener in cultivated places. Aberdeen Links; Rubislaw, &c.

North coast of Caithness and Sutherland. *Mr. Watson*; who observed this species at the height of 500 yards, in Forfarshire.

Perennial—flowering in June and July.

4. *Plantago maritima*. *Sea-side Plantain*.

Root large and juicy. Leaves linear, long, generally entire, though sometimes slightly toothed, channelled above, projecting below. Flowers in long, slender, cylindrical spikes, which are upon long, round, bare stalks springing from the root.

Rather common on the coast and the mountains. Also, occasionally, in the intervening tract.—Old-Aberdeen Links; and on the coast of Buchan, Banff, and Kincardine. Occasionally a few miles from the sea, as in Belhelvie and Rathen. Also, in the interior; as in the parish of Rayne; and at Haddo House,

upon the wall of the Deer Park. In the valley of Alford; but extremely rare.

Glenesk. *Mr. David Lyall*.—Near Inverury. *Dr. James Anderson*.—Roadside, near Sowie-foot, Clatt, in great abundance, over a space about a quarter of a mile in length, by 100 yards in breadth, at an average. *Mr. Minto*.—In Moray.—Caithness and Sutherland. *Mr. Watson*.

Perennial—flowering in June, &c.

5. *Plantago Coronopus*. *Buck's-horn Plantain*.

Leaves close to the ground, hairy, pinnatifid, with narrow, pointed segments. Spikes dense, cylindrical, generally rather short, upon round, downy stalks.

Sea-coast; but not very abundant.—Old-Aberdeen Links; and between the Cove and Stonehaven. Also, in Angus and Buchan.

Banff coast; but sparingly. *Mr. G. C. Smith*.—Sea-beach, Cullen. *Rev. W. Cowie*.—And in Moray. *Mr. Stables*.—North coast of Sutherland. *Mr. H. C. Watson*.

*—flowering from June to August.

Obs.—The last two species require no comment regarding their distinguishing marks. It may, however, be observed, that although *P. maritima* is by no means confined to the coast, the *Coronopus* is, in the North, so far as is known to me, exclusively a maritime plant. Is Hooker correct in stating that, in Scotland, this species is found in inland places? It certainly is so, upon the Continent; being at least abundant in the environs of Paris.

It may be repeated that *P. media* is undoubtedly rare with us; and, indeed, there is reason to suspect that it is but seldom found, in any part of Scotland—a rather remarkable fact, considering how common it appears to be, in the south of Britain. English botanists find sometimes a difficulty in distinguishing this species from *P. major*; the usual means of doing so being derived from the consideration that, in the former, each cell contains but a single seed; whereas, in the latter, there are several seeds in the cell—a distinction precise enough, and sufficiently notable, as occurring in two species so much akin. Perhaps, a good practical distinction between the two plants resides in the spikes and their stalks, which might be adopted when the stage is unsuitable to distinguishing them, by the contents of the seed vessel. The spike in *P. major* is longer than in the *media*, while its stalk is greatly shorter; and, indeed, according to my own specimens, the flower-stalks, in the latter, are five or six times as long

* The duration of this species has not been noticed above. Our common authorities call it annual. *Mr. G. C. Smith*, however, informs me that it is perennial; and *Mr. Hopkirk* is of the same opinion. It is worthy of mention that *Linnaeus* is silent upon this point, in the *Species Plantarum*.

as the spike ; whereas, in *P. major*, the length of the two parts is often nearly equal. It is worth adding that, according to my limited experience of *P. media*, the spike, in this species, is more or less thickened at the extremity ; whereas it becomes narrower towards the point, both in *P. major* and *lanceolata*.

An ovate-leaved *variety* of *P. lanceolata*, met with in several places—as on the Buchan coast, Aberdeen Links, and in the vicinity of Haddo House—has, in various instances, been taken for *P. media* ; but the angled, furrowed, twisted stem of the former species might alone prevent such a mistake. Moreover, the silvery, shaggy appearance of the spike, caused by the colour of the corolla, and the prominent long-remaining filaments (though this last mark is sometimes observed in *P. lanceolata*) are enough for distinguishing *P. media* from other species of this genus. A rather small *variety* of *P. lanceolata* has been met with near Loch Kinnord, in Cromar, and upon the hill of Coull ; with the leaves as narrow as in *P. maritima*, and the flowers in small globular heads. I have also met with this species, both at Strichen and near Aberdeen, with numerous, small, roundish heads, upon stalks, in the manner of an umbel. *Plantago major* undergoes many changes, though I have not observed any of its transformations in this quarter. A rose-spiked *variety* has been long known ; and another, with the inflorescence in a kind of loose panicle, has been noticed since the times of our oldest botanists, “although it be somewhat hard to be found,” as is observed by Gerarde, or rather by his editor, Johnson.

P. media has (or had lately) a place in some of the Continental *Pharmacopæias*, on account of astringent properties, possessed, indeed, by the Plantains in general. They are very old ophthalmic remedies, and, in France, at this day, a water distilled from the first three of the above species, is prescribed for slight inflammations of the eyes. Sir John Hill calls this genus “astringent, cooling, and healing. A water is distilled from it, but this is of small value, for these are not virtues that rise in distillation.” The Plantain leaf is not a little prized by country people as an application to fresh wounds. These plants have also been recommended in spitting of blood and diarrhoea, as well as for a gargle in slight sore throats, and might sometimes be found an eligible prescription by the rural practitioner, either in infusion or in dry powder, to the extent of at least half a drachm.

GENUS VI. CENTUNCULUS.

Calyx in four deep segments. Corolla shorter, four-cleft, tubular. Stamens within the tube. Capsule of one many-seeded cell, opening circularly.

SPECIES.

1. *Centunculus minimus*. *Bastard Pimpernel*.

Plant minute, smooth. Stem erect, from a few lines to an inch and a half high. Leaves alternate, sometimes nearly opposite, ovate, blunt, entire. Flowers seated in the bosom of the leaves, greenish-white or red, of very short duration.

Rare; but, perhaps, occasionally overlooked from its small size.

In Moray, on the coast east of Nairn; west from Stotfield; sides of Loch of Spynie. *Mr. Stables*.

Annual—flowering in June and July.

GENUS VII. CŎRNUS.

Calyx with four minute teeth. Corolla of four petals without a nectary. Nut with two cells.

SPECIES.

1. *Cornus suecica*. *Dwarf Cornel*.

Stem herbaceous, a few inches high. Leaves sessile, ovate, opposite, with several distinct nerves. Flowers small, dark-purple, in an umbellate form, surrounded by four whitish leaves, which are petal-like, and called an involucre. The umbel is upon a stalk, standing between two branches, which are short at first, but longer when the fruit is ripe. Fruit red, sweetish.

Alpine and inland situations; not rare.—Loch-na-gar, in the descent towards Invercauld. Glenbucket, near the Manse, and, perhaps, not farther down than this in Aberdeenshire. I have also found it in the interior of Sutherland.

Abundant on all the mountains of Clova and Braemar. I picked very large and luxuriant specimens, in fruit, at the upper part of Glen Dole, to the north of the Falls. *Dr. Balfour*.—Lochlee. *Mr. D. Lyall*.—Hills about Glen Callader. *Mr. A. K. Clarke*.—Ben Avon. *Mr. Chrystall*.—Corgarff, near Tornahaish. *Mr. Proctor*.—Corriemoulie, Glascarnoch, Kinlochluchart, Achnanaut, Achnashun, in Ross-shire—where I have gathered it both in flower and fruit, but it is not common in fruit. *Mr. G. C. Smith*. *Mr. Watson* observed *Cornus suecica*, on our northern mountains, sometimes nearly as high as 900 yards.

Perennial—flowering in June and July.

OBS.—This is a remarkable plant with which, upon first inspection, I was considerably puzzled. *Dr. D. Skene*, too, was at no little loss about this species, upon receiving a specimen found upon Morven, in Aberdeenshire, from Principal Campbell, who occasionally resided at the foot of that mountain: “*Hæc planta, quam ac-*

cepi a Dre. Campbell, in Morven ab eo lecta, prorsus singulari, gaudet structura. * * An sine calyce, an sine petalis? Folia 4 magna plana radii dixi corollam, solummodo, ex colore et facie. * * * Nullam vero talem plantam invenio in Linn. v. Hudson." There can be no doubt that even Ray, from his words, "flos huic tetrapetalos," mistook the umbel for a single flower with four white petals.

Lightfoot mentions that the berries of *Cornus suecica* are supposed, by the Highlanders, to create a great appetite.

GENUS VIII. PARIETARIA.*

Involucre various. Calyx inferior, of one leaf, in four segments. Corolla none. Filaments at first curved, then expanding with elastic force. Seed invested with the enlarged calyx. Some flowers are without stamens, their calyx remaining unaltered.

SPECIES.

1. *Parietaria officinalis*. *Pellitory of the Wall*.

Stem angular, hairy. Leaves between ovate and lanceolate, three-nerved above the base, alternate, stalked. Involucre of seven ovate segments, surrounding three flowers, of which the central is imperfect.

Walls of old buildings; but not common, and scarcely a native.

Angus-shire, near Craig House. *Mr. White*. (I have also met with it farther south, a little beyond the strict range of the present publication, viz. on the old Abbey of Arbroath.)—Walls of Arbuthnott House, in the Mearns. *Mr. Chrystall*.—Aberdeenshire, upon the old Castle of Tolquhon. *Earl of Aberdeen*; and at Inverugie. *Mr. Cow*, surgeon.—Boyne Castle, Banffshire. *Rev. W. Cowie*.—In Moray, but not indigenous. *Mr. Stables*.

Perennial—flowering from June to September.

This plant was formerly in repute medicinally, but I cannot discover it in any recent *Pharmacopæia*, British or foreign. A French author observes that *Parietaria officinalis* is an excellent diuretic, and he ascribes this effect to nitre contained in the plant: "*Cette plante est un excellent diurétique; ce qu'elle doit, sans doute au nitrate de potasse, qu'elle contient en grande abondance. Etant cuite, elle est emolliente et usitée en cataplasme, appliqué sur les parties enflammées.*" These virtues, real or supposed, possess an interest in France, where the plant is to be observed in great abundance; but

* The name is from *paries*, a wall—the species often growing on old walls.

with us it is in so small quantity, indeed scarcely indigenous, that its merits are little likely to be put to any trial.

GENUS IX. ALCHEMILLA.

Calyx inferior, of one tubular piece, the upper part in eight segments, four of these smaller than the rest, and at the outside. Fruit of one or two naked seeds, but covered by the closed calyx.

SPECIES.

1. *Alchemilla vulgaris*. *Common Lady's Mantle*.

Root long, blackish, tough, throwing out fibres. Stem not quite erect, branched, ending in numerous clusters of small greenish flowers. Root-leaves upon long stalks, large and plaited, approaching to the kidney-shape, with many lobes, which have pointed teeth; upper leaves similar, but smaller; their stalks shorter or almost wanting, with a pair of notched united stipules to each.

Dry pastures, banks of streams, and hill-sides; common.—Aberdeen, on the Old-Town Links, and Banks of Dee and Don.

North of Caithness; Clova and Braemar mountains, at an elevation of 750 yards. Mr. H. C. Watson.

Perennial—flowering from June to August.

2. *Alchemilla alpina*. *Alpine Lady's Mantle*.

Upper leaves nearly sessile, the lowest on long silvery stalks, divided to the very base into lobes, which are inversely ovate, serrated at the point, dull greyish-green above, and satiny on the under surface. Inflorescence similar to that of the preceding.

Mountains and inland situations, abundant. Sometimes transported by water.—At Aberdeen, both above and below the Bridge of Dee, and occasionally in small quantity upon the Inch. Deeside, above Charlestown; Lochmuik; Loch-na-gar; and abounding in the alpine tract adjacent to the highest parts of Dee. Gairnside. Inch More, near the source of Don; and on the moors adjacent to that river, as low as Candacraig. Mountains of Sutherland.

Abundant in Glen Clova, and extending to a considerable elevation on all the mountains of the Braemar and Clova district. *Dr. Balfour*.—"Ad summitatem montis Morven; ad ripas Dee, Tullich; et in arena ad ripas inter Durris et Drumoak." *Dr. D. Skene*.—Near Keith. *Rev. Mr. Cowie*.—Moray. *Mr. Stables*.—Ross-shire. *Mr. Smith*.—*Mr. Watson* observed this

species on the Clova and Sutherland mountains; at the height of 950, and 1000 yards, respectively.

Perennial—flowering in July.

3. *Alchemilla arvensis*. *Field Lady's Mantle*.

Aphanes arvensis. Linn.—*Lightfoot's Flora Scotica*.

Stems numerous, several inches long, scarcely branching, more or less prostrate. Leaves, like the whole plant downy or hairy, for the most part in three lobes which are irregularly and deeply cut, upon short stalks, from which stipules partly arise. Flowers small, green, axillary.

Dyke tops and thin soils; not very frequent.—Aberdeen, at Rubislaw, Nigg, Balgownie, &c.

Buchan. Rev. G. Gardiner.—Banffshire. Rev. W. Cowie.—Golspie, Sutherland. Mr. H. C. Watson.

Annual—flowering throughout summer.

OBS.—The 2d sp. is well characterized by the beautiful, silken, under surface of the digitate leaves; as the 1st is by the large, roundish, lobed, plaited leaves. These species have, on the whole, a considerable similarity; while the *arvensis*, though essentially an *Alchemilla*, bears little resemblance, in appearance, to the two others, but may be detected by the above description. In Aberdeenshire, *A. alpina* is mainly confined to the vicinity of Dee and Don; though it may be seen above, that it has been met with in the intermediate tract, viz. on Morven and Gairnside. Upon Donside it is seldom if ever found below Strathdon; while on Banks of Dee it grows strictly indigenous, at least as low as Charlestown of Aboyne. Indeed, it will probably be found occasionally throughout the whole course of this last river; but whether, in all cases, *transported*, when below the point just mentioned, I cannot tell. A friend mentions that he has been quite satiated with the sight of *A. alpina*, upon the mountains of Ross-shire. The plant singly is no doubt highly elegant, but it has, in the mass, a melancholy air, and too often is the sole object meeting the eye in upland situations. For instance, it is but a cheerless sight to the alpine herborizer, ascending some of the steep Braemar mountains in a midsummer-day, to find, upon gaining each successive summit, nothing to repay his toil but the never-ending sad *Alchemilla*, waving and rustling in the slight breeze, which barely suffices to fan his burning brow.

It has been remarked that the name of this genus is *Lady's* (not *Ladies'*) *Mantle*; as it means the mantle of Our Lady (the Virgin Mary).

I cannot discover that any property, worthy of notice, has ever been attributed to any species of *Alchemilla*, except the last, which has been said to be diuretic, and also to be useful in gravel and stone. To this virtue several of its names

have reference—as *Breakstone*, *Parsley Piert*, and *Percepier Anglorum*. The two last terms are of similar import to the first, being both corruptions of the French *Percepierre*; and one of them at least is not of very modern origin, for I find one of our authors complaining, more than 200 years ago, that “that barbarous word *Parsley Piert* was given by some simple man.” It may be added, that I have been informed by an extensive practitioner of this County, that, under the use of this plant, he has known fetid urine speedily improved.

ORDER II. TETRAGYNIA. Four Pistils or Stigmas.

GENUS X. ÍLEX.

Calyx inferior, permanent, with four very small teeth. Corolla of four concave petals, enlarged and connected at the base, alternating with the four stamens. Styles wanting. Stigmas four. Berry of four cells, with a seed in each. Some flowers barren.

SPECIES.

1. *Ilex Aquifolium*. Common Holly.

Leaves ovate or elliptical, upon short stalks, leathery, shining, wavy, cartilaginous at the edges, where they are divided into large projecting teeth, which, like the apex of the leaf, are spine-pointed. Many of the highest leaves are, however, nearly entire. Flowers numerous, whitish, in small bunches. Berries red.

Woods and hedges; but frequently not wild. Magnificent upon some parts of Deeside.

A tree—flowering in May and June.

OBS.—A handsome evergreen tree, a few feet high; but sometimes double its usual height, with hard, close-grained wood. In the north of Scotland, the berries are not in general produced in great abundance. It is mentioned by Sir. James Smith that the branches laden with berries are stuck about rustic kitchens and churches at Christmas, and remain till Candlemas-day; and that in Norfolk the *Mistletoe* accompanies them, and sometimes the *Euonymus*. He adds, that the Druids are said to have introduced this custom for the accommodation of certain sylvan spirits of a chilly constitution, when other trees were leafless.

The seeds of the *Holly* have been proposed as a substitute for coffee.

GENUS XI. POTAMOGETON.*

Calyx none. Corolla of four concave, incurved, deciduous petals. Filaments very short, often more than four. Styles generally wanting. Seeds four, naked, roundish—"Flowers sessile, upon a spike or spadex, which issues from a sheathing bractea or spatha."

SPECIES.

* *Upper leaves floating.*

1. *Potamogeton natans. Broad-leaved Pond-weed.*

Upper leaves upon long stalks, large, leathery, floating, many-ribbed, oval, pointed at the summit, and sometimes heart-shaped at the base; the lower ones below water, narrow, membranous, stalkless. Stipules large, thin, hollow. Spike an inch or two above water; its flowers olive, and rather distant.

Stagnant water; common.—Canal near Kittybrewster, where the specimens are large. Many other places near Aberdeen; as in Nigg, and along the coast from Don mouth, &c. Occasionally on all parts of Donside, from the sea to Inch More, near the source of the river; in which last station it is remarkably fine.

Perennial—flowering in July.

2. *Potamogeton heterophylla. Various-leaved Pond-weed.*

Potamogeton Proteus β. *Lindley's Synopsis.*

Upper leaves upon rather long stalks, floating, olive, elliptical, ribbed, pointed, slightly leathery; the lower narrow-lanceolate, membranous, reticulated, sessile. Stipules smaller than in the preceding species. Spikes short and close, their stalks thick particularly at the summit, and rather long.

Lakes and ditches; not a common plant.—In Lumphanan; Kincardine O'Neil; and other parts of Deeside. Not in the Vale of Alford; nor have I seen it in the immediate vicinity of Aberdeen.

Near Montrose. *Mr. D. White*, surgeon.—Province of Moray; Ditches in Alves; Loch Lee; Mosstowie; and Duffus. *Mr. Stables.*

Perennial—flowering from July to September.

3. *Potamogeton rufescens. Reddish Pond-weed.*

Potamogeton fluitans. Smith's Flora Britannica.—English Botany.—Hooker's Flora Scotica.—Smith's English Flora.

Stems often very long. Upper leaves floating, slightly leathery, oval, blunt, tapering into a stalk of variable length; those below longer, lanceolate, pointed, membranous, al-

* From ποταμος, a river, and γειτων, near,—because the species grow in water.

most sessile; all the leaves with longitudinal ribs, and a net-work sometimes very distinct. Stipules large. Spikes fully an inch long, rising but little above the water.

Slow parts of rivers and still water; rather common.—Abundant in the Canal, at Aberdeen; and occasionally in Don, throughout its whole course.

Near Forfar. *Mr. Maughan*.—Rescobie Loch. *Dr. M'Nab*. Corby Loch, near Old Aberdeen. *Mr. Henderson*.—In the Gadie, at Premnay, Aberdeenshire. *Hooker's Flora Scotica*.—Banffshire. *Mr. G. C. Smith*.

Perennial—flowering in July.

Obs.—These three species are separated from the succeeding part of the genus by the floating upper leaves. No. 1. is characterized by the floating leaves being large and leathery, and those below few in number, narrow, imperfect, and scale-like; while in No. 2. the upper leaves are smaller and more delicate, and those below water far more numerous; the spike being shorter and its stalk thicker. I do not, however, find that we can rely upon the accuracy of one of the marks of distinction, pointed out by an acute observer, viz. that the leaves are distantly inserted on the stem, in *P. heterophylla*. The last of the three (*rufescens*) is remarkable for becoming of a reddish hue, especially in the upper part. It is distinguished from the two others by the long leaves, which, below water, are scarcely less than the floating ones; whereas, in Nos. 1. and 2. the upper leaves are greatly larger than those below.

** *Leaves all under water.*

4. *Potamogeton prælonga*. *Long-stalked Pond-weed.*

Stem strong, a little tortuous. Leaves long and rather broad, slightly tapering towards the point, sessile or even slightly clasping; their ribs numerous, more or less distinct, running mostly from end to end, connected by transverse fibres. Flower-stalks strong and of great length. Nuts very numerous, like the leaves deep-green; having when mature, a prominent sharp border, with faint furrows and ribs on each side of it.

Loch Kinnord, an old lake in Cromar, Aberdeenshire.

A new British species, of which specimens were found in the North, by *Mr. Stables*, and which I also gathered, last August, in the Lochs of Balgavies and Rescobie, in Forfarshire. *Dr. Balfour*.—Province of Moray; as at Loch Lee, Moss of Little, and Lochindorb. *Mr. W. A. Stables*.

Perennial—flowering in July.

5. *Potamogeton lucens*. *Shining Pond-weed.*

Potamogeton Proteus. *Lindley's Synopsis.*

Leaves all below water, lanceolate, tapering a little at the

base, stalked, more or less pointed and shining, with numerous ribs and transverse fibres forming a beautiful net-work. Of the lateral ribs, the outermost alone run from end to end; the inner ones successively joining the mid-rib at some distance from the base.

Rather rare. Still waters and slow streams.—In Balfluig Moss, Alford, Aberdeenshire.

Forfarshire; frequent in Lochs of Rescobie and Balgavies, and in deep pools near them. *Dr. Balfour* and *Mr. D. White*.—Kincardineshire. *Mr. Chrystall*.—Banffshire, in the Deveron. *Mr. G. C. Smith*.

Perennial—flowering in June and July.

6. *Potamogeton lanceolata*. *Lanceolate Pond-weed*.

Potamogeton setaceum. *Linn.*—*Smith's Flora Britannica*.

Stem slender, much branched. Leaves dark-green, lanceolate, membranous, entire, tapering at the base, sessile or even clasping, alternate with the exception of a pair at the base of the flower-stalk, ribbed, with transverse fibres in the upper leaves, which form a chain-like net-work. Stipules numerous, the highest ending in leafy appendages of some size. Spike small, close, upon a rather short stalk.

Not rare.—Near Aberdeen, in the Canal, at Kittybrewster; and in the Corby Loch. Also, in the Lochs of Skene, Drum, and Leys.

Buchan. *Mr. Cow*.—Moray. *Mr. Stables*.

Perennial—flowering in July and August.

7. *Potamogeton perfoliata*. *Perfoliate Pond-weed*.

Leaves all uniform and below water, semi-transparent, heart-shaped, clasping the stem. Stalk of the spike rather long, thickest at the top.

Ditches and slow streams; not very common.—Abundant in the Canal, near Aberdeen, where this species and *P. rufescens* are the chief aquatics. Near Inverury. Buchan, in the water of Philorth, close to the bridge.

Kincardineshire. *Mr. Chrystall*.—Skene Loch, Aberdeenshire. *Mr. Dickie*.—Dovern river, at Forglen House. *Mr. G. C. Smith*.—Loch of Spynie. *Mr. Stables*.

Perennial—flowering in July.

8. *Potamogeton crispa*. *Curled Pond-weed*.

Leaves bright-green, oblong, blunt, sometimes slightly pointed, more or less toothed curled and waved, sessile, al-

ternate below, more crowded and opposite above; with a scarcely perceptible net-work, and three nerves, of which the central only is very distinct. Flower-stalks as long as the leaves, each bearing a few-flowered spike.

Stagnant water and rivers; not common.

Abundant in the lochs of Balgavies and Rescobie, Forfarshire. Dr. Balfour.—Near Montrose. Mr. D. White.—In the neighbourhood of Aberdeen, and in the river Ythan. Anonymous.—Buchan. Mr. Cow.—Banffshire, in the Dovert. Mr. Smith.—In Moray, as in the Loch of Spynie. Mr. Stables.

Perennial—flowering in June and July.

OBS.—This section is characterized by the leaves being all under water, and mostly approaching to the lanceolate form. *P. prælonga* is one of the most recent additions to the British Flora. It is said, however, that there are specimens of it in the Herbarium of Mr. Brodie of Brodie, 20 or 30 years old; and it is certain that the writer of these remarks, though then unable to determine the name, gathered this species in Cromar, Aberdeenshire, several years before it was known to be a native of Britain, and showed the specimen, still in his possession, upon the same day, as something remarkable, to his friend Mr. John Anderson, now editor of a London daily paper. The most remarkable features in this species (which seems allied to *P. rufescens*) are the oblong, blunt, slightly clasping leaves, with the long and strong flower-stalks. The nuts, too, are very large, and also in great number, being upwards of a hundred upon one of the spikes before me. *P. lucens* is marked by long, pointed, stalked, thin and shining leaves, usually all under water. The species has, however, been said to have occasionally floating leaves, and, indeed, it is, in all respects, a very variable plant. The leaves are of all lengths, from a few inches to nearly a foot, their stalks also differing very much, even upon the same specimen; and while Hooker calls the flower-stalk about the same length as the spike, I find it in one specimen more than six times as long. The leaves, too, sometimes have a singular thorn-like point. This species is perhaps best characterized by the very distinct net-work; and by the outer ribs running from end to end of the leaf, while the inner ones successively join the mid-rib, at some distance from the base. This last circumstance, however, though more strongly marked in this species than in any other, is by no means peculiar to it, as some have supposed; for I have observed it in *P. rufescens*, and also in some specimens of the *prælonga*. *P. lanceolata* is distinguished by the leaves being rather small, lanceolate and sessile, with a beautiful network which is most distinct upon the upper ones, and in the vicinity of the mid-rib. This species makes an approach both to *P. rufescens* and *heterophylla*, and there might be considerable difficulty, especially between it and the latter, should the *lanceolata* sometimes have, as it is said, floating leaves, or were these accidentally wanting in *P. heterophylla*. The two plants may,

however, if I mistake not, be always distinguished by the leaves of the latter, even to the lowest, being overspread with an evident network; while this is well seen only on the upper leaves of *P. lanceolata*, which is, moreover, of greater delicacy, and remarkably branched. The two species last-described in this section, require no comment. It may, however, be observed that, though I have little doubt that *P. crispa* grows in Aberdeenshire, any allusion in proof of this, to my own specimens, has been omitted, because they are in an imperfect state, and far from similar to the *English Botany* figure of this species. The margins are but slightly serrated and waved in my specimens; whereas, in the figure referred to, there are large lobes and sinuses, as in the leaf of the oak; so that this species—though one of its old names is *Tribulus floribus quercus*—would appear better suited to have its leaves, than its flowers, likened to those of the oak.

9. *Potamogeton zosteræfolia*. *Grass-wrack-like Pond-weed.*

Potamogeton cuspidatum. *Smith's English Flora.*

Stem long, compressed. Leaves several inches long, grass-green, linear, rather broad, slightly pointed, with three principal ribs, and several others much less distinct. Spikes cylindrical, about an inch long, upon stalks longer than themselves.

Rare.

Angus-shire, in Forfar Loch. *Mr. Arnott*.—Pretty abundant in the Lochs of Balgavies and Rescobie. *Dr. Balfour*.

Perennial—flowering in July.

10. *Potamogeton graminea*. *Grassy Pond-weed.*

“Leaves broadly linear, obtuse, 3-nerved, with few and obscure connecting veins, peduncle scarcely longer than the oblongo-oval spike.”—*Hooker*.

Still water; rare.

Angus-shire. *Mr. Don*.—Aberdeenshire. Anonymous.

Perennial—flowering in July.

11. *Potamogeton compressa*. *Flat-stalked Pond-weed.*

Stem compressed. Leaves sessile, alternate, linear, blunt, occasionally with a slight point. The mid-rib is distinct, and accompanied by an obscure net-work, and one or two lateral ribs, which are scarcely perceptible. Flowers few, distant, upon stalks longer than the spike.

Rare.

Ponds upon Deeside, *Mr. John Proctor*.—In the lake of Rescobie, and also in the lake of Forfar. Elsewhere I have never observed it. *Mr. Geo. Don*.—Kincardineshire. *Mr. Chrystall*.

Perennial—flowering in June and July.

12. *Potamogeton pusilla*. *Small Pond-weed*.

Stem round, slender, more than a foot long. Leaves numerous, dark-green, stalkless, linear, very narrow, slightly pointed, with a single rib more or less evident at each side of the central one, and an indistinct net-work. Flower-stalk seldom ending the stem, much longer than the small, few-flowered spike.

Ditches and still water; but not common.—Near Aberdeen, in the Canal. Valley of Alford, in various places.

Angus-shire, in the Loch of Forfar. *Mr. Arnott*.—Pools close to Guthrie; and, east, from the Loch of Balgavies, where I have also picked specimens, as well as in a pond not far from the sea, at the foot of the cliffs south from St. Cyrus. *Dr. Balfour*.—Near Montrose. *Mr. White*.—Province of Moray. *Mr. Stables*.

Perennial—flowering in July.

13. *Potamogeton pectinata*. *Fennel-leaved Pond-weed*.

Root tuberous. Leaves in two rows, single-ribbed, bristle-like, sheathing at the base. Stipules closely attached to the leaves. Spikes few, much interrupted, upon a longish stalk.

In salt or fresh water; rather rare.

Abundant at the east end of the Loch of Balgavies, near Guthrie; and also at the east end of the Loch of Rescobie, four miles from Forfar. *Dr. Balfour*.—Marsh on the Old-Aberdeen Links. Anonymous.—In the province of Moray; as at the Loch of Spynie, Loch of Cottis. *Mr. Stables*.

Perennial—flowering in July.

OBS.—This is a second division of the submersed *Potamogetons*, separated from the former, by having narrow, mostly parallel-sided leaves. The first of them (*zosteræfolia*) has only been of late added to the British Flora, and is characterized by the comparatively large, grassy, or grass-wrack-like leaves, with numerous ribs, many of which, however, are far from distinct. With the undoubted *P. graminea*, I confess myself unacquainted; and it may be suspected that *varieties* of other species have frequently received this name. It is said to be characterized by grassy leaves, with the side rib single and scarcely perceptible, and the spikes upon stalks scarcely longer than themselves. The leaves are narrower in the two succeeding species (Nos. 11. 12.) which may be distinguished from one another as follows:—In *P. pusilla*, the leaves are very narrow, with a single indistinct lateral rib at each side of the central one; and the flower-stalks are several times as long as the spike; while in the *compressa* the leaves are broader, with a couple of faint lateral ribs, sometimes to be perceived on each side of the central one, and the flower-stalk is rather short, sustaining a comparatively stout and often interrupted spike. It is strange

that more than one of our authorities in Scottish Botany, express themselves unacquainted with *P. pusilla*, although it is probably far from uncommon in many parts of the kingdom. Along with the specimens of *P. pusilla* above referred to, Mr. Arnott of Arlary—whose opinion, it is well known, is entitled to deep attention—has favoured me with remarks upon this species, from which I gather that he concurs with Chamisso and Schlechtendal, in uniting, without hesitation, *P. pusilla* and *compressa*. Physiological or anatomical difference (Mr. Arnott says) there is none; but without having a positive conviction that they are strictly different species, it has been here thought best to keep them separate, since they are very unlike one another, and always to be distinguished by the marks already given; to which it may be added, that *P. compressa* is of a paler or more brownish-green, retaining also its shape better than *P. pusilla*, with stipules far more distinct; these being white, large, and somewhat inflated. *P. pectinata* is seldom met with, and is indicated by the two-rowed bristle-like leaves and interrupted spikes.

GENUS XII. RUPPIA.

Calyx and corolla wanting. Styles none. Seeds four, each upon a stalk, four or five times its own length.

SPECIES.

1. *Ruppia maritima*. *Sea Ruppia*. *Tassel Pond-weed*.

Stems long, slender, branched. Leaves long, alternate, narrow, acute, with sheaths of variable size. Spikes usually two-flowered, upon short stalks, which, after flowering, are greatly lengthened, rising to the surface of the water.

Salt-water pools and ditches; rather rare.

Near Montrose. Mr. White, surgeon.—In the neighbourhood of Bervie, Kincardineshire. Anonymous.—Kinloss, near the School-house. Mr. Stables.

Perennial—flowering in autumn.

GENUS XIII. SAGINA.

Calyx inferior, of four leaves. Petals four, shorter than the calyx, alternate with its leaves, but sometimes wanting. Capsule one-celled, four-valved. Seeds numerous.

SPECIES.

1. *Sagina procumbens*. *Procumbent Pearlwort*.

Stems two or three inches long, smooth, prostrate and spreading in all directions. Leaves about half an inch long, three-ribbed, awl-shaped, with a very short thorn or point. Corolla very small, half the length of the calyx. Flower-stalks smooth, longer than the leaves.

Dry gravelly places, walls, &c. ; common.—At Aberdeen upon the Inch, &c. &c.

Perennial—flowering in the summer months.

2. *Sagina maritima*.

Stems smooth, inclining below, erect above, much branched. Leaves fleshy, short and blunt, not bristle-pointed, united at the base. Flower-stalks slender, smooth, about an inch long. Corolla wanting.

Sea-coast, and said to have been found in alpine stations ; rather rare.—At Aberdeen on the Oldtown links, between the brick-work and the sea ; New Pier ; Inch ; and between Craiglug and the sea, on the south side of the river.

Rocks at Buchanness. *Mr. Alex. Murray*.—Ythan-mouth and coast of Buchan. *Mr. Cow.*—Banff parish. *Mr. Smith.*—Coast of Moray. *Mr. Stables.*—Ruined castle on the cliff behind manse of Farr. *Edinburgh New Philosophical Journal*, Dec. 1827.

Annual—flowering from May to August.

Obs.—The more erect form of the 2d species, with its fleshy, not bristle-pointed leaves, and the wanting corolla, will, in general, readily distinguish it from the 1st. The bristle-pointed leaf of *S. procumbens* is not, however, to be at all times relied on ; nor can we build much upon the absence of petals in *S. maritima*, as none of the members of this genus appear to be very uniform in respect of corolla. For these considerations, there might be a difficulty between the above two species, when *S. procumbens* grows upon the coast, in which case it will probably put on a more fleshy condition. Hooker says that *Sagina procumbens* is sometimes with difficulty distinguished from *Spergula subulata*, and it is somewhere stated that Linnæus confounded these species ; but I conceive that the comparatively large corolla of the latter will sufficiently separate it from any of our *Saginas*, and it appears more likely that a dubiety should occur between *Sagina procumbens* and *Spergula saginoides*. In such a case of doubt, it may be recollected that the latter is comparatively so rare, that the chances are many thousands to one, in favour of the plant being *Sagina procumbens*. It may be added, that another species of *Sagina*, called *apetala* (but said to have a corolla), may possibly occur in this quarter, though I have never seen it, as it is said to be not unfrequent in Scotland, and very common in England. It is characterized by the leaves being fringed, with a distinct bristle at the point.

GENUS XIV. RADÍOLA.

Calyx inferior, of one leaf in four segments, each of which is three-cleft. Petals four, undivided. Capsule with eight furrows, eight valves, and eight cells.

SPECIES.

1. *Radiola millegrana*. *Thyme-leaved Flaxseed*.*Linum Radiola*. Linn.*Radiola linoides*. Lindley's *Synopsis*.

Stem very short, repeatedly subdivided, with a pair of very small leaves and a single flower at each fork. Leaves opposite, oval, sessile. Flowers white, upon stalks, which are both in the forks and at the extremity of the plant.

Wet gravelly places; far from rare.—Near Aberdeen in the vicinity of the coast, occasionally all the way from the Cove to Belhelvie. Also, near Park Inn, upon Deeside; and in the neighbourhood of Loch Auchlossan, Lumphanan; and of Loch Kin-nord, Cromar. I have also observed it in considerable quantity in Ross-shire. Not yet detected in the Alford district.

Abundant on the roadside between Forfar and Brechin, and between the former place and Montrose. Frequent on moors between Montrose and Guthrie, and in similar situations between Brechin and Slateford. *Dr. Balfour*.—Moor of Benholm, Kincardineshire. *Mr. Chrystall*.—At Aberdeen, on the Links; and the *Commonity* of Whitemyres. *Dr. R. Harvey*.—"In campis nostris maritimis, in ericetis." *Dr. D. Skene*.—*Heugh* of Crimond; and not uncommon in the district of Buchan. *Mr. Cow*.—In Moray, not rare. *Mr. Stables*.—Banks of the Spey, between Fochabers and Orton. *Hooker's Flora Scotica*.

Annual—flowering in July and August.

OBS.—A singular little plant, "soon evincing the propriety of its old names, Millegrana and All-seed, by the multitude of capsules, each containing eight seeds, with which it is laden."

CLASS V. PENTANDRIA. Five Stamens.

ORDER I. MONOGYNIA. One Pistil.

GENUS I. MYOSOTIS.

Calyx inferior, five-cleft. Corolla salver-shaped; the tube cylindrical; lobes five, obtuse; the orifice half closed with short rounded scales. Filaments short; anthers concealed. Seeds four, perforated at the base, lying in the somewhat enlarged calyx.

SPECIES.

1. *Myosotis versicolor*. *Yellow and Blue Scorpion-grass*.
Myosotis scorpioides (var.). Linn.—*Smith's Flora Britannica*.

Stem from three or four inches to a much greater height, with spreading bristles like the leaves and calyx. Flowers nearly stalkless; the upper yellow, those below blue. Calyx with deep teeth, not open when in fruit.

Sandy places, walls, and moist meadows; not uncommon.—Frequent enough in the neighbourhood of Aberdeen.

Annual—flowering in April and June.

2. *Myosotis collina*. *Early Field Scorpion-grass*.

Stem short, soon branching. Flowers all blue. Calyx, when the plant is in fruit, open, and about the same length as its stalk.

Very dry sandy places; not frequent.—Abundant at Aberdeen, on the bent-hillocks south of Don mouth.

Coast of Buchan. Mr. Cow.—Ladyhill, Elgin; Cromwell's Mount, Campbelltown. *Mr. Stables*.

Annual—flowering in April and May.

OBSERVATIONS.—These two species differ from those which follow in the shortness of the flower-stalk, which never (not even when the plant is in fruit) exceeds the calyx in length. They are known from one another by the 2d *sp.* having the flowers all blue, and the calyx, in the last stage, more or less gaping; while, in the 1st, the flowers are some yellow, others blue, and the calyx is shut upon the seeds. *M. collina* is a species comparatively new to the Botany of Britain, which, in the station above specified, had attracted the attention of the writer of these remarks, before its appearance in any British Flora, though he did not then discriminate it as a good species, but only considered it a singular, minute *variety* of *M. arvensis*, looking like a little *Forget-me-not* flower-spike nestling in the sand.

3. *Myosotis arvensis*. *Field Scorpion-grass*.

Myosotis scorpioides (var.). Linn.—*Smith's Flora Britannica*.

Stem erect and clothed with spreading hairs, like the leaves and calyx. Leaves (as in the other species) lanceolate, tapering into a stalk at the lower part of the plant; but above, sessile or even slightly clasping.* Clusters at first spirally twisted (as in the whole genus—whence its name, from a supposed resemblance to the curled tail of a scorpion) afterwards straight. Proper flower-stalks, at first nearly erect, but ultimately almost perpendicular to the common

* The term *Myosotis* (from *μῦς*, *μῦς*, a mouse; and *οὖς*, *ωτός*, an ear) refers to the shape of the leaves.

stalk of the cluster. Corolla blue. Calyx, with lanceolate teeth; when in fruit, ovate, shut, and upon a stalk twice its own length

Cultivated places, &c. common.

Annual—flowering from June to August.

4. *Myosotis sylvatica*. *Wood Scorpion-grass*.

Myosotis scorpioides (var.). *Smith's Flora Britannica*.

Leaves hairy. Clusters loose. Calyx with long, narrow teeth; in the last stage ovate, closed, and on a stalk twice as long or more. Limb of the corolla flat, blue, its diameter longer than the whitish tube.

Dry shady places.

Perennial—flowering in midsummer.

Obs.—These two species are distinguished from the preceding by the calyx, when the plant is in fruit, being upon a stalk about twice its own length; and from the two that follow, by the dry stations and ultimately shut calyx. *M. arvensis* and *sylvatica* are, however, here given as different species, less from knowing them to be so, than out of a deference to the opinion of others. The most tangible distinction may be said to reside in the greater size of *M. sylvatica*, more especially its corolla, and in the looser inflorescence; and, moreover, it is alleged that the latter is perennial, with the limb of the corolla flat, while the *arvensis* has an annual root and the limb concave.

5. *Myosotis palustris*. *Water Scorpion-grass*. *Forget-me-not*.

Myosotis scorpioides (var.). *Linn.—Smith's Flora Britannica*.

Stem rather smooth; its hairs rarely spreading, few and close, like those of the leaves and calyx. Corolla large, bright blue, pink in the bud. Calyx with short triangular teeth; gaping when the plant is in fruit, and on a stalk several times as long as itself. Clusters leafless.

Ditches and wet places rather frequent. Moor near Rubislaw; Alford; Buchan, &c. &c.

Perennial—flowering in the summer months.

6. *Myosotis secunda*. *Pale-flowered shaggy Myosotis*.

Stem clothed with long spreading hairs, which are stronger and more numerous than in *M. arvensis*; sometimes throwing out creepers. Leaves as is usual in the genus; their hairs pressed close, like those upon the calyx and on the stalks both of the clusters and of the flowers.

Calyx small; when in fruit gaping (but less so than in *M. palustris*), with narrow lanceolate teeth; and upon a long stalk, which, at last, is perpendicular to the main stalk, or even with an inclination downwards, and then directed uniformly to one side, so as to present a marked unilateral appearance. Flowers large, many of them pale blue, some flesh-coloured, and not a few almost milk-white. Clusters, in the last stage, very long, weak, and horizontal; one or more leaves being usually mixed with the lowest flowers.

Spongy bogs and wet ditches; not uncommon.—Occasionally around Aberdeen. Abundant and large in a marsh near Guise, Tough; and in various other parts of the Alford district, often associated with *M. palustris*. Morven, Cromar. Also, in Buchan, at Methlick, Aberdour, &c.; and in Sutherland. Indeed, it probably occurs over the whole north of Scotland.

Perennial (?)—flowering in summer and autumn.

Obs.—The present section is indicated by the wet places of growth in conjunction with the long fruit-stalks and gaping calyx. No. 5. is distinguished by the large bright-blue flowers, and short triangular teeth of the calyx. As to the *Myosotis* last described, it will be seen that I have introduced a new species,* which has been named *Myosotis secunda*, because the flower-stalks have ultimately a very remarkable tendency to one side. It is, however, to be noticed, that all the species, particularly *M. palustris*, have, when old, an unilateral tendency, though by no means in the same degree as the species now alluded to; which is, besides, more hairy than any of the others, and is, on the whole, so remarkable and distinct, that it cannot be supposed hitherto overlooked, but certainly it has never been sufficiently attended to. It has probably been considered a *variety* of some other *Myosotis*, as of *palustris* or *cæspitosa*; but it is, doubtless, well entitled to rank as a species, since its characters are more marked than those of any other member of the genus. Indeed, its *port* is so different from any of our other species, that I can invariably detect it, even when at too great a distance for perceiving the tint of the flowers or the hairiness of the stem. The following particulars (mainly a recapitulation) may be noticed:—

The stem is remarkably hairy. The flowers are usually pale blue, though not seldom white; and larger than in *M. palustris*. The calyx is small and gaping (but not very wide) when the plant is in fruit, with teeth narrower and deeper than in *M. palustris*, and more resembling those of the *arvensis*. In an advanced stage, the clusters are very long and horizontal, with the flower-stalks more or less vertical, and all hanging to one side. A remarkable feature is, that the leaves—to the number of 1, 2, 3, 4, and even 6 or 8; indeed, sometimes,

* It has, however, already been alluded to by me, in a paper contained in the 11th No. of the *Edinburgh New Philosophical Journal*.

though very rarely, reaching the extremity of the cluster—are mixed with the flowers; and the hairs continue spreading *up to the highest leaf*, beyond which they are close. It remains to be added, that the fruit-stalks are more diverging and longer than in *M. palustris*, and still more so, than in any other species of *Myosotis*; and that the places of growth are wet and spongy.

The flowers of this genus are singularly interesting; but the herbs, though said to be possessed of astringent properties, are not in any way made use of.

GENUS II. LITHOSPERMUM.

Calyx inferior, of one leaf, deeply five-cleft. Corolla of one petal, funnel-shaped; tube cylindrical, as long as the calyx; the limb divided, half-way down, into five obtuse segments; orifice naked. Seeds four, hard, lying in the bottom of the calyx.

SPECIES.

1. *Lithospermum arvense*. *Corn Gromwell*.

Root with a red bark. Stem erect, branched towards the summit. Leaves bright-green, sessile, lanceolate, of varying breadth, not very acute, rough and hairy, without any lateral ribs or transverse veins. Segments of the calyx long, narrow, bristly; at first erect, afterwards expanding. Corolla little exceeding the calyx, white, though occasionally straw-coloured. Seeds wrinkled and pitted.

Roadsides, waste places, and among crops; not very common, and scarcely wild.—In the vicinity of Aberdeen, at the lower part of the Inch; near new Bridge of Don; and in fields at Rubislaw. Roadside, near Manse of Alford.

Corn fields, &c. Montrose. *Mr. D. White*.—Buchan, in various places. *Mr. Cow*.—Common among wheat crops in the northern counties, and, I think, introduced with that grain. *Mr. G. C. Smith*.—In Moray.

Annual—flowering in May and June.

2. *Lithospermum officinale*. *Common Gromwell* or *Grey Millet*.

Stem branched. Leaves with several ribs, lanceolate, pointed. Corolla buff-coloured, rather longer than the calyx. Seeds large, shining, pearl-like, but often imperfect.

Rather rare.

Angus-shire. *Mr. G. Don*.—In Moray; at Castle of Duffus; south of the Bridge of Nethy, Strathspey. And near Culloden. *Mr. Stables*.—Near the Monastery of Beaulieu, at Inverness.

Lightfoot's Flora Scotica. (I have two other notices of this species in the last-mentioned station—one by Dr. D. Skene, written ten years before Lightfoot's work; the other by an individual who observed it there lately.)—Rosehangh, Ross-shire. Mr. Smith.

Perennial—flowering in June.

3. *Lithospermum maritimum.* *Sea Gromwell.*

Pulmonaria maritima. Linn.—*Lightfoot's Flora Scotica*—*Smith's Flora Britannica and English Botany.*

Root fleshy. Stem prostrate, branched, without hairs like the whole plant. Leaves remarkably glaucous, overspread with minute granular bodies, ovate, imperfectly pointed; below tapering into a stalk. Flowers mostly in clusters; corolla of a beautiful purple. Seeds large, keeled, even.

On the coast pretty frequent and abundant; chiefly in stony places.—From specimens which I have gathered or seen, I can speak to its occasionally occurring, all the way from the Frith of Forth to John o' Groat's. Near Aberdeen, in the sand at Donmouth, but in extremely small quantity;* and at the Bay of Nigg. On the beach at Stonehaven and a little to the southward. Also, in various places to the north of Stonehaven, usually among stones, but occasionally in sand. Abundant and magnificent on the sandy edge of a bay immediately to the north of Garron point. Aberdour, in Buchan; and upon the Banffshire coast.

Montrose. *Mr. White.*—And common on the sea-shore towards Usan. *Dr. Balfour.*—But, mostly, rare on that coast. *Dr. M'Nab.*—"On the sea-coast, in Angus-shire, and near Johnshaven, in the shire of the Mearns, plentifully; as also a variety with green leaves." *George Don.*—Plentiful between Gourdon and Johnshaven, and at St. Cyrus. Anonymous.—Between Bervie water and the village. *Mr. D. Lyall.*—Portlethen. *Rev. Dr. Fleming.*—Peterhead. *Mr. Shier.*—Mouth of the Ugie. *Rev. Mr. Imray.*—"At Banff, among the sand at the seaside towards Doun." *Dr. D. Skene.*—Mouth of the Burn of Boyne, Banffshire. *Rev. Mr. Cowie.*—Most abundant on the shores of Sutherland and Caithness. *Hooker's Flora Scotica.*—John o' Groat's. *Dr. Balfour.*

Perennial—flowering in June.

OBS.—Doubts may be entertained about the title of either of the first two species to rank among our natives. They may be distinguished from one another by the more yellowish flowers of the lat-

* Indeed, the author has there only seen a single specimen, which he met with in August, 1835, in company with Dr. Fleming, King's College, and Dr. James Mitchell, London.

ter, and by its large, shining, polished seeds.* In every stage, we can refer to the leaves, which in *L. officinale* are more greyish and more pointed than in the other, and, moreover, have distinct side-ribs; while in the *arvense* there are merely mid-ribs, without any lateral ones. No one will mistake the singular and beautiful 3d *sp.*, confined to the loose stones and sand of the seaside. In drying, it turns black, and in this state, according to my observation, the crystalline bodies, upon the leaves, not always very apparent in the fresh state, become the most evident. The recent leaves have a flavour somewhat resembling oysters.

The seeds of *L. officinale* (and, indeed, various species of this genus, both British and Foreign) have been extolled in complaints of a calculous nature, with which opinion their stony hardness has, it may be suspected, had something to do.† Waller believed this species possessed of narcotic properties, but modern writers seldom or never allude to it. It was long ago stated that the hard crustaceous part of these seeds effervesces with acids; but far more reliance may be placed upon a recent account that they contain silica, phosphate of lime, and iron. The root of *L. arvense* has a red bark, "which communicates its colour to oily substances, as well as to paper, linen, and pale faces."

GENUS III. ANCHUSA.

Calyx inferior, five-cleft. Corolla funnel-shaped, with five obtuse lobes and a cylindrical straight tube; the orifice covered by convex scales. Seeds four, concave at the base.

SPECIES.

1. *Anchusa sempervirens*. *Evergreen Alkanet*.

Root thick, mucilaginous. Stem erect, reaching to a foot and a half in height. Leaves ovate, acute, diminishing towards the summit; the lowest being of great size and upon stalks, while the upper are far smaller and sessile. Flower-stalks springing from the bosom of the leaves, and carrying the flowers in heads, each of which is accompanied by two small leaves. Corolla fine blue, not properly funnel-shaped, but with a short tube, resembling the flower of a *Myosotis*. Whole plant clothed with rigid hairs.

* There is something very remarkable in the exquisite polish and stony hardness of these seeds. Pliny considered them one of the greatest curiosities in the vegetable kingdom: "Nec quicquam inter herbas majore quidem miraculo aspexi."—Lib. xxvi.

† The name of the genus alludes to the stony seeds—being from *λίθος*, a stone, and *σπέρμα*, a seed.

Roadsides and the vicinity of old gardens; not frequent, and never completely in a state of nature.—At Aberdeen, near the Rubislaw Distillery; Deeside; Old-Aberdeen; and Hilton. Vale of Alford in one or two places. Near Stonehaven. Den of Auchmedden, and various parts of Buchan. And occasionally in most parts of the north.

Perennial—flowering in May and June.

GENUS IV. CYNOGLOSSUM.

Calyx inferior, five-cleft. Corolla short, funnel-shaped; the orifice closed with five convex scales. Seeds four, not perforated at the base, more or less prickly, attached to a central column formed by the style.

SPECIES.

I. *Cynoglossum officinale*. *Common Hound's Tongue*.

Stem from one to two feet high, branched, downy, channelled. Leaves lanceolate, entire, soft, covered with whitish down; stalked below, sessile or clasping above. Calyx downy. Corolla reddish. Flowers in long, loose, unilateral spikes. Stamens shorter than the corolla.

Rare.—Indeed, I have never gathered it in the north of Scotland, though I have met with it unequivocally wild on the east coast, to the south of the range allotted to this publication.

Angus-shire. Mr. Don.—Very rare in the Mearns. Mr. Chrystall.—In a meadow, at the back of the House of Castle Fraser, Aberdeenshire. Dr. D. Skene.—Boyne Castle, Banffshire. Mr. Cowie.—Auldearn churchyard, in Moray. Mr. Stables.—A common weed in the churchyard of Kilmuir, Easter-Ross. Mr. Chrystall.

Biennial—flowering in June and July.

OBS.—Sir James Smith observes that the whole herb is of a dull green, downy and very soft, exhaling, when touched, a pungent and nauseous scent, like that of mice, or, as some say, the urine of dogs. The leaves in this genus have been likened to a dog's tongue; whence its name—from *κυνων*, a dog, and *γλωσσα*, a tongue.

The leaves of this herb are recommended in ill-conditioned ulcers; and, in *Ray's Synopsis*, it is reported that the root is useful in glandular complaints, both as an inward and an outward application. “In strumis et scrophulis, *Cynoglossœ radicem tum intus in decocto, tum extra in cataplasmatibus forma, summo cum successu, adhiberi solitam audivimus.*—*D. Hulse.*”

GENUS V. SYMPHYTUM.

Calyx inferior, five-cleft. Corolla of one petal, tubular, swelling out above, with five shallow, acute, marginal segments; the orifice closed, with five lanceolate fringed scales. Seeds four, tumid.

SPECIES.

1. *Symphytum tuberosum*. *Tuberous-rooted Comfrey*.

Root whitish. Stem scarcely winged. Leaves harsh, broad, lanceolate, tapering at the base, running slightly along the stem, the upper ones opposite. Flowers yellowish-white, drooping. Anthers large, mostly concealing the filaments, which are short and attached to the inside of the corolla about its middle. Style long.

Banks of rivers, roadsides, and old gardens; not uncommon.—At Aberdeen, near Powis' Burn, and on the Deeside road, &c. Near Manse of Alford, and in the upper part of the same valley, upon the Banks of Don. Various parts of Buchan; and in the vicinity of Banff. Also, in Forfarshire.

Perennial—flowering in July.

Obs.—It appears not to be long since this species was first observed in Britain. It is, however, pretty common in the North; but has, doubtless, usually spread from gardens, where, from its supposed virtues, it appears, at a former period, to have frequently had a place. It is, however, sometimes undoubtedly wild, as I have met with it in great abundance, in the upper part of Alford, remote from a garden, or indeed from any habitation. *S. officinale*, certainly not indigenous, though occasionally here met with, is characterized by the decurrent leaves, winged stem, and purplish flowers. This species is, however, reckoned a native of Angus, both by Mr. Don and Dr. M'Nab.

S. tuberosum is called *Comfer Knit-been* in Aberdeenshire; where a preparation, made by boiling the root in oil or lard, is extolled, by old women, for hardening and strengthening fractures. *S. officinale* is astringent and mucilaginous, on which account it is still recommended on the Continent (as it formerly was in Britain) in diarrhœa, hemorrhage, and cough. The name of the genus (from *συνφύω*, *I unite*) refers to its *vulnerary* qualities.

GENUS VI. BORAGO.

Calyx inferior, five-cleft. Corolla wheel-shaped, with five flat, widely spreading lobes, and, having at its orifice, five obtuse, awl-shaped, or notched scales. Seeds four, wrinkled or tuberculated.

SPECIES.

1. *Borago officinalis*. *Common Borage*.

Stem branched, covered like the plant in general with copious rigid bristles. Leaves oval, toothed, sessile; those below largest and tapering into a stalk. Flowers at the extremity of the plant, and arranged in a sort of panicle, which is composed of drooping bunches. Corolla beautiful, commonly blue, with prominent stamens. Calyx shaggy.

In cultivated fields; but not common, and scarcely a native.—Rare in the vicinity of Aberdeen.

Noranside, upper part of Angus. *Anonymous*.—Parish of Methlick. *Lord Aberdeen*.—Banffshire. Mr. Smith.—Moray. Mr. Stables.

Biennial—flowering in June and July.

GENUS VII. LYCOPSIS.

Calyx inferior, deeply five-cleft. Corolla funnel-shaped, with five obtuse, rounded lobes, and the tube twice curved; its orifice closed, with five convex, hairy, converging scales.

SPECIES.

1. *Lycopsis arvensis*. *Small Bugloss*.

Root whitish. Stem angled, juicy, not quite straight. Leaves light green, lanceolate, wavy, of variable breadth; the lowest upon stalks; the rest sessile or clasping; all overspread, like other parts of the plant, with prickles and roundish warty bodies. Clusters usually in pairs, leafy. Corolla blue, with a twisted tube. Calyx very bristly. Stalks of the flowers and fruit erect.

Cultivated fields; common.—Abundant between Craiglug and bridge of Dee, on the north side of the river, and in other places around Aberdeen.

Annual—flowering in June.

Obs.—The genera *Lycopsis*, *Myosotis*, and *Anchusa*, make a near approach to one another. Indeed, *Anchusa sempervirens* scarcely differs generically, from *Myosotis*; but the twisted corolla of *Lycopsis*, perhaps, sufficiently separates it from the two others.

GENUS VIII. ÉCHIUM.

Calyx inferior, in five divisions. Corolla irregular, bell-shaped, the margin in five unequal segments; orifice open and without scales. Stigma deeply cleft.

SPECIES.

1. *Echium vulgare*. *Viper's Bugloss*.

Stem seldom or never branched, round, rough from rigid hairs and tubercles. Leaves also bristly, narrow-lanceolate; sessile except the lowest which are upon short stalks. Corolla splendid, pink in the bud; at last blue or purple; sometimes white. Filaments so long that the anthers are protruded far beyond the corolla. Spikelets unilateral, hairy, curved; ultimately becoming erect, and collectively composing an extensive spike or panicle.

In cultivated fields, generally among wheat.—Occasionally in the vicinity of Aberdeen; but uncommon in Aberdeenshire, and probably not wild. So rare in the Alford district that I have more than once known a casual plant preserved as a great curiosity. Found, though but sparingly, throughout the whole of the north.

In elevated fields at Auchallader, upon the Invercauld property. Mr. A. K. Clarke.—Common at Arbroath, with white flowers. Dr. G. M'Nab.

Biennial—flowering in June and July.

GENUS IX. PRIMULA.

Calyx inferior, tubular, five-toothed and five-angled. Corolla salver-shaped, with five heart-shaped segments; the tube cylindrical, as long as the calyx or longer; orifice naked. Stigma globular. Capsule as long as the calyx, one-celled, opening at the summit, with ten acute teeth. Seeds numerous.

SPECIES.

1. *Primula vulgaris*. *Common Primrose*.

Primula veris γ , *acaulis*. Linn.

Leaves radical, oblong, oval, irregularly toothed, wrinkled, slightly downy, blunt, and tapering into broad short stalks. Flower-stalks all from the root, numerous, springing from a common point, downy, almost woolly at the summit, sustaining each a single yellowish flower, with the limb of the corolla flat. Teeth of the calyx deep and narrow.

Banks of streams and moist woods.—Abundant near Aberdeen, in Den of Rubislaw, &c. Also, at the Cove and other parts of the Kincardineshire coast.

Mr. Watson found it more than 500 yards in Aberdeenshire.

Perennial—flowering in April and May.

2. *Primula elatior*. *Oxlip Primrose*.*Primula veris* β , *elatior*. Linn.

Leaves oval, ending abruptly in the stalk. Flowers in an umbel. Calyx finely downy, with triangular teeth, more or less sharp. Corolla yellow; its limb nearly flat.

Rare.

Buchan, at Inverugie. *Mr. Alex. Murray*.—And at Slains. *Mr. Cow*.

Perennial—flowering in April and May.

3. *Primula veris*. *Cowslip*. *Paigle*.

Leaves finely downy, slightly toothed, wrinkled (much shorter than in *P. vulgaris*), tapering abruptly into a long stalk. The leafless stalk is downy, and supports many yellow flowers arranged in the umbelliferous form. Calyx finely downy, with the triangular teeth rather blunt and short. Limb of the corolla concave.

Not very common; chiefly on the coast, and high places in the interior; but sometimes upon the banks of rivers leading from its upland stations.—I have only myself gathered it in Braemar; and on the banks of Dee, at Upper Banchory.

Abundant near Whistleberry, on the coast of the Mearns. *Mr. Lyall*.—Aberdeen (but very sparingly) on the banks of Dee and Don, and at the Cove. Anonymous.—“Inveni in pascuis inter Tullich et ripam Dee.” *Dr. D. Skene*.—On the highest parts of Don, at Inchrory, Poldoolzie, and Nochtyside; also, at Dulacks, Glenbucket; and Culfork, Towie. *Mr. Proctor*.—Banks of the Avon, below Craighalkie, Tomintoul. *Mr. Stables*.—In considerable quantity, and in great beauty and splendour, on the farm of Clinterty, on the top of a rock overhanging the Moray Frith, nearly 300 feet above the sea. This is the only station here known to me for *Primula veris*. *Rev. G. Gardiner*.—Banffshire coast. *Mr. Gardiner*, Melrose.—Rare in Moray.

Perennial—flowering in April and May.

4. *Primula Scotica*. *Scottish Primrose*.

Leaves all radical, more or less mealy like the whole plant, oval, tapering at the base, entire or slightly toothed. Flower-stalks from the root, stout, without hairs, a few inches in height, supporting the beautiful flowers, which are arranged in the form of an umbel having scales at the bottom of each of its stalks. Corolla blue with a yellow eye. Limb of the corolla flat. Stigma with five points.

Not uncommon on the north coast of Sutherland and Caith-

ness; but not elsewhere. Not very far from Manse of Durness, and in various other places in the north of Sutherland.

Wick. *Mr. Stables*.—Nosshead, 150 feet high. *Mr. Shier*.—Abundant on a Common, 3 miles north from Wick, and in several places between John o' Groat's and Wick. *Dr. Balfour*.*

Perennial—flowering in June and July.

OBS.—The *Primrose* is one of our most common plants, decorating, at an early season, many a sequestered bank and stream. Some one seems to apply it as a criterion of the observer's turn of mind:

“A Primrose by the water brim,
A yellow Primrose was to him,
And it was nothing more.”

It is characterized by every flower-stalk springing from the root and supporting a single large flower, with the rim of the corolla flat; while the *Cowslip* is equally evident by each radical stalk carrying an umbel, which contains a number of yellowish concave flowers. *Primula elatior* may be called an intermediate form; since it has the umbelliferous inflorescence of *P. veris*, whereas individual flowers resemble those of the *vulgaris*, in general aspect, as well as in the flat-rimmed corolla. From these three, *P. Scotica* is abundantly distinct, by its bluish flowers, and the powdery white substance upon its leaves, flower-stalks, and calyx.

It has often been supposed that *P. elatior* is a hybrid engendered between the *vulgaris* and *veris*; in confirmation of which opinion it may be observed that, on the coast of Buchan, where the *elatior* occasionally occurs, *P. vulgaris* is common, and *veris* by no means rare. It has also been supposed, by Linnæus and other authorities, that the two last-named forms are in reality the same species; but I cannot avoid thinking that this opinion stands in need of farther confirmation. Upon this point, Sir John Hill's words, as they relate to his own experience, may be quoted: “I have had the *Cowslip*, *Oxlip*, and *Primrose*, brought into a garden, where they continue, year after year, the same, and their seeds produce the same distinct kinds and no other.”—(*British Herbal*, p. 69.) There seems more reason for entertaining doubts regarding the essential difference between *P. Scotica* and *P. farinosa*, a species met with in the south of Britain, but not with us.† *P. Scotica* is the shorter and stouter of the two, and it appears Dr. Graham first observed that, in this species, the limb of the corolla is only half the length of the tube, while in *P. farinosa* these two parts are nearly equal. In *P. Scotica*, the teeth of the calyx have appeared to me shorter

* A friend who was present, informs me that, at a late meeting of the *Botanical Society of Edinburgh*, Dr. Graham exhibited a *Primula*, picked in Norway by Mr. Edward Forbes, which corresponds completely with *P. Scotica*.

† Information has, however, been received, that either *P. farinosa* or *Scotica* grows both upon the Buchan coast and in Glenfiddich. These are interesting and promising localities; but my account is not direct, and I do not at present rely upon it.

and broader than in the *farinosa*; but as my opportunities, for the comparison, have not been very complete, it might be worth determining whether this observation is uniformly true. Perhaps, indeed, throughout the genus, attention should be directed to the part alluded to. It will, at least, be found that the short broad triangular teeth of *P. veris* are remarkably different from the deep narrow ones of the *vulgaris*, while I have found them to be exactly intermediate in *P. elatior*—an observation, possibly worthy of notice, as tending to confirm the opinion that this is a hybrid production.

It ought not to be forgotten that the species of *Primula* in general, have a tendency to produce—even occasionally upon the same root—both solitary and umbellate flowers; a circumstance which may help to explain the contrariety of opinion, regarding the boundaries of species in this genus; as it is possible that the form alluded to may have been sometimes taken for a proof of species *supposed* to be different, being, as it were, incorporated together, and therefore identical.

Sir John Hill relates that the flowers of the *Cowslip* have a slightly narcotic quality; and in France, at this day, the plant has a character in pulmonary complaints. It is not, however, probable that any *Primula* possesses much medicinal virtue.

GENUS X. MENYANTHES.

Calyx inferior, deeply five-cleft. Corolla funnel-shaped; tube short; the limb in five segments, which are hairy within. Filaments short, alternate with the segments of the corolla. Style terminated by the lobed or notched stigma. Capsule of one cell, containing numerous seeds.

SPECIES.

1. *Menyanthes trifoliata*. Buckbean or Bogbean. Marsh Trefoil.

Root long, thick, and jointed, sending down strong fibres. Leaves composed of three large, oval, smooth, obscurely toothed leaflets, and placed upon stalks that are dilated and sheathing at the base; from which point usually springs the long and strong flower-stalk. Flowers in a panicle or bunch; externally whitish with a blush of red; and having a beautiful copious white fringe within. Fruit said to be rarely seen.

Marshes and bogs.—Near Aberdeen, in the parish of Nigg, and in ponds adjoining the Deeside road, &c.

Mr. Watson observed this species more than 500 yards high in Forfarshire.

Perennial—flowering in June and July.

OBS.—This species, which is remarkable for the shaggy corolla

is one of our finest natives, and is, indeed, excelled in beauty and elegance by but few foreign productions.

Water Trefoil resembles the Gentians in botanical characters, and in containing a bitter ingredient, which may be extracted by infusion. The tea thus procured may be prescribed by the regular practitioner in jaundice, or any other disorder, wherein a bitter laxative is likely to be useful; and, with the addition of a little hartshorn or soda, the draught is well adapted to certain disorders of the stomach, particularly Water-brash, to which country-people are peculiarly liable. Half a drachm of the dried leaves in powder has been much extolled in Intermittent Fever, wherein it is said to have succeeded, after Peruvian Bark had failed. In France, the juice of the *Trefle d'eau* is recommended in intractable diseases of the skin. In Aberdeenshire, the leaves of *Water Trefoil* are sometimes used in brewing; and it has been said that an ounce will go as far in this way as a pound of hops.*

GENUS XI. LYSIMACHIA.

Calyx inferior, deeply five-cleft. Corolla of one petal, wheel-shaped, with five deep segments, to which the filaments are opposite. Capsule of one cell, with ten pieces. Seeds numerous.

SPECIES.

1. *Lysimachia Nemorum*. *Yellow Pimpernel*. *Wood Loosestrife*.

Stem creeping, varying from a few inches to a much greater length, slender, angular, reddish, pellucid. Leaves in pairs, upon short stalks, smooth, entire, ovate, acute. Flower-stalks axillary, somewhat twisted, and fully as long as the leaves; each supporting a single flower with a golden-yellow corolla and smooth stamens.

Banks of streams and moist shaded situations; but not very common.—Near Aberdeen, at Ferryhill, Rubislaw, banks of Dee and Don, &c. In a small ravine, near the old bridge of Don; in a small wood, near bridge of Dee, and upon the south side of the river, above Craiglug. Coast, between the Cove and Findon. Corbie Den. Woods of Drum. Den of Auchmedden, in Buchan. Between Ballater Village and the Wells. Rare in the Alford and Cromar districts, having been only noticed at Bennachie, Asloon, and “Burn of the Vat.” I have, moreover, accounts of

* It is mentioned by a writer, who is probably Mr. Macgillivray, in the *Quarterly Journal of Agriculture*, No. IX. that, in the outer Hebrides, when there is a deficiency of tobacco, the islanders console themselves by chewing the root of *Menyanthes trifoliata*.

it as occurring in various parts of Deeside ; also, near Haddo House and Brux, and in Angus, Kincardine, Banff, and Moray. Mr. Watson observed this species upon the Clova mountains.

Perennial—flowering in summer and autumn.

2. *Lysimachia thyrsiflora*. *Tufted Loosestrife*.

Stems one to two feet high, round, erect, slightly woolly. Leaves numerous, opposite, sessile, smooth, lanceolate. Flowers small, yellow, in dense, stalked, ovate, opposite, axillary clusters, about the middle of the stem. Corolla dotted with red, with solitary minute teeth between the segments. Stamens smooth. Capsules rarely seen.

Forfarshire, by the lakes of Rescobie and Balgavies. *Dr. Balfour*.—Not uncommon in Angus. *Mr. Geo. Don*.

Perennial—flowering in July.

Obs.—The smooth stamens of this genus, with the seed-vessel of ten pieces, may be sufficient to separate *Lysimachia* from *Anagallis*, which has hairy stamens, with the capsule opening all round about. It deserves notice that Merat says the capsule of *Lysimachia* is of five valves, and is disposed to consider *L. Nemorum* as having a capsule which is properly but two-valved. Sir J. Smith's words have been in a great measure adopted regarding *L. thyrsiflora*, a rare British plant. The term *Lysimachia* from *λυσσις* and *μαχη* is of similar import with the English name *Loosestrife*.

GENUS XII. ANAGÁLLIS.

Calyx deeply five-cleft. Corolla of five segments, which cohere at the bottom, in the wheel-shaped manner, without any tube. Stamens hairy. Capsule globular, bursting all round about.

SPECIES.

1. *Anagallis arvensis*. *Scarlet Pimpernel*.

Stem smooth like the whole plant ; prostrate or partially rising towards the summit. Leaves usually in pairs, stalkless, ovate, with dark points beneath ; each having in its bosom a flower-stalk much longer than itself, and curved downwards in an advanced stage. Segments of the calyx narrow, acute. Corolla scarlet ; its lobes slightly notched and glandular at the margin. Stamens hairy. Capsule large.

Among corn, but not common, and seldom wild.—Neighbourhood of Stonehaven ; and in corn fields, Forfarshire.

Cliffs near Montrose, probably indigenous. *Mr. Templeton*.—In the Mearns, upon warm dry exposures, near the coast, but not common inland. *Mr. Chrystall*.—Banchory. *Mr. Adams*.

—Strathdon. *Mr. Proctor.*—Rattray, but not common in Buchan. *Mr. Cow.*—Moray. *Mr. Stables.*—"Satis frequens inter segetes prope Forres, July 16, 1764." *Dr. D. Skene.*

Annual—flowering in summer, and early autumn.

2. *Anagallis cærulea.* *Blue Pimpernel.*

Anagallis arvensis (var.). *Smith's Flora Britannica.*—*Hooker's British Flora.*

Similar to the preceding; but more erect, with a blue corolla, which is strongly notched and not glandular.

Corn fields rare.

Ferryhill, near Aberdeen. *Mr. William Smith.*

Annual—flowering in midsummer.

3. *Anagallis tenella.* *Bog Pimpernel.*

Stem a few inches long, branched, creeping, thread-like, throwing out rooting fibres. Leaves very small, roundish, slightly pointed, upon short stalks, the highest almost sessile. Flowers large, rose-coloured, upon long and slender stalks. Segments of the calyx small, acute. Stamens clothed with white woolly filaments. Capsule small.

In boggy ground; but rather rare.

On a wet heath in Arbuthnott, Kincardineshire. *Mr. Chrystall.*—Moist banks, adjacent to the river Don, in more than one place. *Anonymous.*—Various parts of Buchan; as in the vicinity of Peterhead. *Mr. Alex. Murray.*—Collyburn; Strathbeg; Rattrayhead. *Mr. Cow.*—And Aberdour. *Rev. Geo. Gardiner.*—Most abundant in the *Heugh* of Crimond, but sparingly in flower; 24th June, 1836. *Mr. G. Campbell Smith.*—Province of Moray. *Mr. Stables.*

Perennial—flowering in July and August.

Obs.—These are interesting species, and are all of them among our *plantæ rariores*; though No. 3 appears to be not uncommon in the southern part of Britain. *A. cærulea*, in particular, may be deemed scarce; as it has never been observed growing by myself, nor communicated by any one, unless my cousin and pupil ("heu miserande puer"), whose name is mentioned above. It is, however, by no means agreed upon, that the plant alluded to is specifically different from *A. arvensis*; and it is far from often that either of these forms is a true native. It is, indeed, probable, that we seldom see in Scotland any wild *Anagallis* but the *tenella*; which is indicated by the comparatively large corolla, and small size of the other parts, particularly the leaves. It may be added, that the flower of *A. arvensis* opens only in fine weather, and closes against rain—whence it is called the poor man's weather-glass, and it is said to be one of the most infallible that can be consulted.

A. arvensis has a place in several foreign *Pharmacopœias*. From the excellent work upon Medicine and Surgery, by MM. Roche and Sanson, it appears to be extolled in France—doubtless in vain—as a means of preventing hydrophobia. Orfila ranks it among the poisons which he calls “*narcotico-acres*,” and its effects upon the animal economy, entitling it to a place in this class, are noticed in his *Toxicologie Generale*, where it receives the name of *Mouron des champs*. M. Gronier found it to produce an abundant flow of urine in horses. From there being thus, now no doubt, that *A. arvensis* possesses active properties, the nearly forgotten virtues once attributed to it may deserve to be recalled. One of our English herbalists observes of it—“An infusion of the fresh plant is excellent in slight feverish indispositions, never, or very rarely, failing to promote perspiration and throw off the complaint. The whole plant dried and powdered is good against the epilepsy. There are well-authenticated accounts of this terrible disease absolutely cured by it. A decoction of it is much used, in some places, in the first stage of consumption.”

GENUS XIII. AZÁLEA.

“Calyx 5-partite. Corolla shortly campanulate, regular. Stamens straight, inserted at the base of the corolla. Anthers bursting longitudinally. Capsule 2-3-valved, 2-3-celled; dissessiment formed by the inflexed margins of the bifid valves. Seeds attached to a central, at length free, receptacle. Named from *ἀζαλεός*, parched or arid; because in such places the plant grows.”—*Hooker*.

SPECIES.

1. *Azalea procumbens*. *Trailing Azalea*.

Stem woody, rigid, tortuous, very much branched, bearing numerous, minute, smooth and glossy, oval leaves, which are rolled back at the margin, with very short but rather broad and sometimes fringed stalks. Flowers small, in terminating clusters; each of their stalks having an ovate bractea at the base. Calyx purple, permanent, in five deep, narrow, fleshy segments. Corolla flesh-coloured, of five oblong segments. Stigma in the form of a roundish, lobed ring, bearing some similarity to the same part in the genus *Pyrola*.

Alpine localities; rather common.—Loch-na-gar, in Aberdeenshire. Fon-y-vean and Ben Hope, in Sutherland.

Abundant on the dry summits of mountains in the Braemar and Clova districts. On the top of Cairn Inks, a mountain opposite to the Inn at Clova; and on the summit of the mountains bounding Glen Fee and Glen Dole. On the Clova range we occasionally meet with a larger *variety* of the plant, resembling that brought from America. *Dr. Balfour*.—Cairngorum. *Mr. Smith*.—Ben-na-buird. *Mr. Watson*.—Cairn Turc. *Mr. A. K. Clarke*.—Brae Riach, head of Dee. *Mr. H. R. Scott*, Advocate, Edinburgh.—Plentiful on the top of Ben Avon. *Mr. Proctor*.—Province of Moray. *Mr. Stables*.—Benvochart, near Inverness, and other parts of the same county. *Hooker's Flora Scotica*.—Hills of Ross-shire. *Mr. G. C. Smith*.

Shrub—flowering in July.

Obs.—This interesting and elegant little shrub with its stems usually buried in moss, clothed with numerous minute thyme-like leaves—which are marked above with a furrow, and beneath with a prominent broad nerve—is found on the higher parts of most of the northern mountains. “We are not certain,” says *Smith*, “whether it was first observed by the Rev. *Mr. Stuart* of Luss, or any of *Dr. Hope's* travelling pupils.” *A. procumbens* has not been found either in England or Ireland, but it abounds in the Arctic regions; and it is not uncommon in Switzerland, as I have been informed by *Mr. Thomson* of Banchory, whose Swiss specimens appear to be larger than our common Scottish ones. *Mr. H. C. Watson* found this species 2850 feet high in Forfarshire; and he says, on Ben-na-buird, it attains 3500, and on Ben Hope, 2600 feet. The same laborious and excellent observer informs me, that he has found it as low as 1460 feet, on Ben Heeal, Sutherland; and that it probably comes down as far as 700 yards in Aberdeenshire; but it is the author's impression that he has gathered it considerably lower. In Switzerland, it is said to be scarcely seen below 6000 feet. It has not yet been detected either on the Strathdon hills; or upon Morven, and other mountains at the head of Cromar; nor am I aware that it ever comes lower down, upon Deeside, than Loch-na-gar. *A. procumbens* may thus be considered an exclusively upland plant; and not one of those pliant species which the mountain flood is apt to snatch from their tempestuous highland homes, and carry away, in its swelling bosom, to a more peaceful lowland bed—wherein they seem to grow and prosper as well as in their own native stations.

GENUS XIV. CONVOLVULUS.*

Calyx inferior, in five divisions. Corolla bell-shaped, with five plaits. Stigmas two. Capsule invested with the calyx; its cells three or fewer; each containing two large roundish seeds.

* The generic name, from an obvious Latin derivation, refers to the twining nature of the species.

SPECIES.

1. *Convolvulus arvensis*. *Small Bind-weed*.

Root creeping far, and difficult of extirpation. Stems numerous, twining or prostrate. Leaves upon stalks, arrow-shaped; lobes at the base, acute; and the summit with a minute bristle or point. Flower-stalks much longer than the leaves; like the stem slightly downy, and bearing two minute bracteas about half-way between the flower and the stem. Flowers sometimes white, but often variegated. They are fragrant and close before rain.

Fields and gardens; not common.—Near Aberdeen, at Nigg, and in a field adjacent to the Mill at the Links.*

Links of Montrose; and rocks of Dysart. *Mr. D. White*, surgeon.—Corn field behind the Hospital, Elgin. *Mr. Stables*.

Perennial—flowering in July and August.

OBS.—There is room for doubt about this being a true native. At least the writer has never seen it indubitably wild, in the tract to which these observations relate; though he has gathered it, apparently in a state of nature, not far from Dundee. *C. Sepium*, distinguished by its large size, and more particularly by the lobes at the base of the leaves being truncated; with the bracteas heart-shaped, and close to the calyx which they enclose, has no claim to a place among our native productions. *C. Soldanella*, an undoubted native of the West, characterized by a prostrate stem, and fleshy kidney-shaped leaves, has never been detected upon the east coast.†

GENUS XV. CAMPANULA.

Calyx superior, of one leaf in five segments. Corolla bell-shaped, withering; the limb in five broad shallow segments. Filaments dilated at the base. Stigma two- or three-cleft. Capsule usually with three cells, bursting in general at the sides.

SPECIES.

1. *Campanula rotundifolia*. *Round-leaved Bell-flower*.

Root-leaves between ovate and cordate, sometimes even kidney-shaped, slightly notched, and upon stalks longer than themselves; soon withering and falling off. The stem-leaves are quite different—being long, narrow, entire, and either sessile or tapering into a short stalk. Flowers in a

* Dr. D. Skene, from the following words, probably found the present species (though he calls it *Convolvulus Sepium*) in the same station, about 70 years ago, viz:—"Hab. ad marginem agri, in y^e Links."

† Since the above was in type, Dr. McNab has informed me of *C. Soldanella* having been found near Arbroath.

loose cluster, drooping, blue (though sometimes white), and upon long slender stalks, each of which has, at its base, an awl-shaped bractea. Corolla ultimately twisted.

Common in dry places; sometimes with white flowers, as in Alford and Lochell. Mr. Watson observed this species in the north of Caithness and Sutherland; and at the height of 850 yards in Clova and Braemar.

Perennial—flowering in July.

2. *Campanula latifolia*. *Giant Bell-flower*.

Stem round, unbranched, several feet high. Leaves roughish, doubly serrated; below, ovate and upon rather long stalks, but becoming sessile and narrower towards the top; those among the flowers being far the smallest. Each flower is upon a separate stalk, at first erect, but turning down when in fruit. Calyx smooth, the segments usually entire. Corolla large, blue or white.

Moist shaded situations; but rare.—Bank of Don, on the north side of the river, a little above Breda in Alford (with white flowers).

In Angus. Mr. Don.—In the Den of the Vane, which the water Noran runs through. *Anonymous*.—Millwood, near Keith. ("With flowers nearly as large as a dram-glass.") *Rev. W. Cowie* and *Mr. Craigie*, surgeon.—Not in Mr. Stables's list of Moray plants; but it is mentioned as a native of that province, upon the authority of the *Rev. G. Gordon*, in *Watson's Outlines of the Distribution of British Plants* (printed for private distribution).

Perennial—flowering in July and August.

3. *Campanula rapunculoides*. *Creeping Bell-flower*.

"Leaves roughish, radical ones heart-shaped, crenate, stalked; uppermost sessile, lanceolate. Flowers drooping, unilateral, in a terminal, bracteate, upright cluster. Calyx reflexed."

Foot of Duninald Den (a wood near the sea), at Usan in the vicinity of Montrose. Mr. A. Balfour.

Perennial—flowering in July and August.

4. *Campanula glomerata*. *Clustered Bell-flower*.

Stem slightly angled, never branched, downy or hoary like the leaves and calyx. Radical and lower stem-leaves either heart-shaped or ovate-lanceolate, stalked; the upper leaves smaller and sessile, the very highest clasping the stem; all of them slightly toothed. The flowers are without stalks, mostly in a cluster at the extremity, and accompanied by

pointed, broad, somewhat heart-shaped bractes; though occasionally they are scattered along the upper part of the stem in small heads and pairs, or even singly. Calyx small. Corolla large, of a fine blue.

On the sea-coast; but not frequent.—Upon rocks a little to the south of Montrose.

Coast between Arbroath and Montrose, very abundant; particularly near Auchmithie, where I picked it with white flowers, as had been done many years ago by Dr. P. Neill. Dr. M'Nab.—Rocks in the neighbourhood of Montrose, as at Usan, Duninald, and St. Cyrus. *Mr. White.*—High coast, near Dysart, 3 miles from Montrose. *Mr. Hercules R. Scott.*—Near Stonehaven. *Dr. D. Skene.*

Perennial—flowering in July and August.

Obs.—Nos. 1, 2, and 4 will be easily distinguished from one another, by the above notices. Having no good specimen, I copy from Smith the preceding description of *C. rapunculoides*—a species with flowers only half the size of the *latifolia*, and which may be said to be characterized by the heart-shaped leaves of the root, and the flowers directed to one side. This species has been admitted not entirely without hesitation; while I have—possibly without an adequate reason—ventured upon refusing a place to *C. patula*, though already established in our ordinary Floras, as growing near Cullen. Moreover, it is the writer's impression that rarely, indeed, throughout Scotland, is any truly aboriginal Campanula to be seen, with the exception of *C. rotundifolia*, *latifolia*, and *glomerata*; and it may be suspected that there are local *English* Floras, which would be improved by a considerable dismemberment in this genus.*

Though the stately *C. latifolia* is not apt to be overlooked, I shall not contradict the statements of Sir W. J. Hooker, that it is "very common in woody glens in Scotland," notwithstanding that it does not entirely coincide with my own opinion. The same eminent botanist has mentioned that the station of *C. glomerata* in Scotland is hilly pastures; but confined, he believes, to the east side, between the Frith of Forth and Montrose. It is certain that this is not an exclusively maritime species, either in England or upon the Continent; and though, by possibility, our hills may be its common *habitat* in Scotland; yet, may it be permitted me to say that, when a very young botanist, I gathered it both in Fife and Angus, but have no recollection of *C. glomerata*, except upon rocks by the seaside. That this species, not long after the middle of last century, extended to Stonehaven, appears from the following memorandum by Dr. D. Skene, which is interesting enough for insertion, chiefly because it shows, that more than one species formerly extended to a spot,

* The name of this genus is from *Campana*, a bell, on account of the usual shape of the corolla.

within many miles of which, they do not now reach upon the same coast; and thus may have a tendency to suggest that the northern limits of species are retiring in a southward direction:—

“Augt. 13, 1764. Comite Dre. Reid, iter meridionale feci, 14 v. 15 mill. passuum, usq. ad Fowlsheugh in comitatu Mearn. plantasque sequentes in veni—*Scandix Pecten* inter segetes prope Dunnottar Castle—*Campanula glomerata*—*Epilobium ramosum* (*hirsutum*) et *Astragalus glycyphyllus*.”

“The roots of several species of *Bell-flower* are said to increase milk in the breasts of nurses; but that is an idle conceit,” says a writer of the last century.* There was, no doubt, far more truth in the old opinion that the *Throatworts*, as they were called, are astringent; and in particular, that a decoction of the root of *C. latifolia*, with the addition of a little red wine and honey, is useful in soreness of the throat and mouth, and in relaxations of the uvula.

GENUS XVI. JASIONE.

Calyx superior, of one leaf, in five segments. Corolla wheel-shaped, in five deep segments. Anthers united at the base. Stigma club-shaped. Capsule bladderly, imperfectly two-celled, opening at the top.

SPECIES.

1. *Jasione montana*. *Sheep's Bit*. *Sheep's Scabious*.

Root tapering, woody. Stems several, a span high. Leaves rough, stalkless, oblong, narrow, bluntish, wavy, and usually entire. The light-blue flowers are in terminating globular heads, which are supported, each upon a long stalk; and surrounded by an involucre of many ovate leaves.

Very rare in the North-east.

Coast of Moray. Shingle ridges, between Spey and Lossie.
Mr. Stables.

Annual—flowering in June and July.

Obs.—The flowers of *Jasione montana* have no little resemblance, in appearance, to those of one or more species of *Scabiosa*. The common account has been here copied, as to the species being a span high and flowering in midsummer; but it may deserve mention,

* These “conceits” seem occasionally founded on, what may be called, an apparent physical relation between the cure and the disease. Thus, *Pulmonaria*, because its leaves had spots like those upon the lungs, was thought useful in pulmonary complaints; and *Lithospermum* was celebrated in Stone, on account of the stony hardness of its seeds—shall I add, that *Saxifraga granulata* got its character as a lithontriptic from its root looking like so many little *calculi*? In the same way, it may be believed that the *Bell-flowers* were supposed useful in deficiencies of the lacteal secretion, owing to the milky juice which the plants contain.

that some of my specimens are much taller, while others fall far below the height alluded to; and that I have observed it in flower, in Cumberland, near Ulsewater, as late as the end of September.

GENUS XVII. LOBELIA.

Calyx superior, of one leaf, in five segments. Corolla of one petal, irregular, two-lipped, cloven on the upper side; the limb in five segments; two of these constituting the upper lip, and the rest, which are larger, forming the lower lip. Anthers united. Stigma hairy. Capsule angular, of two or three cells, bursting at the top.

SPECIES.

1. *Lobelia Dortmanna*. *Water Lobelia*.

Root of numerous whitish fibres. Leaves in tufts, almost entirely from the root. They are short curved and cylindrical, each composed of two parallel tubes. Stem wavy, leafless; terminating in a cluster of drooping alternate flowers, which are white, with a bluish tinge.

Lakes; but not very common.—Aberdeenshire, in Lochs of Drum and Kinnord; and frequent in Sutherland, particularly on the west side.

Loch of Lintrathen, Forfarshire. Mr. Don.—Abundant in a small Lake, close to Loch Brandy, on the hill behind the Inn at Kirkton, Clova. Dr. Balfour.—Loch of Skene, Aberdeenshire. Mr. Dickie.—In various parts of Moray; Lochindorb, Loch Baladren, Loch Lee. Mr. Stables.—Loch Luchairt, Loch Cullen, &c. Ross-shire. Mr. G. Campbell Smith.—North of Sutherland to the east of Loch Eriboll. Mr. Watson.

Perennial—flowering in August.

Obs.—*Lobelia Dortmanna*, with its highly curious leaves, formed, as it were, of a couple of pipes laid side by side, is abundant in the west Highlands, growing chiefly in the shallow edges of clear-bottomed lakes; but in the North-east, it is by no means common. I cannot recollect to have seen it in Kincardineshire; or any part of the extensive eastern district of Aberdeenshire, called Buchan; or in Banffshire. It may, however, be above perceived, that it occurs within a few miles of the east coast at Aberdeen.

GENUS XVIII. VIOLA.

Calyx of five leaves, prolonged at the base. Corolla of five petals, unequal in size; the under largest and running out into a blunt horn. Anthers cohering or contiguous. Seed-vessel of three pieces, forming a single cell, with several polished seeds.

SPECIES.

1. *Viola palustris*. *Marsh Violet*.

Root creeping. Plant stemless; the stalks of the leaves and of the flowers springing direct from the root. The leaves are smooth and delicate, kidney-shaped, slightly notched; generally, but by no means always, pointless. Flower-stalks with a pair of lanceolate scales rather below their middle. Calyx small. Corolla also rather small, bluish-white, with a short rounded spur.

Moist shaded places, both low and high; but not common.—Near Aberdeen; as at Nigg, Belhelvie Links, and Craibston. Occasionally at Alford, in the Haughton woods; and in Buchan.

In Moray. Mr. Stables.—Mountains of Clova, Braemar, and Sutherland; according to Mr. Watson, who observed this species at an elevation of between 700 and 900 yards, in Forfar and Sutherland; and as high as 1350 yards in Aberdeenshire.

Perennial—flowering in April and May.

2. *Viola canina*.* *Dog's Violet*.

Root almost woody. Stem at first wanting, afterwards short, angled, not erect. Leaves heart-shaped, pointed, notched; upon long stalks, at the base of which are the small narrow-lanceolate fringed stipules. Corolla large, dull-blue. Leaves of the calyx acute. Considerably above the middle of the flower-stalk are bracteas, in the form of very small awl-shaped entire scales.

Woods and heathy ground; common.—Near Aberdeen, in Nigg, &c. &c.

Caithness and Sutherland. Mountains of Clova and Braemar, where it was observed upwards of 850 yards high. Mr. Watson.

Perennial—flowering in April, &c.

3. *Viola tricolor*. *Heart's-ease*. *Pansy Violet*.

Stem weak, angled, branched. Leaves oblong, deeply notched, the lower ones occasionally heart-shaped. Stipules deeply cut, the terminating segment largest. Bracteas very minute, and near the summit of the flower-stalk. Corolla of variable size and colour, sometimes shorter than the calyx, but in general considerably longer; the petals yellow, blue, and purple, all marked with dark lines.

* "The epithet *canina* seems to have been given to it, as to the hedge-rose, to express a degree of inferiority or unworthiness, as if a dog were always a less respectable or useful animal than his master."

Banks and cultivated fields; common.—Abundant between Craiglug and bridge of Dee, at Aberdeen. Splendid, in a sunny day, near Leggerdale Inn; but I have seldom seen, in the northern counties, the beautiful banks of *V. tricolor* which are so common in the south of Angus.

Mostly annual—flowering through the summer.

4. *Viola lutea*. *Mountain Violet*.

Viola grandiflora. *Lightfoot's Flora Scotica*.

Stem nearly erect, mostly unbranched. Leaves ovate, notched. Stipules cut into a fingered form, the middle segment largest. Bracteas minute; at the upper part of the flower-stalk. Flowers large, usually yellow with black lines; sometimes blue.

Dry upland pastures.—Greystone, in Alford, but in small quantity; much more abundant in Towie and Glenbucket. On Deeside, in the vicinity of Pananich; Glenmuick; and all the way between Abergeldy and Castletown.

Hill of Dunbarrow, Forfarshire. Dr. M'Nab.—Common (as well as the *variety* with purple flowers) on pastures at the upper part of Glen Clova, where Glen Dole and the Capel Munth separate. Also, found close to the sheiling at the foot of Canlochan Glen, where it joins Caness Glen. Dr. Balfour.—Kirkton, Clova; and in Aberdeenshire 550 yards high. Mr. Watson.—In Moray. Mr. Stables.—Both purple and yellow-flowered kinds together, at Ruthven, in Badenoch. Mr. Smith.

Perennial—flowering in summer and autumn.

OBS.—*V. odorata* (*Sweet Violet*) is probably never found with us wild, and is scarcely an unequivocal native of Scotland; on which account I have been not a little surprised to find Lightfoot and Hooker mentioning it, as if it were a common Scottish species, although, in his *British Flora*, the latter makes a different and more correct statement. Indeed, *V. palustris* is by no means a frequent species, and makes an approach to the *canina*; but, not to mention that the former is at all times a stemless plant, it cannot be called difficult to distinguish its broad, bluntish leaves, and small pale-blue flower, from the large purplish corolla and pointed leaves of *V. canina*. *V. lutea* comes rather near to the more common *tricolor*; and, as has been elsewhere observed, distinct as these species probably are, it is very difficult to define the characters in words. The flower-stalks in *V. lutea* are longer; and the corolla much larger, always greatly exceeding the calyx. The mixture, too, of colours is less, all the petals being usually pale-yellow, though sometimes the whole are purple; still more rarely, some are of the one colour, and the rest of the other; while in *V. tricolor* (following Smith's words), "petals very variable

in size and colour; the odd one broadest and yellow; lateral ones bluish; two upper ones (the flower being always reversed) purple." *V. lutea* appears in a great measure confined to high inland situations. The writer has never met with it, either in Buchan or the Mearns; but he is not prepared to say that it may not occur in these tracts. Indeed, he has never gathered it upon Donside, below Alford; nor does it become frequent before we reach Towie, where the corolla is mostly yellow; while, on the higher parts of Dee, the purple petals form a predominating feature.

No violet but *V. odorata* has a place in our own *Materia Medica*; but various Continental *Pharmacopæias* contain *V. tricolor*, on account of its alleged anodyne effects, and, in France, it is considered useful in diseases of the skin. Perhaps *V. odorata* is not the only species which might be used as a test of uncombined acids and alkalies.

GENUS XIX. VERBASCUM.

Calyx five-cleft. Corolla wheel-shaped, with five usually unequal lobes. Stamens attached to the corolla, often hairy. Seed-vessel of two pieces and two cells.

SPECIES.

1. *Verbascum Thapsus*. Great Mullein.

Stem several feet high, round, large, woolly, winged. Leaves large, long, ovate, entire, excessively woolly, running along the stem. Flowers in a dense spike, golden yellow, with red stamens and a green stigma.

Occasionally upon Deeside; but not to be pronounced indigenous in any instance that I have met with.

Forfarshire; but very scarce. Dr. M'Nab.—On precipitous banks of Dee, near Haugh of Tullich. Mr. Proctor.—Aboyne. Mr. Thomson.—Banchory. Mr. Adams.—Moray, but probably introduced, being found only among ruins. Kinloss; Dundurcus; Elgin Cathedral. Mr. Stables.

Biennial—flowering in July and August.

A liquor prepared by boiling the leaves of *V. Thapsus* in milk has been said to allay cough, and to take off the irritation from piles. Hooker mentions that the flowers, when dried in the sun, give out a fat matter, used in Alsace as a cataplasm in hemorrhoidal complaints.

GENUS XX. HYOSCYAMUS.

Calyx inferior, large, permanent, tubular; swelling below, with five acute lobes above. Corolla funnel-shaped,

divided above into five unequal segments. Capsule contained in the calyx, two-celled, with numerous seeds ; opening transversely by a lid.

SPECIES.

1. *Hyoscyamus niger*. *Henbane*.

Root spindle-shaped. Stem round, tough, woolly towards the top. Leaves sessile or clasping, lanceolate and pointed, sinuated, with sharp lobes. The flowers are without stalks, of a greyish-yellow colour, and much veined. Calyx with spinous teeth, the tubular part enlarging and enclosing the ovate seed-vessel.

Rare, and mostly on the sea-coast.

In the vicinity of Montrose. Anonymous.—St. Cyrus. Mr. D. White.—Plentiful near the Whigs' Vault, Dunnottar. Mr. Templeton, surgeon, and Mr. Chrystall.—In Aberdeenshire, at Rubislaw. Mr. Clarke.—And woods of Kemnay. Anonymous.—Banffshire, near old Castle of Findlater. Mr. Craigie and Dr. Geo. Wilson, Huntly.—Province of Moray. Mr. Stables.

Annual—flowering in July.

OBS.—This species is remarkable for the strong oppressive odour which it exhales, and the singular appearance of the greyish, veined corolla ; nor is it unworthy of notice that the capsules all turned to one side, are shut up within the calyx, and contain a number of small seeds, which find egress by the rounded convex top coming off, like the lid from a soap-box. At first, some doubt was entertained, whether *H. niger* was really indigenous in the North ; but from a recollection of myself gathering it in Fife, unequivocally wild, and from the information which I have received, it may be considered pretty certain that it is a true native of the coast of Angus and Mearns. The stations in Aberdeen, Banff, and Moray, are, however, liable to suspicion.

From *Hyoscyamus niger*, medicinal preparations of no small importance are obtained. Opium, a similar agent which, when viewed in all its bearings, is, perhaps, the most valuable remedial substance, derived from any of the kingdoms of nature—literally as it were embodying, in its varying effects, the mercurial qualities attributed to the messenger of the Gods ;

“Dat somnos adimitque et lumina morte resignat”—

is however liable to the objection that, while it usually tranquillizes and lulls to sleep, it in no very few instances rather disturbs and produces irritation. The preparations of *Hyoscyamus*, according to my experience, are the best substitute for opium which we have ; possessing in no small

degree its useful qualities, without causing the bad effects, fairly attributed to that medicine. There can, however, be no doubt, that in large doses, Hyoscyamus is a decided poison. Dr. Christison, in his work on Poisons, (2d Edition, 648) observes, "In a treatise on vegetable poisons, Mr. Wilmer has related the history of six persons in a family, who were poisoned by eating, at dinner, the roots of the Hyoscyamus by mistake instead of parsneps. Several were delirious and danced about the room like maniacs, one appeared as if he had got drunk, and a woman became profoundly and irrecoverably comatose. Emetics could not be introduced into the stomach, stimulant clysters had no effect, external stimuli of every kind failed to rouse, and she expired next morning at six. The roots, in this instance, were gathered in the winter time—a fact which does not quite coincide with the conclusions to be drawn from Orfila's experiments, that the plant must be in full vegetation, before its energy, as a poison, is considerable."

GENUS XXI. ATROPA.

Calyx inferior, of one leaf, with five segments. Corolla bell-shaped; its lobes five, nearly equal. Stamens distant. Anthers heart-shaped. Berry globular, two-celled, placed in the enlarged permanent calyx.

SPECIES.

1. *Atropa Belladonna*. *Dwale*. *Deadly Night-shade*.

Root fleshy, creeping. Stem herbaceous, erect, two or three feet high. Leaves often in twos, ovate, pointed, entire, unequal, and upon short stalks. Flowers purple, solitary, drooping, stalked. Berry black and shining, surrounded by the calyx.

Rare; and scarcely indigenous.

In Bonnington Den, near Maryton, two miles south from Montrose. *Dr. Balfour*.—Kinloss Abbey, in Moray. Mr. W. A. Stables.

Perennial—flowering in June.

Obs.—"Whole plant fetid when bruised, of a dark and lurid aspect, indicative of its deadly narcotic quality. * * Berry, the size of a small cherry, sweetish, and not nauseous, so that children have often been tempted to eat it to their own destruction."—*Smith*. The term *Belladonna* signifies a beautiful woman in the Italian language, and was given to this plant in consequence of the ladies using its berry in the composition of a paint for the face.

Upon one occasion, as many as 150 soldiers were poisoned,

near Dresden, with the berries of *Belladonna*; and there can be no doubt that they are (like the root and juice of the leaves) a dangerous poison, though their activity seems very variable. At least, Sir J. Smith observes that half one of the berries is said to have been fatal; while, on the other hand, Dr. Christison alludes to an instance wherein a young man took a pound of them and yet recovered. The following unassisted case of poisoning by *Belladonna*, particularly as it came under the personal observation of Sir John Hill, may deserve to be inserted:—

“ I saw one unhappy instance, in the year 1743. A labourer found it in the park of a nobleman, where he was repairing the pales, and he eat heartily of the berries, and gave some to his children. The symptoms came on in the following manner:—The man, after two hours, grew light-headed, giddy, and unable to stand; but not thinking of the cause, sat down to his supper. He drank greedily, but could scarce swallow any thing solid. He went to bed, and presently grew worse. He complained of a dreadful pain in the breast and difficulty of breathing. It was about five in the afternoon he eat the berries. These symptoms came on between ten and eleven at night, and at twelve, seven hours from the eating of them, he fell into the most dreadful ravings. Once in a quarter of an hour, his senses would return for a moment; but he relapsed immediately, and every time with more violence. During the intervals of reason his breath was as difficult, and he complained of a dreadful tightness across his breast. Toward morning, the ravings went off, but he became foolish. He was faint, breathed with difficulty, and stared and slabbred, answered foreign to questions, and seemed one born an idiot. All this time he was affected with a most painful and violent strangury; but, by degrees, this went off, and he recovered without the help of medicines. Before the country apothecary could be had, he was growing better; and he, not knowing what to advise, left the family to their own management. The children both died in the course of the night. * * * This I have seen.”
—*British Herbal*, 329.

Upon the authority of Buchanan, several writers upon this plant notice, that a victory of Macbeth over the Danes was obtained chiefly by mixing it with a donation of wine and ale sent by the Scots to Sueno (or Swain), king of Norway, during a truce. They sent “both wine pressed out of the grape, and also strong drink made of barley-malt, mixed with the juice of a poisonous herb, abundance of which grows in Scotland, called *Sleepy Night-shade*.” The description of this plant may be given in the original words—

“Caulis ei major bipedali, in ramos superne diffunditur, folia latiuscula acuminata exteriore parte, ac languide virentia; acini præ-

grandes, ac nigri, cum maturuerunt, coloris, qui e caule sub axilla foliorum exeunt; sapor eis dulcis et propemodum fatuus."—*Rerum Scoticarum Hist.* Lib. VII.

Atropa Belladonna furnishes an important medicinal preparation, one of whose most remarkable and useful effects is dilatation of the pupil. Perhaps one of the most protracted instances of this effect has occurred to the writer of these remarks, who was some years ago consulted by an individual in whom one eye was blind, while in the other, vision was so impaired that he only saw when under the effect of *Belladonna*, as light only then could reach the optic nerve. For the uncommon space of six or seven years this influence was in a great measure continued; though latterly, I understand, the indulgence was mainly reserved for fairs and feasts and other remarkable occasions. An English opium-eater, I recollect, speaks of carrying happiness in his waistcoat pocket; and, in the same way, the individual referred to might, well, consider vision in the light of a portable commodity.

GENUS XXII. SOLANUM.

Calyx inferior, in five segments. Corolla wheel-shaped; the limb turned back, in five deep segments. Anthers opening at the summit, by means of two pores. Berry roundish, of two or more cells.

SPECIES.

1. *Solanum Dulcamara.* Bitter-sweet. Woody Nightshade.

Stem twining, weak, though of a woody texture. The leaves are entire, but differ in form, some being heart-shaped, particularly at the lower part of the stem; others, especially towards the summit, with lobes at the base, after the manner of a halberd. Flowers purple, in clusters, "with two round, green spots at the base of each segment." Anthers large, yellow. Berries oval; when ripe, rather large and of a fine red colour.

Not common.—At Aberdeen, in one or two places, adjacent to the west end of North Street; and at Buxburn, a few miles off. In Angus, at Arbroath.

Tore of Troup, and Den of Auchmedden, and in several other parts of Buchan. Anonymous.—Moray. Mr. Stables.

A shrub—flowering in July.

Obs.—Few plants have been introduced into these pages with so little title to be reckoned among our natives as the present, which,

indeed, has no appearance of being really indigenous even as far south as the Lothians ; beyond which I have not had an opportunity of observing it. The common Potato belongs to the present genus, and *Solanum nigrum* is another species (characterized by a herbaceous stem and ovate leaves), which, however, is not known to me as occurring in the North ; and, indeed, it may be suspected that the statement, by both Lightfoot and Hooker, of its being frequent in Scotland, would deserve to be revised.

Bittersweet was once reckoned a powerful medicine, as well as an active poison ; but Dr. Christison, on the authority of M. Dunal, observes, if it have any power at all, it must possess too little to be entitled to the name of a poison. These berries, however, are still called “poisonous” and “very poisonous” in our most recent works on botany. Upon this subject, the following words (from *Hill's British Herbal*, 328) comprise all that need be said :—

“ Upon the whole, this genus has a much worse character than it deserves. *Nightshade* (*Solanum*), in general, is accounted poisonous ; but, as we have shown, with respect to most of the species, there is little reason for such a character. This opinion seems to have arisen from confounding the plant next to be described (*Bel-ladonna*) under the same name. That is, indeed, poisonous, and having, by a latitude of speech, been called *Nightshade*, all the rest have been supposed of the same qualities.”

GENUS XXIII. ERYTHRÆA.

Calyx inferior, five-cleft. Corolla funnel-shaped, with five deep segments, soon withering. Anthers twisting as the pollen ripens. Style erect. Stigmas two. Capsule linear, two-celled.

SPECIES.

1. *Erythræa littoralis*. Dwarf-tufted Centaury.

Chironia littoralis.—*English Botany*.

Stem from two to six inches high, simple or branching. Leaves narrow, oblong, ovate, obscurely three-ribbed ; most of them at the bottom of the stem. Flowers reddish, superior, upon rather short stalks, arranged in a kind of head or panicle. “Calyx as long as the tube, its segments combined below.”

On the coast ; but rare.

Gathered near Aberdeen on the sea-coast, in the parish of Nigg, Kincardineshire.—*Mr. Chrystall*. Coast of Moray, west

from Burghead (where it was found by the Rev. G. Gordon).
Cullen sands. *Mr. Stables.*

Annual—flowering in July.

OBS.—It may be perceived that the writer has never gathered the present species in the north-east of Scotland, and he was not easy to convince that it has been met with in the vicinity of Aberdeen; nor was he altogether satisfied of this, until Mr. Chrystall had the kindness to transmit to him a specimen found at Nigg. He has, however, found this species, or one nearly allied to it, though differing much in size, in Fife, Lancashire, and Belgium; yet he does not consider himself well enough acquainted with the genus, for forming an opinion upon the question, whether or not the British plants belonging to it, are in reality but *varieties* of one species.

Centaury was once celebrated in complaints of the stomach, and it is said to be still prized by rustic practitioners in England. A modern French writer observes, "*La petite centauree est le meilleur apres la gentiane de nos febrifuges indigenes; c'est un amer tres bon dans les fiebres intermittentes simples, et un bon stomachique.*"

GENUS XXIV. SAMOLUS.

Calyx inferior, its margin in five segments. Corolla funnel-shaped; five-cleft, with small intermediate scales. Capsule globular, of one cell, with five recurved valves at the summit where it opens.

SPECIES.

1. *Samolus Valerandi.* *Brook-weed.* *Water Pimpernel.*

Stem erect, about a foot high. Leaves oval, entire, glabrous, blunt, alternate; the upper ones nearly sessile, those below tapering into a stalk. Flowers white, in long loose clusters; each of the stalks having a little scale, at an abrupt bending near its middle. Capsule globular, embraced by the calyx. Seeds numerous, blackish, and angular.

In Moray; at the side of a ditch, between Kinneddar and Gordonstown. *Mr. Stables.*

Perennial—flowering in July.

OBS.—This species is said to be found in many parts of Britain, and, indeed, in every quarter of the globe. There can, however, be no doubt that it is a very rare production in the north-east of Scotland, as I have no account of its occurring there, except from *Mr. Stables.*

GENUS XXV. LONICERA.

Calyx superior, small, with five teeth. Corolla of one

petal, tubular, irregular. Filaments inserted into the upper part of the tube. Berry of one or more cells, containing several seeds.

SPECIES.

1. *Lonicera Periclymenum* *Honeysuckle. Woodbine.*

Stem round and twining. Leaves ovate (in my specimens slightly downy, like the stem) and upon short stalks, but those of the summit sometimes almost meeting. Flowers fragrant, yellowish-red, gaping, collected into an ovate head, which terminates the stem. Calyx five-toothed. Tube of the corolla long. Berry dark red and globular.

Occasionally upon small rocks, particularly in the neighbourhood of streams. Near Aberdeen; as at Bridge of Don; upon the south side of Dee; and in the vicinity of the Suspension Bridge. Among the large stones not far from the Cluny Toll; and upon Donside, in Alford. Also, in Buchan; Banffshire; Moray; and probably in many parts of the North.

Shrub—flowering throughout the summer and autumn.

GENUS XXVI. RIBES.

Calyx superior, somewhat coloured, five-cleft, bearing the petals and stamens. Petals five, from the rim of the calyx. Style divided. Berry globular, juicy, one-celled, many-seeded.

SPECIES.

1. *Ribes petraeum.* *Rock Currant.*

Stem erect. Leaves more or less five-lobed, considerably downy beneath, and upon stalks of varying length. Flowers very slightly concave; in clusters, which are slightly downy, and at first erect, but in fruit they become pendulous. Bractees short. “Berries globose, bright red, acid.”

Mountainous woods and river sides; rare.

Angus-shire; in woods near Airly Castle, by the river side. *Hooker's Flora Scotica*.—Strathdon, in Aberdeenshire. Mr. Proctor.—Banks of the Spey, above Grantown. Mr. Stables.

Shrub—flowering in May and June.

OBS.—The writer has never met with an undoubtedly wild *Ribes* in any part of Scotland, nor has he accounts, upon which he places reliance, of any but the *Rock Currant* being indigenous in the North. Whether the other species, inserted in our ordinary books, have a good title to be reckoned natives of more southern parts of the kingdom, he has no means of judging.

GENUS XXVII. HÉDERA.

Calyx minute, with five teeth. Corolla of five oblong petals, enlarged at the base. Berry with three to five seeds, crowned by the calyx.

SPECIES.

1. *Hedera Helix*. *Common Ivy*.

Stem either trailing and barren, or climbing and bearing flowers. Leaves with three to five angular lobes, leathery, shining, stalked; those upon the flowering branches ovate and entire. Flowers in a simple umbel. Berries blackish.

Upon rocks, ruins, and trunks of trees; not uncommon.—Near Aberdeen, in various places; as banks of Don, near the Old Bridge; rocks near Craiglug, upon the south side of the river; Rubislaw; Corbie Pot, &c. Also, upon the Kincardine coast, between Stonehaven and Portlethen. Rocks in the upper part of Strathdon. Likewise, in Buchan; Banffshire; Moray; Ross (where it seems more than usually common); and Sutherland.

A shrub—flowering in the end of autumn.

Obs.—This species, when in the climbing form, attaches itself by means of dense tufts of whitish fibres. Formerly the *Creeping Ivy*, without flowers and all the leaves lobed, was reckoned a different plant from the *Climbing Berried Ivy*, with its upper leaves undivided; and I understand that our own country people—probably with a similar view—sometimes speak of *Creeping Ivy* and *Seeding Ivy*.

Hooker observes that an ointment made of the leaves of *Hedera Helix* is much valued, by the Highlanders, as a cure for burns, and the author of "*Nouvelle Flore des Environs de Paris*," observes, under this species, "*Les feuilles de lierre s'appliquent sur les cauterés pour y maintenir la fraîcheur, et en entretenir la suppuration. Les baies sont purgatives et vomitives.*" But, indeed, the most of all this may be found in "Old Gerarde," who, in his turn, probably derived it, directly or indirectly, from the ancients: "The leaves of *Ivy* are a remedy against burnings or scaldings. * * * They are laid upon little ulcers, made in the thighs, legs, or other parts of the body, which are called issues; for they draw humours to those parts."

GENUS XXVIII. GLAUX.

Calyx coloured, bell-shaped, in five deep obtuse segments.

Corolla wanting. Capsule globose, with one cell of five pieces. Seeds five.

SPECIES.

1. *Glaux maritima*. *Sea Milkwort*. *Black Saltwort*.

Root of many tortuous fibres. Stems a few inches long; some lying on the ground, and some tolerably erect. Leaves small, oval, and somewhat fleshy. Flowers elegant, flesh-coloured, reddest at the base, sitting in the bosom of the leaves. Filaments purplish.

In the vicinity of the sea; not uncommon. At Aberdeen, on the Old-town links; near the Suspension Bridge; and at the Cove. The following stations have been observed by myself, or received from others.—Angus coast; edges of the Montrose Basin; St. Cyrus; Gourdon; Buchan; Banff; Moray; Sutherland.

Perennial—flowering in June and July.

GENUS XXIX. GENTIANA.

Calyx inferior, four-or-five-cleft. Corolla tubular at the base, divided above into four or five segments; destitute of nectariferous glands. Filaments attached to the tube. Styles sometimes combined, having the appearance of a single bifid style. Capsule of one cell in two pieces, with numerous small seeds.

SPECIES.

1. *Gentiana campestris*. *Field Gentian*.

Stem much branched and bushy. Leaves sessile, lanceolate, acute, three-ribbed. The calyx is four-cleft; two of the segments being large, and, as it were, enclosing the two smaller divisions. Corolla bluish or nearly white, salver-shaped, four-cleft, bearded in the orifice.

Dry pastures, rather common; particularly in upland and maritime situations, and on the banks of rivers.—At Aberdeen in the vicinity of the coast, occasionally all the way from Belhelvie to the Cove. Abundant enough on the higher parts of Don; as Towie, Alford, and Keig. Also, in Glenmuick; and in Banffshire.

Angus-shire. Dr. M'Nab.—Common in the Mearns. Mr. Chrystall.—Lochlee. Mr. Lyall.—Kirkton Clova; and Castleton Braemar. Mr. Watson.—Abundant in Glen Callader (with white flowers). Mr. A. K. Clarke.—Corgarff. Mr. Proctor.—Coast of Buchan. Rev. G. Gardiner.—Not uncommon in Moray. Mr. Stables.—Caithness and Sutherland. Mr. H. C. Watson.

Annual—flowering in Autumn.

2. *Gentiana Amarella. Autumnal Gentian.*

Resembling the last, but the segments of the calyx are nearly equal, and five in number. The corolla is five-cleft; with a whitish tube, a purplish-blue limb, and a fine erect purplish fringe in the throat.

Dry pastures; mostly in the neighbourhood of the sea. In the north of Sutherland; and on the west coast at Sandwood, a few miles from Cape Rath.

Abundant on the *Common* at Arbroath. Dr. M'Nab.—Aberdeenshire coast. Anonymous.—Province of Moray; as in pastures at St. Andrew's and Calcots; Inverugie lime quarry; near mill-pond, east of the new manse of Duffus; Westfield. Mr. Stables.—North coast of Caithness. Mr. Watson.

Annual—flowering (according to Hooker) from April to June, and often through the whole summer and autumn.

3. *Gentiana nivalis. Alpine Gentian.*

Plant smooth, from one to four inches high or more; with a single flower upon each of the few branches. Leaves small and oval. Calyx with five teeth, and as many brownish angles. Corolla funnel-shaped, bright blue; five-cleft with small notched segments between the larger ones.

Mountains of Angus; rare.

At the top of Canlochan Glen, head of Glen Isla, upon rocks well marked by the white veins of quartz which intersect them in different places, and having at their summit a patch of snow that generally remains during the whole year. In this situation, the plant is associated with *Erigeron alpinus* and *Carex atrata*. I have also gathered it upon the north side of Canlochan Glen, along with *Veronica saxatilis* and *alpina*. Dr. J. H. Balfour.

OBS.—The 1st and 2d species, though not a little similar, are sufficiently separated by the very unequal segments of the calyx in the former, wherein, too, the flowers are rather larger. *G. campestris* seems to be one of those species which are common enough on the coast, as well as in upland situations, but far less frequent in the intermediate region. In *Anderson's Guide*, *G. Amarella* is mentioned among plants found on the east coast of Scotland, almost exclusively; but it is certainly not uncommon in some places in the west and north of Sutherland, while, so far as my own observation goes, it is altogether wanting on the far greater part of the east coast.*

* I observe in the same list *Primula veris*, and *Arenaria verna*; both of which are rather abundant in Aberdeenshire, more than 50 miles from the east coast.

The limited and exclusively alpine stations of *G. nivalis*, render any additional account of its characters little necessary. This species, according to Dr. Graham, varies from a simple stem scarcely a quarter of an inch high, to one greatly branched and six inches in height; but always with flowers of equal beauty and not differing proportionally in size. "The sparkling of this most rare and lovely gem (says the same Professor, in *Jamieson's Journal*, October, 1832), among the scanty mountain herbage, cured me of hunger and thirst, and made me forget that I was gathering it at the risk of my neck." Gerarde also, in his own way, expresses his admiration of an allied species of Gentian, whose flower he says, "*seems to exceed blueness itself.*" It may be added that, on the mountains of Switzerland, as I understand from an accomplished friend, *G. nivalis* is a delightful sight.

Annual—flowering in August.

It is probable that a pure bitter *Tincture* or *Dram* might be conveniently got from steeping *G. campestris* in spirits; and, by pouring boiling water upon the plant, a safer draught would, doubtless, be procured, which might be an advantageous substitute for certain stomachics, at present used by our country people.

GENUS XXX. CUSCUTA.

"*Calyx* 4-5 cleft. *Cor.* campanulate, 4-5 lobed. *Caps.* bursting all round transversely at the base, 2-celled, with the cells 2-seeded—*Parasitical leafless plants, with long twining filiform stems.*"

SPECIES.

1. *Cuscuta Europæa.* Greater Dodder.

"Flowers sessile, corolla 4-5 cleft, without any scale at the base of the stamens, stigma simple.

Stems very large, red, having small tubercles and papillæ, which act as roots. Flowers clustered, of a pale yellowish rose-colour."

Nettles, flax, &c. very rare.

Forfarshire. Mr. Don.—Near Aberdeen (by Mr. Alexander Smith). *Smith's English Flora*.—Printfield. Anonymous.

Obs.—The above account of *Cuscuta*, generic and specific, is derived from Hooker's British Flora. It may be perceived that no northern specimen of this parasite has been gathered by the author, or presented to him; but there is no doubt that it has been met with in this quarter. *C. Epithymum* a smaller species, with a little scale at the base of each stamen, may also, it is possible, occasionally occur.

Annual—flowering in autumn.

APPENDIX TO PART I.

I.—NOTES FROM THE ANCIENTS, ON CERTAIN INDIGENOUS SPECIES.

By FRANCIS ADAMS, Esq.

Translator of the Works of Paulus Ægineta, &c. &c.

THE following brief notices from the Works of the Ancients regarding those plants in the *Northern Flora*, which held a place in their Herbals, it is to be feared, will not be looked upon as being a very flattering specimen of the knowledge possessed by the Greeks, Romans, and Arabians, on the subject of the *Materia Medica*. It must be attended to, however, that as few of the medicinal plants which grow in the classic regions of Europe and in Asia are indigenous in Scotland, we have had no opportunity of giving their descriptions of the properties of those articles which the ancient physicians held in most esteem. We may mention, as a proof how very industrious the Rhizotomi and Medical Botanists of antiquity were, in investigating the sanative powers of the vegetable kingdom, that, in the *Materia Medica* of Dioscorides, who flourished towards the end of the first century of the Christian era, about 700 plants alone are described. To this list, the Arabians added a few articles of considerable importance; but, upon the whole, the science of the *Materia Medica* continued in nearly the same state as it was left by Dioscorides, until it was enriched by means of the geographical and scientific discoveries of late years. The old English Herbals and Pharmaceutical works of our forefathers are, almost entirely, made up from the writings of Dioscorides and Avicenna.

F. A.

Hippuris vulgaris. It would appear to be the ἵππων of Theophrastus (H. P. iv. 11). The two species of ἵππουρις, described by Dioscorides and the other medical authorities, are evidently to be referred to the genus *Equisetum*, probably to the *fluviatile* and the *limosum*.

Fraxinus excelsior. According to Sprengel, it is the μέλα of Homer. Dioscorides recommends the *Fraxinus* for the cure of the viper's bite, in a cataplasm, and also for leprosy. The old English Herbalist, Culpepper, gives a similar account of its virtues.

Veronica Anagallis. It would appear that it is the σίον of Dioscorides, who makes it to be lithontriptic and diuretic. There can be no doubt that, as it is a vegetable aromatic, it is, to a certain degree, diuretic.

Lemna minor. The commentators on Dioscorides make it to be his Marsh Lentil (M. M. iv. 87). He says, it is possessed of refrigerant powers, and recommends it externally for the cure of inflammations, erysipelas, and gout.

Cladium Mariscus Sprengel agrees with Cordus in referring the *ὀλδοσχοῖνος* of Dioscorides to this plant (M. M. iv. 25). It was held to be astringent and diuretic.

Valeriana officinalis. It can scarcely admit of a doubt that it is the *φῶν* of Dioscorides and the other medical writers of antiquity. All the ancient authorities praise it for its diuretic and emmenagogue properties.

Iris Pseudacorus. It is generally acknowledged to be the *ἄκορος* of Dioscorides, who calls it calefacient, and recommends it in strangury and other complaints.

Scirpus palustris and *lacustris.* Some of the species of *σχοῖνος* described by Dioscorides are most probably to be referred to these. (See Sprengel ad Dioscor. iv. 52.)

Arundo Calamagrostis vel *Calamagrostis epigejos*, Roth. It is the *καλαμάγρωστις* of the ancient medical authorities.

Arundo phragmites. It is the *φραγμίτης* of the ancient writers on medicine. Dioscorides recommends these reeds principally in external applications, as refrigerants and paregorics.

Triticum repens. It is decidedly the *αγρωστις* of Theophrastus and Dioscorides.

Lolium perenne. Without doubt it is the *φῶνιξ* of Dioscorides (iv. 43), who recommends it as an astringent in diarrhœa and internal hemorrhage.

Lolium temulentum. Theophrastus describes it by the name *ἄρα* (H. P. ii. 5, 8).

Galium verum. This would seem to be the *γάλιον* of Dioscorides; although it is not partial to marshy situations as he represents. He mentions that it was used for coagulating milk, in place of rennet. He further recommends it in a cataplasm for burns, and to stop hemorrhages (M. M. iv. 94).

Galium aparine. It is the Aparine of the Greek medical authors, and the Lappa of Virgil. Dioscorides recommends it, in wine, for the bites of vipers, and of the venomous spiders called *phalangia*.

Plantago major and *lanceolata.* These two species are described pretty accurately in the Herbal of Macer Floridas, and it appears to be certain that they are the two species of *ἀρνόγλωσσος* described by Dioscorides. The Plantain has, in all ages, been celebrated as a vulnerary.

Plantago coronopus. It is the *κορωνόπους* of Dioscorides and the ancient medical authors.

Parietaria officinalis. Without doubt it is the *ελξίη* of the Greek medical authors, who recommend it as an external application for the cure of erysipelas and other inflammatory complaints.

Alchemilla arvensis. It is the same as the *Alchemilla aphanes*, first described accurately by Lobelius. It has the French name of *Percepier*, and hence, perhaps, the English name *Parsley piert*. It is further called *Parsley break-stone*, and hence also, by a strange corruption, it is named *Parsley brixton*, by a writer in Mr. Guthrie's late publication on the diseases of the

bladder. The renowned Nicholas Culpepper declares of it, that "its operation is very prevalent to provoke urine, and to break the stone." And "a modern, mightier far," Mr. Watt of Old Deer, has assured the writer of this, that he has often proved the virtues of the *Parsley piert* in stranguries and other affections of the bladder; and, in particular, that he has known the infusion act like a charm in excessively fetid urine.

Potamogeton natans. This, in all probability, is the first species of the two described by Dioscorides (M. M. iv. 98), who recommends it, as a refrigerant and styptic, in prurigo and in old spreading ulcers.

By the way, modern Botanists have fallen into strange mistakes about the gender of this word. Thus Sprengel, in his History of Botany, makes it masculine, and Hooker, in his *Flora Scotica*, makes it neuter. Now, it so happens that the word is unquestionably feminine in Latin, as is proved from the following passage in the N. H. of Pliny: "*Potamogeton adversatur et crocodilis: itaque secum habent eam qui venantur. Castor hanc aliter novorat,*" &c.—(Lib. xxvi. c. 33. ed Hardouin.)*

Myosotis palustris. This is clearly the second of the two species noticed by Dioscorides (M. M. ii. 214), who gives a pretty correct description of it, comparing its flower to that of the *Anagallis cærulea*. He merely states of its medicinal properties that it cures *fistula lachrymalis*.

Lithospermum officinale. It is briefly noticed in the M. M. of Dioscorides, who recommends it as possessing lithontriptic and diuretic properties. Pliny, in describing this plant, bursts into raptures of admiration at the splendour of the leaves and the wonderful phenomenon of seeds of a stony hardness being produced in a vegetable.—(H. N. xxvii. 74).

Anchusa sempervirens. We notice this merely to say that it is *not* any of the three species of *Ἀγχούσα* described by Dioscorides, and the other ancient writers on the M. M. The Alkanet, so famous in ancient as in modern times as a dye, is the *A. tinctoria*.

Cynoglossum officinale. This plant occurs in the M. M. of Dioscorides (iv. 127), who recommends it externally, mixed with old hog's lard, for the bites of dogs, alopecia (*porrigo decalvans*), and burns; and internally with wine, as a laxative. The English Herbalist, Culpepper, assures us that it not only possesses all the virtues ascribed to it by Dioscorides, but further, that "he cured the biting of a mad dog with this only medicine." With respect to the etymology of the word, he says "it is called Hound's Tongue, because it ties the tongues of hounds; whether true or not I never tried."

Symphytum officinale. There can be no doubt that it is the second species of *σύνφυτον* noticed by Dioscorides (M. M. iv. 10).—All the Greek and Arabian authorities concur in recommending it internally for the cure of hæmoptysis, and externally as an application to recent wounds. In like manner, Dr. Hill calls it a famous vulnerary, both internally and externally. Culpepper, as usual with him, follows the authority of Dioscorides.

Echium vulgare. It has been generally acknowledged as the *ἐχίον* of Nicander and Dioscorides, but, according to Sprengel, this is a mistake, since the flowers of the *Ech. vulg.* are blue, whereas Dioscorides describes those of the *ἐ.* as being purple. It is to be remarked, however, that the Greeks used the terms *πορφύρεος* and *πορφυροειδής* in a loose manner to other colours be-

* It will be perceived, under this genus, that the author has adopted Mr. Adams's opinion. In fact, general principles, as well as the authority of Pliny, may be said to be in favour of *Potamogeton* being a feminine word.—A. M.

sides purple, and more especially to the *dark-blue* colour of the sea, which would not be inapplicable to the colour of the flowers of the Viper-bugloss. It was given for the cure of venomous animals.

Menyanthes trifoliata. This is briefly noticed by Theophrastus under the name of *μήνανθος* (H. P. iv. 11), and in the *Geoponics*, by that of *τριφυλλος*. Dodonæus advanced the opinion that this plant is the *ισοπυρος* of Dioscorides (M. M. iv. 119), but, as Sprengel remarks, its botanical characters do not well agree with those of the *Isopyrum* as given by Dioscorides. At the same time, it must be observed that Dr. Hill speaks of the *Buckbean* as being serviceable in the same class of diseases for which Dioscorides recommends the *Isopyrum*, namely, affections of the chest; and, I may add, from my own knowledge, that the Rural Empirics in the North of Scotland still give it in Phthisical complaints.

Anagallis arvensis and *A. cærulea*. These two species are accurately described by Dioscorides, Galen, and most of the ancient writers on the M. M. The Scarlet Pimpernel has been celebrated, both in ancient and in modern times, as an application to the bite of the viper, and a few years ago it was much cried up in Germany by Bruck for the cure of Hydrophobia. Paulus Ægineta is most probably correct in stating that it is possessed of slightly heating and attractive powers. I do not find that any of the ancient authorities speak of it as being beneficial in the cure of hysterical and convulsive complaints, for which Dr. Hill says it has been greatly commended. The Pimpernel has been celebrated in prognostications of the weather—"Closed is the pink-eyed pimpernel."

Viola odorata. This, without doubt, is the *ζων* of Dioscorides and of the Greek poets. It was used principally in external applications as a refrigerant.

Verbascum Thapsus. According to Fuchsius and Sprengel, this is unquestionably "the white Female *Phlomis*" of Dioscorides (M. M. iv. 122). The ancient authorities commend its root both internally and externally, as an astringent. Dioscorides says that when given in wine it cures Diarrhœas.

Erythræa Centaurium. There is every reason to believe this to be the Lesser Centaury of the ancient physicians, who reposed great confidence in it—more especially Galen, who wrote a treatise on its medicinal powers. It was greatly famed for the cure of Hydrophobia. Serapion and Mesue commend it in the form of a potion; and in clysters for the cure of Sciatica.

Lonicera Periclymenum. This is the second species of Cyclamen described by Dioscorides (M. M. ii. 194), who recommends it particularly as a diuretic and laxative, in enlargements of the Spleen.

Hedera Helix. The three varieties of the Ivy described by Dioscorides and other ancient authors are all referable to this species. Its juices are acrid and astringent, and hence it was recommended for the cure of Diarrhœa, and other internal complaints. But it was more particularly celebrated in external applications for the cure of burns and ill-conditioned ulcers.

2.—OBSERVATIONS
ON
THE AGRICULTURAL PROPERTIES
OF
NATIVE PLANTS.

BY THE
REV. J. FARQUHARSON, F.R.S.

DR. MURRAY, before the announcement of his intention to publish a Flora of the northern part of Scotland, having applied to me to furnish him with the result of the observations I have made of the use of native plants especially the grasses, in relation to agriculture; I feel that I have been laid under too deep obligations to him for fidelity in his professional capacity, as a medical practitioner at one time resident in my parish, not to comply with his request. What follows does not, however, pretend to form any systematic or complete treatise upon the grasses, but only to present the result of the desultory and incidental observations I have made on some of the species which are common in this part of Scotland, and which I have observed to form the staple of our most valuable old pastures; and, in respect of a few species only, to give the result of actual experiment in their cultivation.

The grasses form a great natural order of plants, more or less abundantly dispersed over almost all the lands of the globe. "They yield," says Sir James E. Smith, "more sustenance to man and to the larger animals than all the rest of the vegetable kingdom together." The natural order includes not only the plants which chiefly form our pastures and hay crops, to which, provincially, we limit the name *grass*; but, in the arrangement of botanists, it comprehends also the plants which form the grain crops, as our oats, barley, rye, and wheat. In respect of these last, however, it is not proposed to enter into any detail. It is to the grasses, which are cultivated for hay and pasture for cattle, that our notices are chiefly to be directed. This branch of husbandry is of more recent introduction than that of grain; and there are yet many imperfections and deficiencies in conducting it, which a proper attention to the habits and qualities of our native grasses, and the judicious employment of some of them in cultivation, may do much to correct and supply.

According to the most prevalent practice in this district, only three plants are cultivated for hay and pasture, viz.—the *Lolium perenne* or Ray-grass, the *Trifolium pratense* or Red Clover, and the *Trifolium repens* or White Clover. These are generally sown alike on all kinds of soil; and as well on land that is intended to remain many years in grass, as on that which, in the practice of the common alternate husbandry, is to be only three years in that state. It is very true that, for the three years common in the alternate husbandry of this district, no plants better adapted for hay the first year and pasture the two next, could be chosen for the richer and drier lands than these three in use; and the excellent success which attends their cultivation, on rich dry lands which continue only three years in grass, is unquestionably one great reason why they are trusted to, as being all that are necessary on other soils; and also for perennial pasture. But the Red Clover is only a biennial, and of course fails in the two pasture years. The Ray-grass is the

native of a dry soil. It does not live in damp land generally longer than for the first year, which is devoted to hay; so that, of the three plants sown, only one, the White Clover, remains for the pasture years in the damp land. On such land, we accordingly observe the pasture (however rich the soil and productive of heavy crops of oats, and even of barley) very inferior. Two of the plants sown having died out, the surface is left extensively unoccupied by those of useful produce, and is taken possession of by hurtful weeds which the cultivator finds to be very troublesome afterwards. The *Cnicus arvensis* or Field Thistle, the *Prunella vulgaris*, and many other useless and injurious plants—among which the *Holcus mollis* or Creeping Soft Grass, a couch or remack the most difficult of extirpation, is often one—are seen taking possession of the vacant surface, and the farmer not only loses the crop of the year, but incurs great additional labour and expense in afterwards cleaning his land. The Ray-grass fails, also, often in the second, and almost invariably in the third year, even on the dry lands, if they are of a poor soil; as the old outfields of the district, or thin sandy soils recently brought into cultivation. These are then generally immediately occupied by the *Agrostis vulgaris*, a late grass, disliked by cattle, and having a creeping scourging root, which is also difficult of extirpation. This is the plant that, generally getting into the pastures of such soils, gives them their frequently grey desolate aspect. The injury it occasions is so great, that it is a common proverb in this district, that “if poor or recently reclaimed land be left long in grass it will go back to its wild state.” In fact, however thoroughly it may have been limed and cultivated, if the *Agrostis vulgaris* gets into it through the failure of the sown grasses, instead of improving under pasture, it will speedily become unproductive of every crop that may be afterwards sown in it.

The three plants, then, sown in our grass lands do not answer on all soils, even for the three years required in the common alternate cropping; but when they are trusted to in land sown out for permanent pasture, their deficiencies become much more striking and hurtful. The Red Clover disappears altogether the second year; and, even in the richest soil, the Ray-grass does not continue permanent. It totally disappears also, in a space of time, which may be longer or shorter in proportion to the richness and dryness of the land, but which rarely exceeds four or five years, even in the land most favourable to it. So totally wanting is the plant in very old pastures, and in rich pieces of natural grass that may be seen on the banks of the rivers, and in the edges of the glens of this district—excepting, perhaps, at a few pathways, or in the neighbourhood of farm-steadings, where a few seeds may have been scattered from the neighbouring cultivation—that we are fully entitled to conclude, that the Ray-grass is not a native, and that it would speedily disappear in this part of the kingdom were cultivation to cease in it. The result of the failure of the Red Clover and Ray-grass is worse here than in the alternate husbandry. If the soil is poor, the *Agrostis* takes possession, and the pasture is never of any value. Even on the richest soils, the valuable native pasture grasses become established slowly and irregularly; and before that takes place, the land is often extensively occupied by various useless or pernicious weeds, with which they are afterwards unable to contend. Hence the great differences, in point of value, that are often seen existing between fields of old pasture, although of similar soil and exposure. One may be seen, which, having been favourably situated for incidentally receiving a supply of seeds of the good grasses from some neighbouring piece of rich pasture, is highly valuable; and another, equally rich and kindly by nature, yet, from a want of a like supply, overrun with many useless weeds, or occupied by grasses which cattle dislike.

Such are the imperfections of those plants which are almost exclusively sown for hay and pasture in this part of Scotland. It is quite obvious that

it would be very desirable to find substitutes for, or additions to them, with two separate views:—1st, To secure good pasture in the alternate husbandry; and, 2dly, To make a permanent pasture that shall be good from the beginning, and continue so.

We shall first inquire which of our native grasses will supply the necessary desideratum in the alternate husbandry, *on damp land*. It is in vain to say, in respect of many damp soils, that they ought to be effectually drained by the cultivator, and then they will produce good crops of Ray-grass. On a generally retentive or impermeable subsoil, the expense of such draining as would make the land quite fit for Ray-grass, would be very great. It would often, indeed, be of a magnitude not to be vindicated by any prospect of a corresponding return; as we may perceive at once when we advert to the circumstance that there are extensive tracts of good soil, of that intermediate state of dryness which is well adapted for raising productive crops of oats, but yet unfit for Ray-grass. In such cases, the expense of draining would be incurred for the sake of the Ray-grass; and it is better therefore to look out for a grass more adapted to the soil, than, by a costly and otherwise unnecessary process, to adapt the soil to the grass.

The account generally given of the failure of Ray-grass, in damp soils, is, that they *spout out* the grass. It would, however, be the true and simple explanation to say, that we have sown in them a plant not fitted for them by nature. On looking at the little uncultivated margins at the fences of rich damp fields, we generally observe them covered with a dense herbage of various grasses, which cattle, when they find access to them, eagerly feed upon. These, then, are grasses which the soil does not reject, as they are adapted by nature to grow in it. If we can find one or more of them perennial, and at the same time having the properties of being liked by cattle, giving an abundant produce, furnishing also a large quantity of seed which may be easily collected, and dying like the Ray-grass when turned down by the plough; we have then a plant which may here be substituted for the Ray-grass, or at least sown along with it to supply its deficiencies.

The *Poa trivialis*, a plant growing abundantly by nature in all such situations, possesses, in great perfection, all the above properties. It delights in damp land, and gives there a very abundant produce. Horses and black cattle prefer it to almost all other plants. It furnishes seed in much greater profusion than the Ray-grass itself; and, having like that also a fibrous root, it dies on being ploughed down. It is somewhat later than the Ray-grass; but, to balance that deficiency, it grows more into the autumn.

I have very successfully cultivated this grass for several years past, and can give a very favourable account of it. Having some enclosures on my small farm, and pieces of land within others, of a damp retentive nature, that disadvantage, already described, became very conspicuous in them, viz. that the Ray-grass, although thriving pretty well in them for one year, failed almost entirely the second and third years of grass. To have altered the rotation of cropping on these enclosures, so as to take only one crop of grass, would have inferred the derangement of the rotation on the whole farm, and a complete alteration of all the enclosures. It was observed that the *Poa trivialis* grew in profusion and luxuriance on their uncultivated margins, where it continued very permanent, and the idea readily occurred of collecting its seeds and sowing them in the cultivated ground. The experiment has answered admirably well; and the pasture on the damp land which formerly failed, through the aid of this grass, is now very close and valuable. I devoted a small corner of a field to the production of this grass alone, with the view of easily obtaining from it a supply of the seeds. In this, too, the success was complete. The land so employed did not exceed sixteen poles, and sufficient seed was got yearly from it to sow six or seven acres.

The thrashed hay, got at the same time, was in respectable quantity, and more acceptable to horses and black cattle than any other hay whatever. The small piece of land was four years under the grass, and afterwards gave a more than ordinary good crop of oats. The grass was equally good all the four years.

But the way in which I have chiefly cultivated this grass is not by itself, but by adding a proportion of the seeds of it, for damp fields or damp pieces of fields, to the common allowance of Ray-grass, and of the Red and White Clovers. The Ray-grass and Red Clover furnish the principal part of the first crop, which is generally cut for hay, and the *Poa trivialis* and White Clover make a close pasture the next two years.

The seeds of the *Poa trivialis* are minute. A bushel of them consists of about eight times as many grains as the same quantity of Ray-grass seeds. They are heavier than Ray-grass seeds of equal measure, in the proportion of about three to two; and from these proportions we find that four pounds weight of the seeds of the *Poa* will produce as many plants as a bushel of the seeds of Ray-grass. The *Poa* tillers more abundantly; that is, produces more culms from the same plant, in rich land, than the Ray-grass. These remarks will indicate the proportion of the *Poa* seeds to be sown upon an acre. When they are first thrashed out, they are entangled and matted together by a vegetable fibre, looking like a spider's web, which uncoils from the base of the seeds; but by drying them perfectly on a floor, and turning them carefully, the web falls to powder, and they may then be readily mixed with other seeds, and sown with equal facility.

On moist soils, the *Poa trivialis* is equally valuable for permanent pasture as for the alternate husbandry; or we should say, more so. It is, in fact, the plant, as may be discovered on examination, that forms the chief produce of the damp places of our finest and most celebrated old pastures.

There is another native grass which I have successfully cultivated for hay, and which I have found to be a tolerable pasture grass also, on wet pieces of land, over some depth of moss. It is the *Holcus lanatus* or Meadow Soft Grass. It must be confessed, however, that, in its green state, it is not so acceptable to cattle as many others, and there is therefore a prejudice against it, the extent and authority for which it would be wrong here to conceal. My experience of the value of the *Holcus lanatus*, on peaty soil, is similar to that of Mr. Menteath,* excepting that, the soil I cultivated being tenacious enough for oats, the grass seeds were sown with that grain, like other common hay seeds. The produce of hay was large, and the after pasture abundant in quantity. Although the cattle would no doubt have preferred pastures of other grasses, yet, when confined to this, they prospered well upon it. It is said, in the *Hortus Gramineus Woburnensis*, that the hay of the *Holcus lanatus* is disliked by cattle, especially by horses. This, certainly, I have not observed respecting the hay I made from it. Both black

* It is necessary to explain that, in Mr. Farquharson's manuscript, there is at this place a quotation regarding *Holcus lanatus* from a "valuable sketch of the Geology of Netherdale, by James Stewart Menteath, Esq. younger of Closeburn." It ought also to be mentioned that, while all Mr. F.'s own observations and opinions are carefully retained, the liberty has been taken of omitting, in general, his researches regarding the "inquiries and experiments of distinguished writers, who have more at large devoted their time and talents to the illustration of this important subject." Mr. Farquharson will also excuse me for omitting a dissertation which, however excellent, is not exactly suited to this publication, upon a point that, in his own words, "is of such importance to the agriculturists of that part of Scotland to which Dr. Murray's Flora refers (and in which oats form the chief grain produce), that we cannot resist taking advantage of this opportunity briefly to discuss it. The point is the very great advantage which this part of the kingdom has derived from the introduction of early varieties of oats."—A. M.

cattle and horses have always readily eaten it, and thriven well while doing so. Perhaps the difference of the experience in this matter may be owing to a difference in the way of curing the hay. We know that, in England, hay is generally allowed to heat in the stack; and this may have been the case with that procured from the *Holcus lanatus* at Woburn. The hay I made was, according to the Scotch method, fully dried in the field, and underwent no heating in the *cole* or stack.

The seeds of the *Holcus lanatus* are easily procured. They are nearly as large as those of Ray-grass. The plant is very liable to be mistaken, and has been often mistaken, for the *Holcus mollis*, the most inveterate and injurious weed, on damp sandy soils, which the cultivator has to contend with. The most obvious distinction between the plants is, that the *Holcus mollis* has a creeping root—being the Couch-grass or *remack* of wettish sandy land. The *Holcus lanatus* has a fibrous root, and dies on being completely ploughed down.

In conclusion, it is to be carefully noticed of this grass that it is recommended only for peaty soils, where certainly its produce so far surpasses that of any other grass, as to make its other imperfections be overlooked. The seeds are very liable to get among those of the Ray-grass; but this ought to be prevented; for on dry land its cultivation would not be commendable. There its produce would not be superior in point of quantity, to compensate for its other imperfections.

We proceed next to consider which of our native grasses may be best adapted to supply the failure of the Ray-grass on the poorer dry lands—which, as already remarked, takes place, leaving them to be overrun with the useless and even hurtful *Agrostis vulgaris*.

Nature here also points out a grass which will answer the purpose. The uncultivated edges of our fields, and the dry tops of their earthen fences, are occupied often by the *Festuca duriuscula*. I have had occasion to make many incidental observations on the value of this grass for such soils, although I have never cultivated it, having indeed in my possession no land that much requires its aid. I have noticed it naturally sown, on the outsides of poor fields, by seeds dropt from the plants on the turf fences, and forming a close and valuable pasture, almost to the exclusion of the *Agrostis*, after the Ray-grass had gone out. It is not quite so early as the Ray-grass, but it is much earlier than the *Agrostis*, and fills the soil before that shoots up; and it grows late into the autumn. Its natural situation, frequently on the turf coping of stone walls, demonstrates that it stands drought well. It is a grass that *tillers* greatly, sending up from each plant a great many culms, and a large tuft of radical leaves. The root is fibrous, like that of the Ray-grass, fitting it for the alternate husbandry; and it is equally fit for permanent pasture—being perennial, and enduring perfectly the severity of a northern climate. The seeds of the plant are very abundant, and may be easily collected. In a bushel there are about the same number of grains as in a bushel of Ray-grass seeds.

Another grass, which partially occupies the borders of such fields, and which is, indeed, more universally disseminated, by nature, over almost all the soils of the district than any other grass, excepting the useless *Agrostis*, is the *Cynosurus cristatus*. This, therefore, might be sown in part on the poor soils, along with the *Festuca duriuscula*. Its qualities will be more particularly described among the grasses for perpetual pasture. In recommending it and the *Festuca duriuscula* for the poorer soils, in the alternate husbandry, it is not meant that they should be substituted for the Ray-grass; but that a proportion of them should be added to the usual allowance of Ray-grass. The latter gives an abundant produce for the first year, and if it should fail the two succeeding years, the *Festuca* and *Cynosurus* will remain, and

form a close turf, so as to exclude the *Agrostis* so natural to such soils, or at least to prevent it from appearing in any injurious abundance.

Our last object in respect of the grasses is to ascertain those which are best adapted for permanent pasture.

After examining with attention a considerable number of the most valuable old pastures in the district, those, indeed, which are proved to be so by the infallible criterion of their bringing, for a succession of years, the highest rents from the graziers, I venture to say that they are composed chiefly of the following grasses, along with White Clover and Yarrow (*Achillea Millefolium*), viz. *Alopecurus pratensis*, *Poa trivialis*, *Poa pratensis* and *Cynosurus cristatus*. In some of the driest there is also seen not a little of the *Festuca duriuscula*. Not that these form the herbage exclusively; but where other grasses, as the *Agrostides*, the *Holci*, or even *Anthoxanthum odoratum*, have got in, in any abundance; there the lower rent marks the inferior esteem in which the fields are held by the graziers, in comparison with those where the four grasses first named occupy the soil, nearly exclusively, along with the White Clover.

We place, then, at the head of the list of grasses for permanent pasture, the *Alopecurus pratensis* or Meadow Fox-tail Grass.

This grass is generally found growing in abundance on the uncultivated margins of all the richer old infields of this district, and it has many valuable qualities which adapt it for a pasture grass. It springs up earlier than any other native grass excepting the *Anthoxanthum odoratum*. Cattle delight in it, as may be observed by the closeness with which they eat down the margins of the fields referred to, when they can have access to them. The produce is abundant, especially of radical leaves, in the production of which the energy of the plant is chiefly expended; for it sends up comparatively few seed culms. I have had some experience in cultivating this grass, which has confirmed my observation of these qualities and habits in it, and laid open also some others, and therefore I shall give a brief account of it. Some years ago, I laid out a small piece of land, of a few poles, with this grass alone, in the hope of easily collecting seed from it for further experiment. The seeds first sown were gathered from the edges of the neighbouring cultivated fields. It produced a close crop of radical leaves, which, however, was not heavy the first year, but became larger each succeeding year, during four years it remained; and the crop of the last year was a heavy one. It did not send up flowering stems, in any considerable quantity, till the third and fourth years; and even then, their number was proportionally less than in any other grass. After the four years, the land was ploughed for oats; but the grain crop on it failed greatly in comparison with that of the rest of the field, which was after other grasses; and the cause of the failure was observed to be that the *Alopecurus*, though not having, properly speaking, creeping roots, yet had a number of vegetable crowns, which were not killed by being ploughed down, but set up a vegetation injurious to the oats. At another time, I sowed a parcel of the seeds got from the seedsmen, mixed with the usual allowance of Ray-grass and Clover, on a piece of land too wet for the permanence of Ray-grass, in the hope that it would form a pasture after that failed. In the third year, the *Alopecurus* did, indeed, form a good pasture, which was more closely eaten down by the cattle than any other part of the field. This being included in the alternate husbandry was then all broken up for oats; when, as in the other case, the *Alopecurus* adhered to the soil, injuring the oat crop, and forming a troublesome weed, which it was difficult to get rid of in the succeeding turnip crop. The result of this limited experience in its cultivation is, that it is totally unfit for being admitted into the alternate husbandry; but, at the same time, it became obvious that it is

eminently adapted for permanent pasture. It does not, indeed, arrive at perfection the first year, like the Ray-grass, nor even the second; but instead of going out, as that does, it improves by age. It ought certainly, therefore, to form one of the grasses sown for such pasture.

In a bushel of the seeds of this grass, there are only about two-thirds of the number of grains contained in a bushel of the seeds of Ray-grass. On account of the habit of the plant in sending up only a few culms; the seeds are difficult to be procured. They are, besides, liable to be abortive, or eaten by insects; and I have noticed that they drop suddenly after they are ripe, and while the culm is yet green. This circumstance should be attended to by those who collect them, that they may cut the plant early.

The grass next named of the four is the *Poa trivialis*. Of that we have already given an account, in recommending it for the alternate husbandry. It occupies naturally the moister parts of the fields, and is unfit for very dry lands; yet it has a considerable range of land in respect of being wet or dry, that it occupies very well. It produces heavy crops in places partially inundated by springs, and in the bottoms of ditches through which their waters flow; and, at the same time, may be seen forming the chief part of the pasture on land, which, though damp, is not yet unfitted for the turnip husbandry.

The substitute for the *Poa trivialis*, on very dry land, is its congener the *Poa pratensis*. These two plants are very like each other; but the *trivialis* may be very readily distinguished by its culm being rough to the touch, and by its oblong acute stipule, that of the *pratensis* being short and abrupt. The *pratensis* has a creeping root or couch, which renders it unfit for the alternate husbandry. This root, however, I have had occasion to notice, is the most easily overcome, in cultivation, of all the couches or remacks; generally dying on being ploughed down, if drought succeeds. Notwithstanding this imperfection, and that plants with creeping roots are said to exhaust the soil, it forms such a large proportion of our best native and old pastures, on dry land, that nature thus indicates it ought not to be dispensed with, in laying out permanent pasture in such land. It is considerably earlier than the *trivialis*, and cattle almost equally delight in it.

The seeds of the *pratensis* may be as easily procured as those of the *trivialis*. They are somewhat larger than those of the *trivialis*; and a bushel of them has only five or six times as many grains as a bushel of Ray-grass. When newly thrashed out, they are connected together by a stronger web than that of the *trivialis*; but this, too, disappears by keeping them on a dry floor and turning them.

The fourth grass named, as partly forming our best pastures, is the *Cynosurus cristatus*, or Dog's-tail grass. This is the grass which forms the most valuable part of the fine herbage, on the rich margins of our streams which have never been subjected to the plough; and on uncultivated steep banks of fine pasture, which may be seen in some places in the midst of arable fields. It enters largely, indeed, into old good pasture every where; and thus is indicated as a grass which ought always to be sown in part for permanent pasture. It has a great range in occupying both moist and dry soils. In dry soil its roots penetrate vertically to a great depth, and its new branches or crowns are formed under the surface. Hence, it continues green and productive in a dry season after most of the other herbage is withered. At the same time it may be seen occupying very damp places. It is not particularly early, but it continues to send up fresh leaves in autumn, later than any other good pasture grass. Horses, black cattle, and sheep, equally delight in it. While the leaves of this grass are so valuable, and so much relished by beasts, the seed culms are wiry, and rejected by them; a wise ordination of nature to secure the continuance and extension of so important a plant.

They are named provincially *windlestraws*; and on old pastures are often seen in such abundance that a sufficient quantity of the seed, for the purposes of the cultivator, might be soon gathered, by hand, from his own land. In this climate, the seeds ripen about the end of July or beginning of August. They are nearly twice as heavy per bushel as the seeds of the Ray-grass; and the bushel of them, as they are small, consists of about four times as many grains as a bushel of Ray-grass.

It has been already noticed that, besides these four grasses, the *Festuca duriuscula* is not of unfrequent occurrence in the drier parts of our more valuable pastures. That species also may therefore be introduced, in part, in dry places.

Many other grasses have also been recommended for permanent pastures, of which some notice should therefore be taken, although I do not feel entitled to recommend any of them. The chief are the *Phleum pratense*, *Dactylis glomerata*, *Anthoxanthum odoratum*, and *Agrostis alba* or *stolonifera*. I conceive it might be a sufficient objection to the introduction of the two first, that, although not unknown, they are certainly not common; and their absence, in a great measure, from our most valuable old pastures, affords the highest presumption that there is something in the soil or climate unfavourable to them. But I would say farther of the *Phleum* and *Dactylis*, that beasts are not fond of them. A small piece of uncultivated land, natively planted with the *Phleum*, is included in one of my fields. The field has been often pastured by beasts enclosed in it; and although the herbage was not at all times over abundant, the *Phleum* was never touched by them, but both leaves and stems were allowed to grow up and wither together in autumn.

Dactylis glomerata is also highly recommended in the *Hortus Gramineus Woburnensis*, both for the alternate husbandry and permanent pasture; and yet there are, in that valuable treatise, certain admissions respecting it which I must be permitted to refer to, as vindicating the unfavourable opinion which I have learned, from my own observation, to entertain of it. Thus, in p. 138 (3d Edition), it is acknowledged, there is a "necessity for keeping this grass closely cropped, either with cattle or the scythe, to reap the full benefit of its superior merits as a pasture grass." It is allowed, too, in the same page, that it is not permanent but in deep dry land; and, in p. 39, that it formed only one plant of every twenty in celebrated pastures. After these admissions, I may venture to state, without being deemed guilty of presuming too much, in the face of such high authority, that, although the *Dactylis* is not common in this district, there are yet a sufficient number of patches of it, in my immediate neighbourhood, to have enabled me clearly to ascertain that beasts certainly reject it, unless urged to eat it by hunger. As to the *Anthoxanthum odoratum* and *Agrostis alba*, the same objection does not come against them; viz. that they are not common in the district—for they are both abundant. The *Anthoxanthum* is seen everywhere; but it is never eaten by beasts that can find any thing else. The *Agrostis* is in little better favour. It is the latest of all the grasses; but, towards the end of autumn, it covers swampy places with a large, coarse, prostrate herbage, which cattle entirely neglect, till the fields are otherwise quite bare. Then they may eat a part of it, when they can get no other green thing. Mr. Don of Forfar, a high authority—in discussing the merits, or rather pointing out the demerits, of this grass, at a time when it got temporarily into repute for cultivation, under the Irish name of Fiorin—says of it and the Agrostides in general, "that nothing but necessity ever compels cattle to eat them."

But although we thus cannot find more grasses fit for permanent pasture, in this district, to be added to the four or five already described; yet we

must not be led to suppose that our pastures, when composed only of these, will therefore be deficient. There is among the five a sufficient variety, in respect of their earliness, to give a succession of young herbage during all our warm months. The *Alopecurus pratensis* comes into full vigour with the first warm weather; the two *Poas*, and on very dry land the *Festuca duriuscula*, afford a fine pasture when the summer is more advanced; and the *Cynosurus* continues to send up young leaves, till it is finally checked by frost.

And here we may remark that, as the *Alopecurus* is some years after it is sown before its plants arrive at perfection, it will be advisable to sow, with the permanent grass seeds, the usual allowance of Ray-grass, to give, for some years, an early produce in its place.

There is one advantage attending the limitation of the number of our native grasses fit for being used for permanent pastures in our soil and climate, which is of no small importance. It is, that the expense for seeds will be diminished. The seeds of the *Poa trivialis*, *Poa pratensis*, *Cynosurus cristatus*, and *Festuca duriuscula*, if it shall be deemed expedient, may be all secured within the district, by the cultivator himself, with as little attention, on his part, as the securing his Ray-grass seeds requires. The *Poa* seed, especially, will cost little trouble or expense. The seed of the *Alopecurus pratensis* alone is that for which he will need always, it is to be feared, to have recourse to the seedsman.

The *Festuca ovina* has been recommended for gentlemen's lawns, on account of the fineness of its leaves; but I should think this not a very desirable grass in such situations. The herbage, when in full vigour, in summer, is very liable to assume a brown or reddish-brown colour, under a strong sun. The plants send up innumerable flowering culms; and as the budding crowns, to form these, sprout latterly above ground, each plant, in good soil, becomes a semi-globular tuft, which does not coalesce well with the neighbouring herbage. In winter, these tufts remain grey and withering, without soon rotting and dropping down, as the dead leaves of many other grasses do. The true grass for lawns is the *Cynosurus cristatus*. The budding crowns of that grass are all formed under the surface of the ground; and the herbage, for this reason, continues smooth and even, without ever rising into tufts. The leaves of this grass, too, are of a very elegant green, and the verdure continues late into the autumn. Sheep eat the plant closely down; and, accordingly, a pasture composed chiefly of that grass, when stocked with these animals, becomes, under their feeding, nearly as smooth as if shaven with the scythe. A few *windlestraws* are no doubt always seen where this grass prevails; but surely the unsightly culms of no other grass may be more easily cut down than these, and advantage may be taken, by cutting them at the proper season, to obtain a quantity of the seeds of the grass.

I shall end with a notice of a grass which is not a native of this district, but which experience within my observation has shown, might be profitably introduced to occupy ponds and marsh lands, that do not profitably admit of draining; and which, in this district, are generally occupied by *Equiseta*, *Carices*, and other entirely useless plants. It is the *Poa aquatica*, now named *Glyceria aquatica*. This was introduced into a pond of half an acre, having a muddy bottom and from two to three feet deep, by a gentleman in my neighbourhood, twenty-five years ago. It has occupied the pond with the most luxuriant and ornamental vegetation, and grows up yearly with continued vigour, to a height of six or eight feet above the water. It has, in this case, been little eaten by beasts, being preserved as an ornament; but, when black cattle can get it, they eat it with great readiness. In the *Hortus Gramineus Woburnensis* there is an account given of the remarkable produce of this grass, in the fen lands of England, which is five or six times the weight

of that of any other grass. It is there said, "It is, when dried, excellent fodder for milch cows, but horses are not fond of it," and that the inhabitants of the Fens call it *fodder* by way of eminence. It is added, that it does not grow freely from seed, except when sown in mud, and that the best method of propagating it is by parting the roots, which, from their creeping nature, soon increase the number of plants. Although not a native, its long continuance, and remarkable luxuriance in the pond referred to, demonstrate that it will prosper, in a suitable situation, in our climate.

JAMES FARQUHARSON.

ALFORD, 5th November, 1835.

Extracts from
Letters of Linnaeus.
referred to in Preface to

THE NORTHERN FLORA.

1. — Addressed to "Doctor David Skene,
"Physician in Aberdeen - North Britain."

Lato magnopere quod Tu tanquam Lucius
Lidus, ortus sis in boreali Britannia, ubi
nullam praeter Te curiosum novi.

Ad dubia a Te, Vir Clansime, nota de natura
Geophytorum non lubenter respondes; Legs cum
oblectamento aliorum sententias, nec eas refello;
dico tantum quae mihi visa sunt; forte non
semper tutissima, nec alios obstringo in meam
sententiam

Hic vale et vive fove

Tui Clansimi nemini

Upsalia Vob

D. 21. Januarii

cultor

CAR. v Linne

Egu. aar

2. — Addressed to "Mr. David Skene
"Med. Doctor. Aberdeen - Scotland."

Viro Amplissimo
DD. DAV. SKENE

S. pl. D
Car. a Linné

Tuas die 27 februarii datas nte accepi in
quibus graphice demonstraste quam parum
differat vita Animalis a vegetabili; Dadum
et ego in ea opinione fue

Admodum gauderem videre Serpulas et Tubu-
larys a te descriptas, quarum neutras posi-
deo; ulinam velles et posses mittere quam
primum, antequam typum subirent mei-
rennes in Systemate Naturæ, iis inferni-
cum tua auctoritate et serpente et
Araneum

Hic vale et me amare perge.

Dabam upsalia 1766. d. 14 April

THE NORTHERN FLORA.

1850

1850

1850

1850

1850

1850

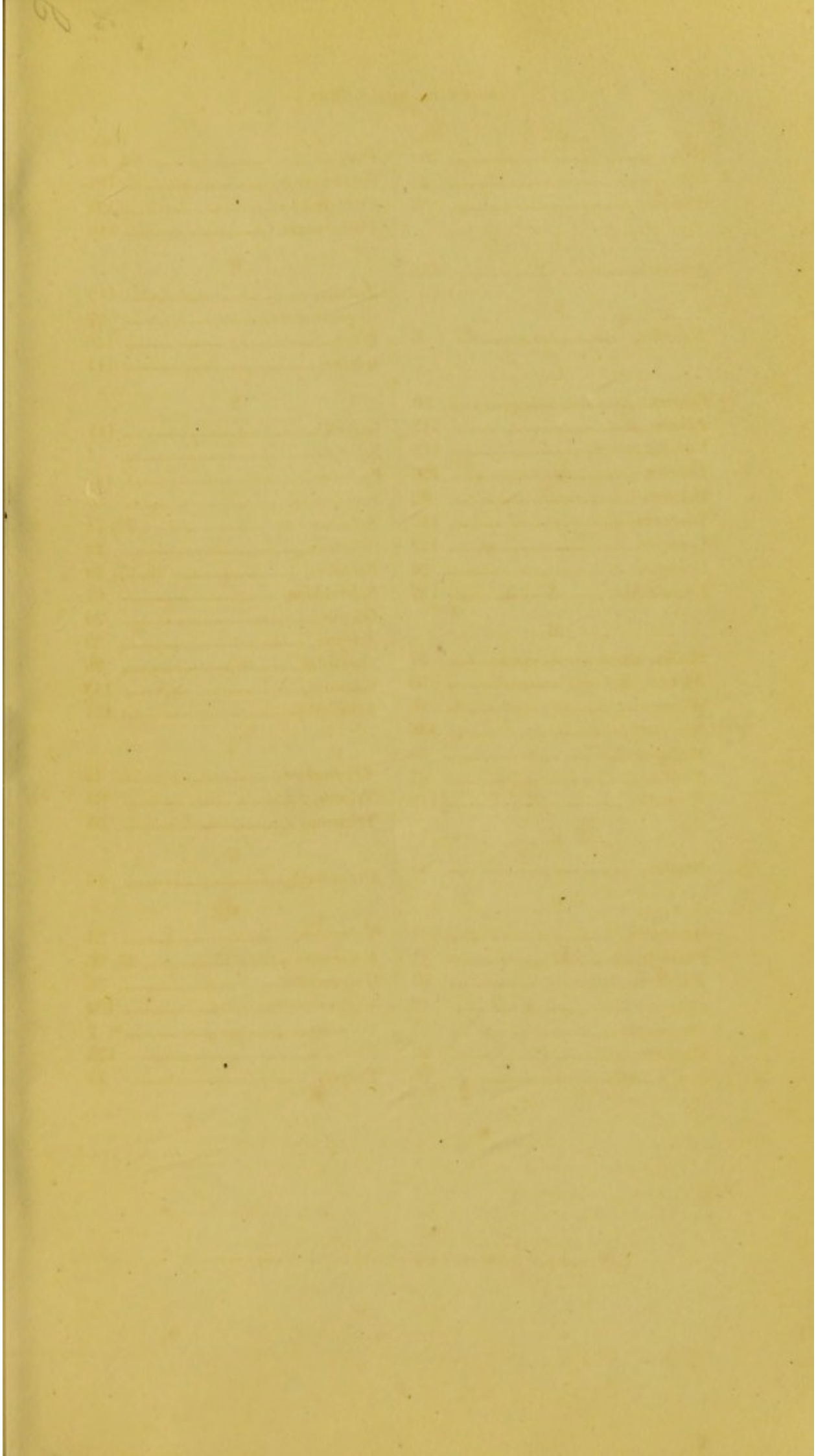
INDEX

TO

THE GENERA IN PART I.

	Page		Page
A			
<i>Achnodon</i> ,	43	<i>Cuscuta</i> ,	150
<i>Agropyrum</i> ,	85, 86	<i>Cynoglossum</i> ,	120
<i>Agrostis</i> ,	49	<i>Cynosurus</i> ,	67
<i>Aira</i> ,	52	D	
<i>Aira</i> ,	53, 59	<i>Dactylis</i> ,	67
<i>Airochloa</i> ,	52	<i>Deschampsia</i> ,	53
<i>Alchemilla</i> ,	102	<i>Digraphis</i> ,	41
<i>Alopecurus</i> ,	39	E	
<i>Ammophila</i> ,	47	<i>Echium</i> ,	122
<i>Anagallis</i> ,	128	<i>Eleocharis</i> ,	30, 31
<i>Anchusa</i> ,	119	<i>Elymus</i> ,	79
<i>Aphanes</i> ,	103	<i>Elymus</i> ,	86
<i>Anthoxanthum</i> ,	22	<i>Eriophorum</i> ,	36
<i>Arrhenatherum</i> ,	87	<i>Erythraea</i> ,	144
<i>Arundo</i> ,	45	F	
<i>Arundo</i> ,	41	<i>Fedia</i> ,	25, 26
<i>Asperula</i> ,	95	<i>Festuca</i> ,	68
<i>Atropa</i> ,	141	<i>Festuca</i> ,	61, 65, 74
<i>Avena</i> ,	77	<i>Fraxinus</i> ,	4
<i>Azalea</i> ,	130	G	
B		<i>Galium</i> ,	89
<i>Blysmus</i> ,	29	<i>Gentiana</i> ,	148
<i>Borago</i> ,	121	<i>Glaux</i> ,	147
<i>Brachypodium</i> ,	72	<i>Glyceria</i> ,	60, 61
<i>Briza</i> ,	66	H	
<i>Bromus</i> ,	73	<i>Hedera</i> ,	147
<i>Bromus</i> ,	72	<i>Heleocharis</i> ,	30, 31
C		<i>Heleogiton</i> ,	32
<i>Calamagrostis</i> ,	46	<i>Hierochloe</i> ,	57
<i>Campanula</i> ,	132	<i>Hippuris</i> ,	3
<i>Catabrosa</i> ,	52	<i>Holcus</i> ,	55
<i>Centunculus</i> ,	99	<i>Holcus</i> ,	57, 78
<i>Chironia</i> ,	144	<i>Hordeum</i> ,	81
<i>Circæa</i> ,	5	<i>Hydrochloa</i> ,	60
<i>Cladium</i> ,	22	<i>Hyoscyamus</i> ,	139
<i>Convolvulus</i> ,	131		
<i>Cornus</i> ,	100		

I		Page			Page
<i>Ilex</i> ,		104	<i>Poa</i> ,		52, 65
<i>Iris</i> ,		26	<i>Potamogeton</i> ,		105
<i>Isolepis</i> ,		33	<i>Primula</i> ,		123
J			<i>Pulmonaria</i> ,		118
<i>Jasione</i> ,		135	R		
K			<i>Radiola</i> ,		112
<i>Knautia</i> ,		88	<i>Rhynchospora</i> ,		27
L			<i>Ribes</i> ,		146
<i>Lemna</i> ,		20	<i>Ruppia</i> ,		111
<i>Linum</i> ,		113	S		
<i>Lithospermum</i> ,		117	<i>Sagina</i> ,		111
<i>Lobelia</i> ,		136	<i>Salicornia</i> ,		1
<i>Lolium</i> ,		82	<i>Samolus</i> ,		145
<i>Lonicera</i> ,		145	<i>Scabiosa</i> ,		88
<i>Lycopsis</i> ,		122	<i>Schedonorus</i> ,		70, 71
<i>Lycopus</i> ,		20	<i>Schœnus</i> ,		28
<i>Lysimachia</i> ,		127	<i>Schœnus</i> ,		22, 27, 29
M			<i>Sclerochloa</i> ,		61
<i>Melica</i> ,		57	<i>Scirpus</i> ,		30
<i>Melica</i> ,		59	<i>Scirpus</i> ,		29
<i>Milium</i> ,		45	<i>Sherardia</i> ,		96
<i>Menyanthes</i> ,		126	<i>Solanum</i> ,		143
<i>Molinia</i> ,		59	<i>Symphytum</i> ,		121
<i>Montia</i> ,		87	T		
<i>Myosotis</i> ,		113	<i>Trichodium</i> ,		49
N			<i>Triodia</i> ,		65
<i>Nardus</i> ,		38	<i>Triticum</i> ,		85
P			U		
<i>Parietaria</i> ,		101	<i>Utricularia</i> ,		18
<i>Phalaris</i> ,		41	V		
<i>Phalaris</i> ,		43	<i>Valeriana</i> ,		24
<i>Phleum</i> ,		42	<i>Valeriana</i> ,		25, 26
<i>Pinguicula</i> ,		15	<i>Valerianella</i> ,		25
<i>Plantago</i> ,		96	<i>Varbascum</i> ,		139
<i>Poa</i> ,		60	<i>Veronica</i> ,		7
			<i>Viola</i> ,		136
			<i>Vulpia</i> ,		72



[Faint, illegible text, likely bleed-through from the reverse side of the page]

