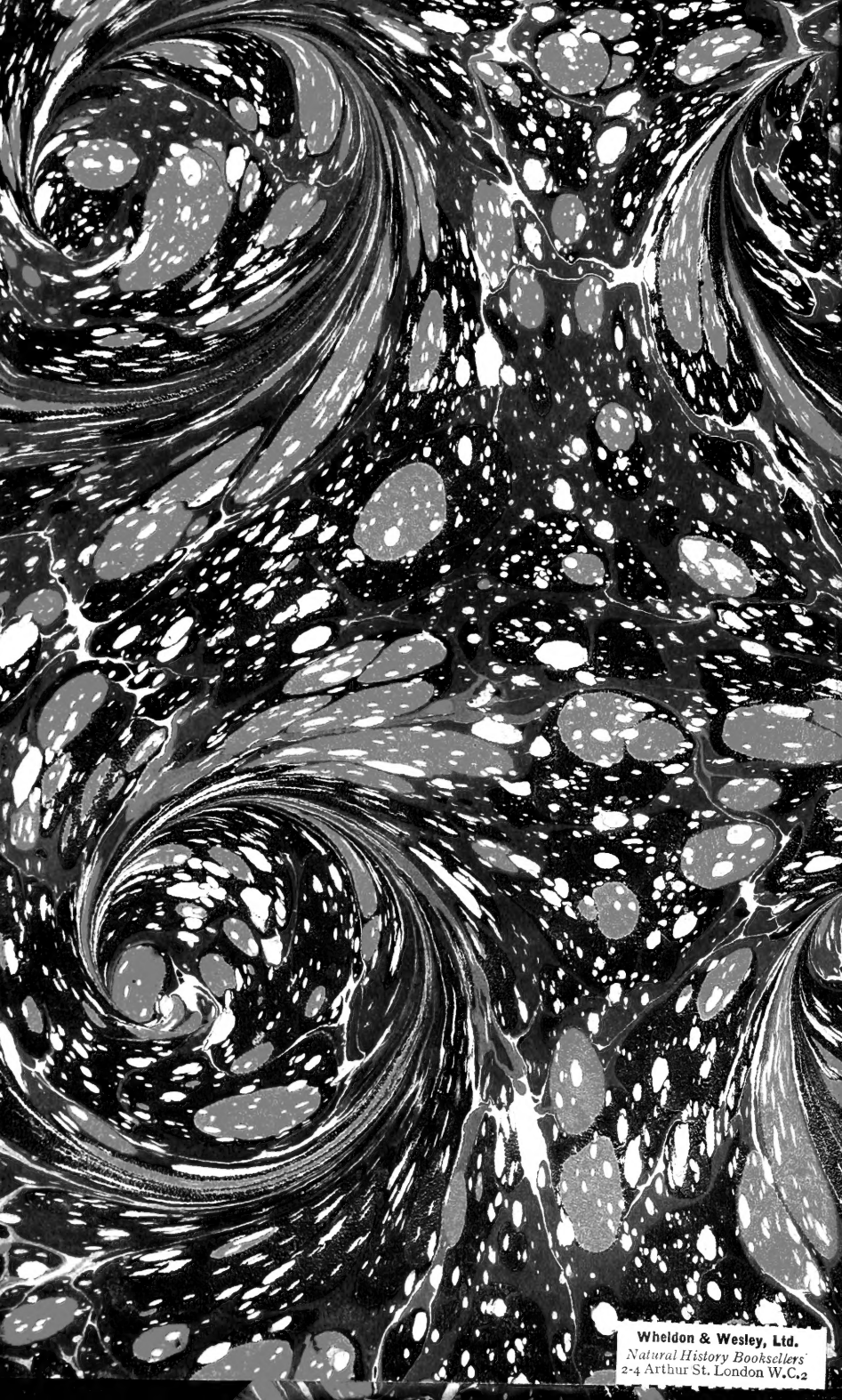

Edward S. Marshall

1889

THE

PHYTOLOGIST.

A BOTANICAL JOURNAL.

EDITED BY

ALEXANDER IRVINE,

FELLOW OF THE BOTANICAL SOCIETY OF LONDON.

VOLUME THE SIXTH.

Ὡς ἐμεγαλύνθη τὰ ἔργα σου, Κύριε!—πάντα ἐν σοφίᾳ ἐποίησας.
ΨΑΛΜ. ργ΄. 24.

Benedicite universa germinantia in terra Domino; laudate et superexaltate Eum in secula.—*Hymn. iii Pueror. v.* 76.

LONDON:

WILLIAM PAMPLIN, 45, FRITH STREET, SOHO SQUARE.

1862-3.

PRINTED BY
JOHN EDWARD TAYLOR, LITTLE QUEEN STREET,
LINCOLN'S INN FIELDS.

PREFACE.

Before issuing the Sixth and last Volume of the Second Series of the 'Phytologist,' the Proprietors desire very cordially to tender their warmest acknowledgments to the contributors and subscribers, to whom they are solely indebted for both the material and the pecuniary support of this periodical.

The approaching retirement of the Publisher affords a convenient opportunity for making fresh arrangements, which will be communicated to our friends and the public at the earliest possible period.

We have long entertained a settled conviction, founded on experience and history also, that a high-priced scientific periodical does not possess the essential elements of commercial prosperity, and therefore cannot obtain an extensive circulation. *First,* its readers are few, for comparatively a small portion of the reading public takes any interest in its contents. *Secondly,* its price must be high, to cover the expense of publication. This consequently restricts its currency to the wealthier students of science, viz. those who can afford to buy dear books. There may be, and doubtless there are, minor collateral reasons of failure; but the above-mentioned fundamental facts are the real causes of non-success.

It is not admitted that the 'Phytologist' has been a failure. It has been now for nearly a quarter of a century almost the sole medium of communication among Botanists who study or collect the British plants. It has also afforded them the means of permanently recording their discoveries. That this has been useful to the present age, and will be more so to posterity, no one can or will dispute. But it need not be concealed that this has been accomplished at a pecuniary sacrifice to the Proprietors, which none know so well as they themselves. But as this result was not unforeseen, it has never been made the subject of peevish complaint.

That readers have increased (probably a hundredfold), is proved by the success of the Penny Literature, as it may be called, viz. the penny daily and weekly newspapers, and the many useful and popular miscellanies, filled up with facts, fancies and fiction, which have obtained, and deserve to have, an immense circulation.

Several of our readers, who do not know how few copies we *sell*, are astonished at our cupidity, and compare two sheets of letterpress, at the high price of a shilling, with such publications as the 'Literary Times,' 'St. Paul's,' 'Bow Bells,' etc., where as much or more matter is sold for a penny, forgetting that there are hundreds of thousands of purchasers of the latter, and only a *few* of the former. But the trade, and even some of the purchasers, grumble at the Proprietors for not reducing the price of their periodical, as if cheapness were the sole cause of an extensive currency. It may reasonably be doubted whether we could get a thousand readers, even if the magazine were circulated gratis. These may reasonably complain of the price, but it is certain that they will not envy the financial returns, viz. the state of the exchequer.

Those who are inclined to believe that the publication of the 'Phytologist' is remunerative as a trading investment, should ask the printers how many copies pass through their hands, and also get from the same firm the bill of costs. The accounts of expenditure and income will show that both Publisher and Editor have not only bestowed their time and talents gratuitously, but have been out of pocket besides. However, as they never anticipated a profit, they have not been disappointed; and the little loss incurred has been repaid a hundredfold in the pleasure of getting so much information, goodwill, and cheerful co-operation in our well-meant endeavours to popularize our favourite science.

That a considerable reduction of the price would have had much effect in increasing the sale of our Journal, cannot be entertained by those who remember the premature extinction of the 'Phytologist's' only formidable rival. This latter was supported by all the available talent and influence of the scientific botanists of Britain; and after struggling a couple of years, and

after a reduction of its price to one-half its original cost, it was obliged to succumb to its destiny. It failed not for want of literary and botanical support, but because it wanted the sole self-sustaining element, viz. a remunerative sale. This is the great motive power in all literary and scientific undertakings.

The Botanists who take an interest in a periodical like our own, are only those who, in common parlance, are denominated botanical collectors. These may in Great Britain amount to hundreds, but certainly they are not counted by thousands. A magazine which is adapted to supply their wants, must necessarily have but few supporters, especially when it is considered that many of these plant-collectors cannot conveniently spare a shilling a month. It is upon the whole no subject of regret that the hunters-up of rare species are not numerous. The spread of knowledge is very desirable, but the destruction of scarce plants is a subject to be deplored by every genuine Botanist.

While laying these facts before our readers, for their information and satisfaction, it should not be inferred that the 'Phytologist' has been a failure. Speaking commercially, it has yielded no pecuniary profit; on the contrary, as stated above, the owners have not been indemnified for the necessary expenses; the capital and labour expended have yielded no money-returns. It has however been a channel through which many hitherto unknown facts have been communicated to the public, and permanently recorded for the benefit of the present generation, and for the instruction of posterity. It has been almost the sole medium among Botanists for circulating their opinions, their wants, and wishes, for nearly a quarter of a century. It has been a chronicle of passing events in botanical science for the same period; facts and discoveries which would have been forgotten if there had been no such periodical, have been preserved in its pages, and will be available in the times to come. Besides, it has stimulated many observers in all parts of the kingdom to investigate and to record the productions of their immediate localities.

This subject is far from being exhausted. There are hundreds of nooks and corners in Old England, ay, and in Auld Scotland and Ould Ireland, which will repay the labour bestowed on this innocent and unassuming investigation.

The Proprietors will not part with the 'Phytologist' (a title, by the way, etymologically and logically *bad*, for it is the appellation of a person, not of a book) before stating that they regret having to say "Good bye!"

The monthly labour of selecting matter to fill its pages has been a light task, for our kind correspondents filled our hands; the duty of preparing the selections for the press was no ungrateful office, while the correspondence has been a source of unmitigated pleasure. But, as they say, the best of friends must part when the hour of parting comes; and it is as much a part of prudence to know when to part or leave off, as to know when to meet and to begin. Besides, we do not say adieu to our numerous correspondents; but *au revoir*, as our good friends south of Kent say,—that is, till we "meet again." We say, farewell to the 'Phytologist,' which we have already condemned for being a pedantic term, ill-applied as the name of a publication; and we say, Hail, welcome, and good success to all phytologists or *phytologers*, or botanists or herbarists, or *rhizotomists* or simplers,—to all the confraternity, including the fair sisterhood, collectively and individually, under whatever appellation you, O gentle reader or readers, choose or like to give to your *confrères*, or wish to appropriate to yourselves.

Favete vel salvete, lectores benevolentissimi et pulcherrimæ; or, long life and much enjoyment be your lot, ye fair and brave daughters and sons of science! We do not like to say *valete*, or farewell, for this is a word of sad and solemn import, and we are neither grave nor sorry. We earnestly wish, O most indulgent readers, that your contentment and pleasure may be as abundant and lasting as have been our edification and delight in your kind, disinterested, and useful correspondence. May increasing years increase still more our goodwill, esteem, and mutual obligations; may time draw closer the ties of friendly intercourse which have long subsisted, and which, on our part, are now most respectfully and thankfully acknowledged.

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CONTRIBUTORS, CORRESPONDENTS, AND AUTHORS, WHOSE BOOKS, ETC., ARE REVIEWED.

THE PHYTOLOGIST.

1862.

THE ANNUAL ADDRESS TO THE READERS, CONTRIBUTORS, ETC.

Our Friends and Readers—in our own case we are both happy and proud to state that these two terms are synonymous—have now for a considerable period indulged the Editor with the liberty of entering, in this the first number for the new year, a multifarious series of topics on matters affecting the utility of this periodical, and which are conducive to the harmony that should exist between the readers and the writer, and especially between him and the contributors.

This article, which is anticipated with feelings akin to the delight which the juvenile branches of the community indulge at the recurrence of Twelfth-day, St. Valentine's, or any other season of festivity and merry-making, will not be a thing of shreds and patches, but rather something like the good fare of Christmas, which is produced by a judicious combination of many diversified but savoury ingredients.

Many communications of a confidential nature are received during the year, and a hope is here expressed that their authors are not disappointed because their good counsels, friendly advice, and courteous cautions have produced no *good* results so speedily as they expected.

The Editor's correspondents are hereby assured, that their honest sentiments on all subjects are treated with deference; and that their hearty approval or disapprobation of what they like or what they condemn, are certain pledges of the interest which they take in the prosperity of the publication.

Those who kindly point out slight errors or inaccuracies, are most deserving of our special and heartiest thanks. All such strictures the writers themselves will surely testify, have been received with submission, and even with gratitude. These corrections, if offered in kindness as well as in candour, are a source of encouragement, as they are stimulants to energetic exertion. They are more efficient inducements to an honest, earnest performance of our duties, than the mere necessity of labouring for our bread, or even the delight of being employed in a pleasing and congenial labour.

The Editor wishes implicitly to obey the apostolic injunction, viz. "Owe no man anything, but to love one another," while he is conscious of his utter inability to discharge his obligations to the contributors who supply him with material for this publication, and to the friends and readers who honour him with their approval of the manner in which he performs his part of the undertaking. As these services, contributions, and kind feelings, are labours of love or manifestations of charity, they are truly debts of gratitude, and are payable only in the same currency, viz. benevolence, good wishes, and heartfelt thanks; for the debt of love can never be paid, and the indebted one must remain a debtor for ever.

The past year has been a prosperous period; several fresh contributors appear in our columns, and their articles will speak for their authors. The 'Phytologist,' in her now mature age, does not condescend to commend herself, or, in common and proverbial parlance, to blow her own trumpet; she has become wiser with increasing years, and leaves the superfluous work of self-laudation to those who like it. A good word may be offered for the past year without incurring the slightest suspicion of sycophancy or of officious obsequiousness.

Our anticipations of the new year are that the coming time will be no worse than that which is now to be numbered with the past; or, in other words, may the future be as good as its predecessor.

In this article, named "An Address," the liberty has been granted, or taken for granted, of explaining certain matters which have occurred during the previous months; also, of answering certain questions which naturally arise out of the

relations existing between the Editor and the contributors and readers. Two queries have been submitted since last Midsummer, and to both of these answers will now be given. The first question was, "What will become of the 'Phytologist' after the retirement of its publisher from all connection with the publishing and bookselling business?" and the second, "Are the proprietors of the Magazine taking steps either to enlarge it or reduce its price?" Both of these questions will be most conveniently answered on the not uncommon custom of last come, served first.

It is quite true that the paper tax or duty has been recently repealed; but are our readers aware of the insignificance of one penny-a-pound tax on the financial interests of the 'Phytologist?' They may ascertain it from the following statement:—Twenty pounds of paper will suffice for the letterpress of 240 copies of the Magazine, and if the publisher received all the benefit of the remission of duty, the saving would be only 1*s.* 8*d.* on the paper used for 240 copies; but let the saving be estimated at a couple of shillings or even half-a-crown, the gain would be say 2*s.* 6*d.* at the very utmost, while the loss if 1*d.* less was charged for the work, would be a pound on 240 copies; if the price was fixed at 2*d.* less, the loss would be two pounds; if at 3*d.* less, three pounds. On 240 copies the loss would be one, or two, or three pounds respectively, according as the price was reduced one penny, or twopence, or threepence; while the other side of the account would show only a saving of less than a couple of shillings.

If the price were to be reduced one-half, the circulation would not be materially increased: the fate of the 'Botanical Gazette' settled this, till then, doubtful point. If the 'Phytologist' were to be sold for twopence, its sale would not be greatly extended, because the readers who like its contents are few. When the botanists of Great Britain amount to thousands, a cheap botanical periodical may exist; at present it is impossible.

To the first question, "What will be the fate of this Magazine when its publisher relinquishes his trading business?" no very precise answer can be given. Time alone can discover what will be the future destiny both of books and authors in the darkness of futurity. A rough guess is all that can be given to so ticklish a question.

The Editor assumes from the following facts, that there is no inconsiderable share of vitality in the 'Phytologist.' In the first place it has been a favourite, otherwise it would long ago have disappeared, and have been consigned to the limbo of unsuccessful speculations. It has been a prominent object on the small stage of botanical activities upwards of twenty years. Again, the contributors are gradually increasing, a sure evidence of growing prosperity, because they supply both the facts and the pecuniary assistance. Under the present management the sale has been more than doubled, and the contributors have multiplied more than a hundredfold.

From experience it may safely be inferred, that no exclusively botanical publication, unless issued at a high price, can be a self-supporting adventure. The publisher who speculates on a greatly enlarged circulation by diminishing the price, will act as imprudently as a knee-buckle merchant of the last century, who, as stories tell us, sent a large consignment of buckles, universally used in this part of the kingdom, to the regions lying west and north of the Grampian Hills, where, he had been told, that there was not one dealer in this article of general wear. He learned to his sorrow, that though he had the market solely to himself, there were no buyers, because the people there dispensed with the garment for which knee-buckles were manufactured.

During the last thirty years several serials, with botany for their sole or chief object, have been fairly started under tolerably favourable prospects; but their career was not of long duration. With the view of increasing our sale and lowering the price, the following is thrown out as a hint to our subscribers, and especially to our correspondents, with this proviso, that it cannot be undertaken until the present publisher has entirely ceased to have any concern in its publication.

The Editor's proposal is to enlarge the sphere of the 'Phytologist,' or, in other terms, to make it a comprehensive digest of the progress of the kindred natural sciences; for example, to combine zoology with botany. There are several of our contributors, zealous friends of the 'Phytologist,' who could, and probably would, aid us in supplying facts about animals as well as about plants. It is probable that our

circulation might be extended by this proposed extension of our plan; and in this event more letterpress might be afforded for the same price.

As above intimated, this cannot take place till the retirement of the worthy publisher, who entered into an engagement with the former proprietor not to admit any zoological articles into its pages, on the express stipulation that no botanical matter appeared in the 'Zoologist;' an agreement which has, on one side, been but indifferently fulfilled.

Many remarks, queries, notes, and reflections, have reached both our eyes and ears on a subject which has given rise to much discussion, during at least a space of two years, viz. on the mutability of species, or, in more qualified terms, on the effect of natural selection in modifying what are usually called species. The ancient doctrine, sanctioned by the high authority of Linnæus, that only a *single* plant of the more complete kinds, and a *pair* of the less complete, were originally created, has been again broached in these our times. From this assumed hypothesis, and from other well-known facts, it has been asserted that varieties are incipient species; and that aberrant forms by a kind of accumulative action will gradually become distinct from their original parents, and grow into new and independent species, genera, and orders.

Much of the ingenious speculation bestowed on this new doctrine is based on the acknowledged distinction existing between domestic and wild animals, and cultivated and spontaneous plants. It is further assumed that all plants were originally wild, and that all tame breeds of cattle, sheep, horses, pigs, etc., were once *ferœ naturâ*, natural wild-beasts; also, that the human race was once in a similar condition, and that thousands of years were spent in the selective operations ere a perfect man and woman were evolved, by the continuous exercise of these wonderful secret selective powers.

The Editor most humbly begs all his correspondents who have sent him remarks, queries, and memoranda on this mysterious subject, to remember that the 'Phytologist' is not the proper medium for ventilating theoretical views; it is merely a repository of facts, though it is sometimes entrapped into the maze of speculation, probabilities, and possibilities; and its pages are sometimes made receptacles of learned lumber, a state

of things unavoidable in our case, where readers and authors are almost synonymous terms.

From the very admissions of the ingenious inventor of this new doctrine, it may be inferred that his theory of the origin of species is deficient in some of the constituent elements of vitality. If we be hopelessly and utterly ignorant of the mutual relations of all organic beings, as he admits (see p. 78), is it probable that we shall arrive at any satisfactory conclusions about their origin, which ascends so far into the geologic periods of unknown ages. The theory may amuse the speculative, dreamy classes of mankind, who are pleased with the paradise of fools, and who cackle and crow when they have found only a mare's-nest; but it has no charm for two very influential orders,—neither for the practical and popular, nor for the philosophic mind. To the former it will be repulsive, because it is useless; it wants the utilitarian element; and to the latter it will seem chimerical, because it is not well founded; the assigned causes are not sufficiently causative of the well-known effects.

The theory has another weak side; it is a butt at which the wits throw their slight but sharp shafts of ridicule; and it is repulsive to the theologian, who deems it only a fresh development of pantheism.

Another paragraph or two, and these personal matters will be dismissed for the present. There was a hint conveyed, in friendly enough terms, that the Editor now and then takes the liberty of giving in our vernacular the equivalents of certain classical (Latin) scraps, with which some correspondents illustrate and embellish their compositions. A friend has intimated that these English versions are uncalled-for and unnecessary; moreover, that they convey a sort of reproach, or insult, or slur, on botanists, who ought to get credit for the ability of translating for themselves. It is far from our intention to give offence to any, and least of all to the learned portion of our readers, who honour us by perusing our lucubrations. The *amende honorable* is hereby tendered to each and all the botanists who conceive that any imputation, either avowed or implied, has been cast upon their learning.

While humbly tendering our apology for the past, we take the liberty of pleading, in justification, that there are readers of the 'Phytologist' who do not understand Latin, for a good reason:

they never learned it; and it would be of little use to them if they had. In the first place, our lady-readers are not expected to possess this accomplishment; and we have the happiness of informing our friends that this class is increasing; and for their sakes it is our duty, as it is our pleasure, to suffer nothing to be published which it is probable *they* would not understand. Again, there are some of our very staunchest friends who can distinguish minuter shades of distinction in plants than those which divide the Cowslip from the Primrose, but who are not classical scholars, *i.e.* could not construe a line of Virgil or Homer to save them from the gallows. It would be absurd to believe that they possessed such qualifications.

The Editor cannot afford, even if he had the inclination, which he has not, either to tantalize, disappoint, or alienate, his best friends. With all deference to his learned readers, to whom he wishes daily accessions both of wisdom and knowledge, he must indulge his good-nature so far as to endeavour to convey to every reader the meaning of what has been published, on his responsibility, for general information, or satisfaction, or pleasure.

It is hoped that this explanation will be satisfactory, and that henceforth no offence will be taken at our doing what many of our readers would consider a sort of benefaction. Be this as it may, when a scrap of Latin comes to us from any quarter whatever, it will receive the best translation which we can afford; but it is hoped and desired that there may be as little occasion for the exercise of this right as possible, and that the writers will generally be content to write their reflections in plain English. Fair warning is now given to all who write in this piebald fashion that their learned quotations will be always accompanied by words which convey the sense in our mother-tongue.

The first important fact recorded in the simple annals of the past year, and to be here briefly recapitulated, is an account of a new station for *Arenaria balearica*. The locality is in Dorsetshire, far from the Scottish place where it was first observed, but quite as likely to be a genuine one as the Perthshire station. The authority is that of the noble owner who has known the plant there for almost a quarter of a century.

Perhaps the most interesting discovery of the year was that of *Verbascum thapsiforme* in Kent, not far from Ashford. For a

notice of this event, and of the plant itself, see 'Phytologist,' vol. v. p. 362.

The confirmation of the genuineness of the station for *Maianthemum bifolium,* by Mr. James Backhouse, has given much satisfaction to our readers, as a final settlement of one of the troublesome questions that arise about the nativity of certain plants.

The number of foreign or stray plants naturalized and semi-naturalized, and hitherto unrecorded as growing spontaneously in this country, is gradually increasing. We never observed so many in any single year. Their names and origin, with their other accidents, viz. their history, multiplicity, locality, etc., will be forthcoming subjects for the coming year. For the present, it is better, in this review of our annual proceedings, to enter here only the prominent subjects which have been already submitted to our readers.

The list of local botanists, so long a *desideratum* among many lovers of the innocent and useful art of *simpling,* is now an accomplished fact on which we have the pleasure of congratulating our readers as a progressive movement in the right direction. A confident expectation is indulged that this is only the precursor of further advances, and that their example will stimulate the botanists of other counties, and especially of the South, to follow in the wake of the intelligent and enterprising energetic men of Lancashire, Yorkshire, and Cheshire; that is, give the Editor authority to publish their names, as being willing to assist strangers in their botanical researches. We hope, for the general interests of humanity, which may be greatly promoted by these and similar pursuits, that the botanists of the north of England will increase tenfold, and that their goodwill may never be less.

We have very little to enter here under the head of botanical publications. As usual, the most important work on vegetation has been the 'Phytologist.' Sowerby's 'Wild Flowers,' and the same distinguished author's work on Grasses, have been completed and sold, and a new edition of the 'Wild Flowers' is now issuing. Vague rumours of a re-issue of 'English Botany' are abroad, but nothing definite nor even tangible has reached us.

The following hint is submitted to those who are fortunate enough to possess a microscope, or rather, who have taste and tact to make a good use of it.

When the 'Phytologist' made her first appearance, microscopes were not so common as they are now. Hence we have never had more than a scantling of physiological matter. We are not very desirous of getting communications on structural botany, or about the anatomy of vegetation, because this is generally to be met with in good elementary introductions to the science. Facts relating to the economy of living objects remain still to be discovered, and these are of never-failing interest. The phenomena of life, whether in sentient or non-sentient objects, is exceedingly attractive and very instructive both to botanical and general readers.

Again, another word to all readers, whether microscopists or only good practical observers unaided by these excellent scientific auxiliaries. Facts about the uses of plants, for example, in diet, or in medicine, or in clothing, or in the arts, or in any manufactorial process, will be thankfully received and duly honoured. The 'Phytologist' professes the creed of universal utilitarianism, and she solicits contributions from all quarters and on all subjects connected with the Vegetable Kingdom so far as these are subservient to the necessities of man, and are contributory to the gratification of his tastes, and to the enlargement of his intellectual and moral faculties.

Our strong point always has been, and probably ever will be, *local botany*, and we are not afraid of exhausting the subject. Is there any equal portion of the earth's surface which has been more diligently searched for plants than England has been? and there are none who know so well how much remains to be done as those who are best acquainted with the botany of their native land.

We have another favour to ask, in addition to the foregoing humble request, to be supplied with as many facts on economical, physiological, and local botany as our obliging friends can let us have with as little trouble to themselves as possible, viz. examples or forms of certain species or alleged species of plants, for purposes which are now to be stated in detail.

In the first place, *Œnanthe peucedanifolia*, Sm., or *Œ. silaifolia*, Bieb., is wanted. The plant so called, in some parts of England, approaches too near to what is now universally (?) named *Œ. Lachenalii*, to be always distinguishable from the latter-named species.

We are not afraid to give currency to certain doubts which are humbly entertained and diffidently divulged, that our older botanists, and one of the moderns, at least, may have been right in calling our three assumed species of *Œnanthe*, viz. *Œ. pimpinelloides*, *Œ. peucedanifolia*, and *Œ. Lachenalii*, by the first name. This is only sheer surmise, for the matter is undecided; and it probably will remain in this doubtful state after a series of examples have been carefully compared. But by undertaking this labour, a step will be taken in the right direction, and our readers will have the benefit not merely of the result of this comparison, but they will have the opinions of the *élite* of the leading collecting botanists of England.

There is another object looming in the distant future, viz. a monograph of the British genera and species of the Order *Potamacæ*. We may say ditto to that or those of *Chenopodiaceæ*, that is, if our readers will supply us with a sufficient series of examples, or even of the most critical and proximate forms of plants belonging to either of the Orders, or to both.

We have no more requests to make, nor any more explanations to submit, only this one, viz. that our readers, correspondents, and contributors, will receive our assurance that we are their most obedient servants, and that we are most grateful receivers of all their favours, honest counsels, and cheering encouragements. For their goodwill and active support we hereby tender to each and all the expression of our joint feelings, joint thanks, and gratitude, and wish them all a happy and prosperous new year, assuring them that our gratitude will not lag behind their judicious efforts in our behalf.

THE PLANTS OF HOLY ISLAND.

By W. R. Alnwick.

Though the situation and extent of Holy Island are doubtless known to most readers of the 'Phytologist,' perhaps a short introductory description may be useful.

The island is about three miles long, and a mile and a half wide, and of a very irregular outline. Its entire area is one thousand four hundred acres. "Its surface," says Raine, "is

flat, for the only conspicuous eminence is the Beblowe, on which the Castle sits like a crown. The Heugh is a rocky elevation along the southern shore, overlooking the town, and the Links (about nine hundred acres) heave up with rounded knolls of sand."

There is a small lake (the Lough) near its eastern shore, occupying about five or six acres; but it appears to be gradually diminishing in size, or filling up with decayed vegetation. If such is the case, several interesting plants will disappear with it, and render the island less attractive to the botanist.

About six hundred acres of the island are under cultivation; the remainder is occupied by the "Links," which are mostly flat, but with a few round hills here and there, and are entirely composed of sand, interwoven with the Sea-Bent, *Arundo arenaria*, etc., whereby the loose soil is consolidated. Off the south-western extremity there is a small rocky islet, called St. Cuthbert's Isle: at high-water it is entirely insulated, but at low-water it is accessible by a low ridge of rock covered with seaweed.

To the mere pleasure-seeker, Holy Island offers but little attraction, but to the antiquary it yields interesting objects, in its old ruined Monastery, which was one of the most celebrated in the North, and in its picturesque, weather-beaten Castle, which is yet in a good state of preservation.

The naturalist, especially the botanist, here finds a rich, though limited field for research, and enough of the beauties of Nature to give him the most heartfelt satisfaction, when he has diligently contemplated the various objects that are scattered round him on every side. "To the eye thus at freedom, Lindisfarne becomes the greenest spot in our prospect, and the most interesting field for the naturalist's researches. It was the mother of our Churches in the north, the nurse of our religion, and of much of our civilization; and you may wander amidst its ruins with the same reverential feelings that moved and agitated Samuel Johnson at Icolmkill."

At low tide the water between the island and the mainland is so shallow, though it is never quite dry, that people are in the habit of crossing on horseback, and also by wading. The road across the sands is six miles in length, and leads to the northern extremity of the island. Further south a point of land juts out, approaching to within two miles of the island. A passage can

be readily obtained by boat.* It was by the latter route that I visited the island last July (1861); and if the reader will kindly accompany me, I will try to describe the interesting objects which were presented to my view, and which are now reproduced for his delight and information.

The first point of approach is the little isle of St. Cuthbert. About half an acre of the islet is covered with a scanty vegetation; and though rarities are scarcely to be looked for on so barren a spot, yet I saw a small quantity of *Artemisia maritima*, and an abundance of the Sea Lavender (*Statice Limonium*). The foundations of the little chapel, formerly inhabited by the patron saint of the island, and still traceable, are objects of great veneration to the fishermen, one of whom told me, as I was crossing in his boat, that the bones of the saint could find no rest there, he was so much disturbed by their oaths from the adjacent landing-place. They were exhumed, he said, and buried at the opposite side of Holy Island, but the change of place brought no peace; for the sea-fowl were as clamorous and disturbive as the fishermen; so the brethen of the monastery were obliged to transport the holy relics to Durham.

Leaving St. Cuthbert's, I proceeded along the treacherous slippery ridge of rocks that connect the islet with the island, and was glad when I placed my feet on the greensward again. I was not long in making important captures, which consisted of an abundance of *Convolvulus arvensis* and *Glyceria maritima*, also *Carduus Marianus* and *Silene noctiflora*. Proceeding through the town, I noticed the two commoner Mallows, *Malva sylvestris* and *M. rotundifolia*, occupying their usual habitat by the wayside. A little patient search of some waste ground was also rewarded by a few small plants of *Senebiera Coronopus*.

Winding my way through the town, I soon reached the ruins

* When the illustrious botanist Ray visited the north of England in 1661, he neard it confidently asserted that the ebbs are so great on the Lord's-day that a man might go over the narrow strait in the morning and return in the evening dryshod. Is this legend still current, or has it been contradicted by long experience?

When Ray, with his companion Willisel, visited Holy Island ten years later, in 1671, on a simpling tour, as he says, they found the following plant, viz. *Asperugo procumbens.*

See Memorials of Ray (Itineraries), p. 151 *note:* "In the Holy Island I found growing *Aparine major* Plinii; *Asperugo procumbens*, Linn. Upon the walls of Berwick, by the seaside, *Erysimum latifolium Neapolitanum* (*Sisymbrium Irio*, Linn.)."

of the Priory. Though a short description of these might be interesting to some readers, it would be out of place here; therefore I shall content myself with indicating the plants I gathered.

Among the ruins, and on the waste ground near them, was a quantity of *Salvia Verbenaca;* and in the adjacent fields I saw *Carduus Marianus* and *Carlina vulgaris,* both apparently wild. *Asperugo procumbens* grows in profusion on and about the ruins of buildings on the Heugh. It was seen there by Ray now nearly two hundred years ago; yet, notwithstanding its abundance, it remained unobserved till it was re-discovered in 1850.

I next made for the rocky ridge that lies between the town and the sea, called the "Heugh," and found many plants that are not universally distributed over the island, viz. *Glyceria rigida, Hordeum murinum, Plantago maritima, Sagina maritima,* and others, grew on the grassy banks, as did *Vicia lathyroides,* but it had gone out of flower long ago. *Silene maritima* was growing in the crevices of the rocks facing the sea, and *Sedum anglicum* occupied similar localities. The coast between the Heugh and the Castle is low and rocky; in proceeding along it I saw *Trifolium scabrum* growing in some of the crevices, but in small quantity; the delicate little Trefoil, *T. arvense,* decorated the banks in many places.

As I approached the Castle, I saw patches of *Allium oleraceum* in several places, and some straggling plants of *Cynoglossum officinale* and *Hyoscyamus niger.*

Several of these plants occur again on the rock on which the Castle stands. *Sagina apetala* grows on the walls, and on the summit *Echium vulgare* stands conspicuously. *Erigeron acris* has been reported to the north of the Castle, but though I searched diligently, I was unable to discern any trace of it. In going northward through the cornfields, I found *Silene noctiflora* growing as a weed. Indeed the "weeds" appear to thrive amazingly. One field is brilliant with the Poppy, *Papaver Rhœas; Anagallis arvensis* luxuriates in another; and I crossed a third that ought to have produced a crop of barley, but one might have imagined it had been sown with *Carduus arvensis* and *Lycopsis arvensis.* It is here that the Lough is situated. I made a careful inspection of it, and saw the following plants, in more or less abundance, round its margin:—*Potamogeton pectinatus, Chara hispida, Veronica Anagallis, Alisma ranunculoides, Ranunculus*

aquatilis (or one of the multitudinous progeny that give so much labour and so little satisfaction to those who labour in this barren field), *Sparganium simplex, Menyanthes trifoliata, Juncus cœnosus, Littorella lacustris, Polygonum amphibium,* and many more of less note. A walk over two or more fields brought me to the bounds of cultivation, and I arrived at the Links, which present some diversity in their productions, or yield a few species which I had not previously gathered.

As before said, in describing the island, the Links, which occupy so large a portion of its area, consist of rounded hills of sand, which are also covered with *Arundo arenaria. Carex arenaria* also has a good footing, and among other Grasses I saw *Phleum arenarium* and *Festuca rubra.* In passing one of the banks I was attracted by some fine examples of the Rest-harrow. I had almost passed it with merely a passing look, taking it for the commoner species, *Ononis arvensis;* but on possessing myself of a sprig, I saw at once that it was *O. antiquorum.* This simple circumstance, at the same time, showed me the value of *accurate* observation in botanical rambles, for if this is not attended to, many awkward mistakes may be made. *Astragalus hypoglottis,* though not in flower, was still visible in many places, and the same may be said of *Cochlearia officinalis.*

By the way, the rarer *C. danica* grows on the Farne Islands, which lie a few miles to the south of Holy Island. In many parts of the Links there are depressions, which are usually damp. The most important plants I found in these places were *Samolus Valerandi, Blysmus compressus,* and *Lycopodium selaginoides. Gentiana campestris, G. Amarella,* and *Erythræa littoralis* appear to occupy as much ground as they can, for I found plants of these species here and there all over the Links, but always thinly scattered. *Rosa spinosissima* and *Salix fusca* grow side by side in various parts all along the coast; the former, indeed, is plentiful in many parts of our Northumbrian shores, but Holy Island is the only locality in our county for this Willow that I know of.

At the north-western corner a long point juts out towards the opposite shore, forming about half the length of the island, though very narrow; and it is so similar in character and productions to the portion I have last described, that it will not repay a journey along it; I shall therefore cross to the western shore, and proceed southward.

Before doing so, I may mention a feature that is certain to be noticed by a stranger; that is, the absence of trees. The few trees that are to be seen are only in the vicinity of the houses, and have evidently been planted. From this it may be inferred that the island has a very bare appearance; even the fields are generally divided by "dykes" of earth or stone, not by hedges.

The south-west shore is generally flat and muddy, and appears congenial to the Chenopods, for there they muster strongly both as species and individuals. This Order is represented by *Chenopodium maritimum, Atriplex patula, A. littoralis, A. rosea, A. erecta, Salicornia herbacea,* and *Salsola Kali. Chenopodium botryoides* is reported from this locality by Dr. Johnston, who quotes Mr. Babington as his authority. It would have been more satisfactory if the Doctor had seen it for himself, for then two witnesses might have been adduced for its existence in the island. I did not see it, but I have gathered what I believe to be that plant in the vicinity of Alnmouth. Not far from the shore, I met with some fine examples of *Blysmus compressus;* plenty of them too. *Cakile maritima* also grew among the Chenopods. Further from the edge of the water many parts of the beach were covered with *Glaux maritima, Zostera marina,* and *Arenaria peploides.* I also met with the Sea Wheat-grass, *Triticum junceum,* as well as others that I had previously seen. A short walk further along the shore, past the harbour, and I arrived at the town from whence I started; a tourist may obtain rest and refreshment, but will find little to interest him in it; but if he has been as successful in herborizing as I was, this alone will afford sufficient gratification.

HERBARIA SALE.

The following lots of interesting specimens of plants collected by botanists and travellers from almost all parts of the world, were sold at Mr. Stevens, King Street, Covent Garden, on Saturday, the 7th December, 1861.

Lot 12. A large quantity of British and exotic Flowering Plants and Ferns, collected by Mons. Gerard, several thousand, all named (of *Dentaria bulbifera,* Harefield, there are numerous specimens), six bundles.

This M. Gerard was gardener to the Royal family of France when the first revolution broke out. After his Royal master lost both crown and life, he fled over to England, and lived in humble circumstances, and for many years collected plants for botanists, and medicinal herbs for sale. At his death, in 1840, his enormous stock-in-trade was dispersed. This lot formed a portion of his collection, and sold for one pound.

14. Ferns. The genus *Asplenium*, illustrated by several hundred specimens, from most parts of the world, all named and localized, including sub-species, varieties, and some few duplicates, £1. 10*s*.

15. The genus *Aspidium*, similarly illustrated, £1. 4*s*.

21. *Polygala*. The genus *Polygala*, extensively illustrated by several hundred specimens from most parts of the world, all named and localized, £1. 3*s*.

42. Rare British (chiefly Essex), ex. herb. Christy, 4*s*.

46. Portugal. Dr. Welwitsch's plants of Portugal, a fine set of plants, all named, and in the best possible condition, about three hundred species, £1. 3*s*.

61. Plants collected by Mr. Edward Forster, chiefly Essex, 5*s*. 6*d*.

62. Plants, various, by the same botanist, 4*s*.

71. British plants. A large number of rare and interesting British plants, chiefly collected by Edward Forster and his friends, 5*s*. 6*d*.

72. A collection of duplicates of British plants, various, 3*s*.

90. Buckley's plants of Alabama, U.S., and neighbouring States, about three hundred species, all named; one bundle, 7*s*. 6*d*.

91. A collection of dried plants, from various parts of the world, and from noted botanical gardens, nearly all named, many with notes in the handwriting of the late Professor David Don, Mr. A. B. Lambert (in whose herbarium they formerly were), and others, in all about a thousand fastened down on herbarium paper, in five large bundles, £1. 9*s*.

103. Edward Forster. A very large number of interesting and rare British plants, collected by Mr. Forster and his brothers, during their botanizing journeys, or communicated to him by his friends; the most of the tickets bear his own autograph, and here and there interesting notes and criticisms. Many of them are the very plants from which the drawings in Sowerby's 'English Botany' were originally made. £1. 2*s*.

150. A very curious old herbarium, one folio volume; apparently collected by some Dutch botanist of note. It contains plants from various sources, but principally from the Botanic Garden at Leyden (?). The tickets are difficult to decipher, but the dates thereon are plain enough: 1634, 1635, and 1636! There accompanies this botanical curiosity a very interesting letter (to its former possessor, the late Dean Buckland) by the Rev. Gerard Smith, partly describing it. This volume contains *Orchis hircina* and numerous other rare specimens. Although in a very poor state, yet, such

as it is, it affords a most interesting relic of some early botanist's labours. The dates on the tickets, the handwriting, and other circumstances, appear to point to the elder Tradescant as the collector and owner of this, I suppose, the very oldest herbarium now existing, certainly the oldest I have ever seen. This lot was purchased at the sale of Dr. Buckland's library, 16*s.*

194. Welwitsch's Plants of Portugal, an excellent set of the second section (Estremadura, etc.), above four hundred and fifty species, in the best condition, 17*s.*

195. British, rare and interesting, collected by Babington, Borrer, Christy, and others, 2*s.* 6*d.*

196. Miscellaneous, chiefly British (1), and two other bundles, Botanic Gardens, Strasbourg, etc., three bundles, 4*s.*

197. European, mostly rare British, 3*s.* 6*d.*

198. Autographs. A collection of twenty-five botanical pamphlets, each of which bears a presentation inscription in author's own handwriting, 5*s.* 6*d.*

199. A similar lot, 3*s.* 6*d.*

200. Ditto, 3*s.*

201. Ditto, 6*s.*

202. Twelve autograph letters or memoranda of distinguished botanists, Endlicher, etc., 4*s.*

203. Twelve ditto, Steudel, etc., 4*s.*

204. Ditto, Sprengel, etc., 2*s.* 6*d.*

205. Ditto, Martius, etc., 3*s.* 6*d.*

206. Ditto, Fischer, etc., 2*s.* 6*d.*

The publication of the sale and the prices of the above few lots of botanical specimens will be subservient to two purposes: in the first place, they will show our readers that such things are so utterly worthless, as marketable commodities, that the sum realized by their sale would not pay for the labour, time, and paper necessarily spent in preparing them for the auctioneer. There were about two hundred lots at this sale, some larger, some smaller than the examples here reprinted, and on an average they did not fetch above a penny for each species, duplicates and mounting included. The paper to which they were attached would have cost more originally, without taking into account the charge for work and labour, than the sum realized by their sale.

Those who want specimens of plants, both British and Foreign, may have their wants supplied by a very moderate expenditure.

The second object is to inform collectors generally, whether

they belong to the commercial or the scientific class of *simplers*, that their trouble in collecting, drying, pressing, arranging, packing, and distributing, either to friends or customers, is not followed by an ample remuneration. Our reader's special attention is solicited to the article 195, wherein he may learn that a parcel of rarities, comprehending the combined collections of three eminent botanists, whose names are published as a guarantee for the genuineness of the articles, sold for half-a-crown; and there are other contributors to enhance the value of this lot, but they are probably not so well known, or are of a humbler social grade. We need not ask what they think such a parcel should have sold for; as Hudibras, or somebody else, says,—

> "The honest price of anything,
> Is just as much as it will bring."

But probably they will say that the collections of great men are not always objects of great estimation.

Finally, it is to be hoped that the time-honoured practice of the donor's attaching his name to his gift, will never be discontinued. *It* tells us (the ticket is meant by *it*) to whom we are indebted for overstocking the market; and also that the commercial botanist is not the only one of the brotherhood who has helped to make plants scarce and specimens cheap.

KENTISH BOTANY.

Memoranda of a few Hours' Botanizing on Barham Downs, and about Broome Park, near Canterbury.

To have travelled from London to the ecclesiastical metropolis of England, in the days even of fast coaches, and to have returned home the same day after transacting a little business, would have been deemed a feat worth relating. By the facilities of railway locomotion, it is an easy journey to south Kent, either to Folkestone, Dover, or Canterbury, returning home to dinner.

The botanist who lives in London may have his breakfast comfortably before starting, go to the station about eight o'clock, and reach his destination, say Canterbury, by ten o'clock or half

past ten; thus leaving eight or nine hours for his researches, and ample time for his return.

The writer of the following memoranda of a journey to Canterbury on the 2nd of July, offers the readers of the 'Phytologist' the result of his experience of the pleasures and advantages of similar excursions.

Two are better than one, both for counsel and for action; and therefore the use of the plural pronoun is not only justifiable but necessary; in a word, to cut short needless explanations, *we* left Canterbury about five or ten minutes past eleven, and walked along the Dover road through the pretty village of Bridge, (all the villages here are pretty,) and over the racecourse (Barham Downs),* onwards to the place where the Folkestone road branches off from that to Dover. On the right is Broome Park, which was to be the utmost extent of our journey.

Barham Downs are about four miles from Canterbury and they extend about four miles to the south, occupying the summit of the chalk hills, which extend from this ancient city to Dover, the most ancient port of Kent. The scenery on the right hand is beautiful, even in this beautiful part of England. There is a series of parks of noble dimensions, and abounding with first-rate trees, and turf of the richest herbage and intensest green.

The noticeable plants on the racecourse were what are usual in similar localities. The Grasses were chiefly *Brachypodium pinnatum, Avena pratensis, Koeleria cristata, Festuca ovina, F. duriuscula,* etc. Among other plants, the little and elegant species *Asperula cynanchica* abounded; *Spiræa Filipendula* was not scarce; and the whole Orchid family was represented by a few solitary and small examples of *Orchis pyramidalis.*

At the borders of cornfields, a few miles along the downs, *Cerastium arvense* was gathered, and among them some very dwarf examples, which we thought might, where none better were forthcoming, supply the place of of *C. strictum.*

* Barham Down, or Boarham Down, was so called by our Saxon progenitors when it was better wooded than it is now. It was a favourite resort of wild swine, animals which afforded noble and valuable game to our athletic forefathers. "Barramdowne," as Lambarde calls it, "in the Saxon Barhamdune, the hill where the bores doe abide," is a spot of historical importance in the early annals of England. Here Julius Cæsar reviewed his army, and marched thence against the Britons. Here Philip the king of France encamped his host, prepared to avenge the Pope, who had been offended by John; and on these hills in the Barons' war the Earl of Leicester mustered his host against King Henry III.

We missed *Hippocrepis comosa,* not entirely, but the myriads which cover some steep hangers on the North Downs about Guildford, Shere, and Dorking, were not here observable. It appeared on the roadside, but not in great abundance.

On the slopes and hangers beyond Broome Park, in the direction of Elham, an amazing abundance of certain Orchids grew, one of which, *Herminium Monorchis,* abounded on both sides of the valley a little beyond Broome Park, towards Elham. It was most abundant on the south-east slope, where it grew in scattered patches, spread over many acres. Several of the specimens were from nine to twelve inches high.

Gymnadenia conopsea was equally plentiful on the same sloping pasture field, where the Bee Orchis appeared only few and far between.

In Canterbury there has recently been established a botanical and floral society, and these florists are so zealous collectors,—I will not say rapacious,—that the race of some of the rarest plants, especially of the Orchid family, is in imminent danger of being speedily extirpated. It is very much to be regretted that the leading members of these societies are so forgetful of the claims of posterity.

An open space on the downs, between the place where we were and Elham, was pointed out to us as the station of the Spider Orchis, but whether of the early or late species, we did not ascertain. This fine tract of high ground between Canterbury and Dover, or on the Folkestone branch, is well worth the notice of botanists. It has not had its fair share of attention, though it is celebrated for its fine open and diversified scenery. Its botany is but little known.

The old Roman road, from Hythe to Canterbury, which passes through Elham, is the locality for *Vicia sylvatica,* an outlying station for this fine sylvan species. A week or even a fortnight might be enjoyed here about the beginning or middle of June in backward seasons, making the little town of Elham the botanist's headquarters, and working round from this centre between Hythe and Folkestone on the one side, and Broome Park and Ashford on the other. A rich collection could surely be procured in this district, and British botanists might get reliable information about the productions of one of the richest districts in England, a part of the country at present comparatively unexplored.

The chief object of our visit to Broome Park was to see, not to collect Orchids, and in this object we were partially disappointed. We did not see many of the *rariores* (rarities), and of the *rarissimæ* we saw none.

Several reasons may be assigned for our slender success, besides the one above stated, viz. the reckless practice of non-botanical collectors; in the first place, as we were informed by a resident lover of Orchids, the pastures had been overstocked in spring, and in the early summer, a natural consequence of the scarcity of the fodder, occasioned by the protracted, severe winter. The excess of stock and the deficiency of pasturage contributed to the scarcity of the Orchid family. What may be the effect of a more than usually cold spring on the members of this family, we were not able to determine, but whatever may have been the cause, the rarer species were scarcer than usual during the spring and summer of 1861.

CATALOGUE OF PLANTS CULTIVATED BY COLLINSON.

Extracts from a privately printed Catalogue, and Brief Notes on some British and Foreign Plants which were cultivated in Mr. Collinson's garden at Mill Hill, Hendon, Middlesex.

The celebrated botanist and florist, Peter Collinson, lived at Mill Hill, Hendon, Middlesex, about the middle of the eighteenth century—upwards of a hundred years ago. This Catalogue was compiled by L. W. Dillwyn, and printed at Swansea in 1843.

Anemone Pulsatilla.—The following note is appended to this entry:—"Mr. Knowlton found millions of Pulsatillas growing everywhere in the grass,* from a mile south of Lancaster, on the way to Little Purton" (Hart. Coll. p. 3). This is a new fact for the botanists of Lancashire and the north of England, who could hardly have overlooked so conspicuous a plant, and one which appears when there are few other plants in flower.

* Mr. Knowlton was gardener to Consul Sherard in the earlier part of his life, and subsequently to the Earl of Burlington. He was a zealous botanist and antiquary. See Phil. Trans. vol. 45. He died in 1782, at the advanced age of ninety.

Is this fine plant entirely unknown in Lancashire and in the north of England? If this fact is not new to the botanists of Lancashire, it may be so to the learned author of the 'Cybele,' who names ten counties where the plant is reported to grow; but Lancashire is not one of them.

HELLEBORUS FŒTIDUS has the subjoined memorandum:—"*Mem.* July 27, 1757.—I went to R. Warner, Esq., at Woodford, Essex, to see his fine new Jasmine from the Cape. He showed me his thumb and fore-finger, so poisoned, swelled, and inflamed with much pain, from opening the greenish pods or seed-vessels of the stinking black Hellebore or Bearsfoot. It rose in blisters, but when the water was let, out the pain abated.—P. COLLINSON."

NYMPHÆA ALBA, var., of De Candolle. Letter, indorsed by Mr. Collinson,—"From my learned and ingenious friend, Doctor Dillenius, Botanic Professor at Oxford, who, with infinite pains and application, drew, and then himself engraved, his curious 'History of Mosses;' and besides that the 'Hortus Elthamensis' was all drawn and engraved by himself, not to be paralleled.

The following is the Doctor's letter to his friend Collinson:—

"On the small Water Lily which I found in shallow waters at Brockenhurst, in the New Forest, Hampshire, and brought home specimens.

"Dear Sir,—The Willow with opposite leaves is the 11 of Synopsis (Ray's), p. 448, and the Water Lilly is called *Nymphæa alba minor* by C. Bauhin and others. It is not a common plant, nor observed to grow in England but by Lobelius, but his direction is so large, that notice hath not been taken of it, for he says in his 'Adversaria,' p. 251, that it grows in slow and not too deep waters, as you travel from London to Oxford and Bristol. Lobelius can't be understood of the *Morsus-ranæ*, for he describeth that in the next page, and knew and distinguished plants very well. Mathiolus (Matthiolus) says that it grows in the lakes of Bohemia, and in his figure makes it a pentapetalous flower, which is wrong, and if there be such a flower nobody has seen it but himself. What most authors say of it they transcribe from Matthiolus, and their figures they have from that author, except the Hortus Eystettensis, where you will find both sorts very well figured in the part vernal, ord. 7, fol. 3. I find a specimen of it in Will. Sherard's collection, gathered

in the lake at Mantua, to which Mr. Ray hath put down that he never saw it before; nor have I seen it growing. You will in your next more particularly describe the places where you found it. . . .

"I am, dear Sir, your sincere Friend and Servant,

"J. J. Dillenius."

In Mr. Collinson's copy of Blackstone's 'Specimen Botanicum,' which had been presented by the author, the following memorandum, without any signature, has been pasted on the fly-leaf, and I believe it to be in Mr. Blackstone's handwriting, and to have been sent to Mr. Collinson some years before the work was published:—"I don't find the *Nymphæa alba minor* taken notice of in the Synopsis, fol. 368. . . . This rare plant I have twice observed. The first was on the north road from York, going over a stone bridge on the right hand, in a river, before one comes to Doncaster; it was then in flower, the beginning of August. The second time I met with it was in going from Lindhurst (in New Forest) to Brockenhurst. There is a watercourse at the entrance of the village, over which there are bridges, but it being dry weather there was no running stream, but the water stood in pools. In the pools I observed both the small and great Water Lilly: they were both in blossom, for the distinction was easily made, and the difference is pretty remarkable. August 10, 1739." By an additional note, the plant at Brockenhurst appears to have been again in flower on August 1, 1740.

Œnothera biennis.—*Œ. rosea* and *Œ. pumila* were garden flowers in the eighteenth century. Several of them are now imperfectly naturalized in this country. *Œ. pumila* sprang up of its own accord in a garden in Chelsea, in the summer of 1861.

Ophrys apifera.—Curtis, in Fl. Londinensis, wrote—"This with other Orchids was cultivated with great success by the late Peter Collinson, Esq. (whose memory will always be revered by every botanist), in his garden at Mill Hill. His method was to place them in a soil and situation as natural to them as possible, and to suffer the grass and herbage to grow around them."

Ophrys muscifera.—*Orchis Myodes major*. "*Mem.* July 4, 1757.—Went to the Duke of Portland's, at Bulstrode; stayed to the 11th. In returning found the great Fly Orchis on the declivity of a chalk pit, in full flower, in Esquire Cook's

park, in the parish of Harefield, Middlesex; but there is one Miles, a parson, of Cowley, near Uxbridge, who is Orchis-mad, and takes all up, leaves none to seed, so extirpates all wherever he comes, which is cruel, and deserves chastisement" (p. 36).

Orchis hircina.—*Orchis barbata fœtida,* Goat Satyrion. "*Mem.* July 1763. Miller's Satyrion, No. 2, now in flower in my garden; three feet high, above fifty flowers."

Orchis pyramidalis.—In the 'Daily Advertiser' for July 4, 1768, this Orchis appears in a list of plants stolen from Mr. Collinson, and there are memoranda of many imperfectly defined species sufficient to show that he possessed a large collection of hardy orchidaceous plants.

Pulmonaria virginica.—*Mountain Cowslip,* an elegant plant and very ornamental in spring (Hort. Col. p. 43). To the above there is the following interesting "mem." :—"Miller's sixth species (of *Pulmonaria*) was entirely lost in our gardens, but I again restored it from Virginia by Col. Custis; flowered April 13, 1747, and hath continued ever since a great spring ornament in my garden at Mill Hill." In another memorandum, written by the same hand, and dated May, 1767, it is recorded that "twenty-seven stems grow from one root." Miller says that this ornamental early-flowering plant was originally sent from Virginia by Banister, to the gardens of Bishop Compton, at Fulham.

Loudon, in his 'Encyclopædia of Plants,' says it was introduced in 1699, and further that *P. maritima, P. sibirica,* and *P. virginica,* are all elegant plants, and bear so great a resemblance to each other that they are by some regarded as varieties of one common species. They are choice spring flowers, but require some care in keeping; except where they are grown in a soil almost composed of sand. Is this fine species now obtainable in trade collections?

On Ramonda pyrenaica, a plant recently introduced to the notice of our readers in the 'Phytologist' for December, 1861, where the history of this fine species is briefly told, "it is the *Cortusa,* No. 2, of Miller's sixth edition;" and Mr. Collinson has there left the following memorandum,—"I have had it many years by the name of *Bear's-ear Auricula,* from its hairiness on both sides of the leaf."

Rubus arcticus.—"*Mem.* April, 1747. Raised from seed *R.*

humilis septentrionalium (*R. arcticus*), in Swedish, 'Aker Bar.' May, 1747. Dr. Beck, of Sweden, sent me the *Rubus humilis*, or *Chamæmorus norvegicus*. It makes a pretty show with its red flower, and produces ripe fruit."

Rubus Chamæmorus, *Chamæ Rubus*, from Sweden, thrives finely. "*Mem. Vaccinia nubis* (Cloudberry), *Chamæmorus*. In August, in the highway from Settle to Appletreewick, a little parish on the river Wharfe, as I went down a rugged rocky hill, I observed this plant growing in the clefts of the rocks on the right-hand side; it was then in berry. I took up some roots and planted in my garden, where it grew; but my gardener pulled it up for a common briar," p. 47.

Salix babylonica, *Weeping Willow*.—"*Mem.* Mr. Vernon, Turkey merchant at Aleppo, transplanted the Weeping Willow from the river Euphrates, and brought it to England, and planted it at his seat in Twickenham Park, where I saw it growing anno 1748. This is the original of all the Weeping Willows in our gardens.

"In July, 1765, I measured a Weeping Willow at Mr. Smelling's, at Godalmin, Surrey, of but fifteen years' standing. It measured six feet in girth, or two feet in diameter, and the height in proportion."

Loudon states in his 'Encyclopædia of Plants' that this Willow was introduced in 1692; but this early date is somewhat discredited by Mr. Collinson's account. It is very improbable that he should not have seen a tree so popular till more than half a century after its introduction. Loudon also states that the famous Weeping Willow in Pope's garden at Twickenham was an accidental growth from some rods used in a package brought from Spain. The poet perceived some signs of vitality in these twigs, and planted them, with the remark that they might possibly produce something which was not in England. This is not impossible, but Mr. Peter Collinson's "mem.," written at the time, is higher authority than the poetical remark.

Spiræa Filipendula.—"*Mem.* Mr. Brewer, from Bradfield, Yorkshire, sent me two roots of double *Filipendula*, lately discovered." And from another memorandum it appears to have been found growing wild near Pontefract, and "considered to be a great rarity."

Spiræa Ulmaria, flore pleno (with double flowers). This variety

appears to have been discovered near the north of England, and sent by Mr. Knowlton to Mr. Collinson in 1736.

Syringa vulgaris, *Common Lilac.*—"*Mem.* Lord Petre was particularly fond of white Lilac, and his gardener sowed seeds gathered from the white-flowered variety of the shrub. He raised above five thousand plants that flowered in 1741; and of that number about twenty became white, the rest all blue" (Hort. 54).

It is inferred from the contents of this Catalogue, and from the 'Hortus Kewensis,' etc., that Mr. Peter Collinson contributed more trees, shrubs, and garden plants, to the stock previously in Britain, than any one botanist of the last century—more than all the botanists together? Commercial botanists (nurserymen) were neither so numerous nor so prosperous as they are at the present day, and the public botanic gardens have at no period added much to the fittings of parks, plantations, pleasure-grounds, and gardens. Private enterprise has made large additions to our stock of ornamental and useful plants. Dr. Pulteney, who passes a high encomium on Mr. Collinson as a benevolent and virtuous man, adds,—"In his time England received large accessions to exotic botany from all parts of the globe, to which no one contributed more than himself. Mr. Collinson died August 11, 1768, in the seventy-fifth year of his age" (Sketches of Botany in England, vol. ii. 275). There are further particulars of this worthy man and member of the botanical brotherhood, in the 'Biographia Britannica,' vol. iv. ed. 2, p. 34. In Dr. Lettsom's 'Memoirs of Dr. Fothergill,' there is a list of Mr. Collinson's papers printed in the 'Philosophical Transactions' and in the 'Gentleman's Magazine.'

In April, 1861, the writer of this notice of the catalogue of Mr. Collinson's plants, went to Mill Hill, not so much with the hope of gleaning any anecdotes among the residents of that retired hamlet in reference to so distinguished a resident, but rather to ascertain whether all memorials of him had perished in the place which he had rendered famous. The following has been obtained from an old correspondent:—"I remember that in 1831 I saw Mr. Collinson's gardener, then a very old man, for his master had been dead, at that period, upwards of sixty years. This man's descendants are still in Mill Hill, and carry on the nursery trade of their father and grandfather. The latter

was proud of having been once in the service of so celebrated a botanist. He was in possession of a few anecdotes about Mr. Collinson, and Mr. Salisbury, who lived at Mill Hill after it was left by the son of his employer. This is all I know about this famous amateur. I have only seen a man who had seen him, and had lived with him." The daughter-in-law of Mr. Collinson's gardener, now an aged but very intelligent person, had often heard her late husband's father speak of his early master. She was the only person in Mill Hill, so far as we could hear, who knew anything about Mr. Peter Collinson, or who had ever heard his name in connection with Mill Hill.

The estate formerly owned and occupied by him is the site of the Protestant Dissenters' Grammar-school, which has been established nearly half a century.

In a very few short, short years, every memorial of Mr. Collinson's reputation will have disappeared; his very name will be utterly forgotten in the obscure hamlet celebrated as the scene of his floricultural and arboricultural triumphs!

Sic transit botanicorum gloria,—Nothing lasts for ever, not even botanical fame. ZETA.

Review.

The Forests and Gardens of South India. By HUGH CLEGHORN, M.D., F.L.S. London: W. H. Allen and Co.

This valuable work, on the forests and gardens of South India, treats chiefly on the commercial value of timber, its cultivation and perservation, and is mainly a series of Reports made to Government by the conservators, inspectors, and other officials, extending over a period of four years, viz. from 1857 to 1860 inclusive. There are also numerous Reports from overseers, collectors, and others, acting under the authority and by the direction of the Conservator.

In times anterior to the British rule, teak, blackwood, rosewood, and sandal-wood, were rigidly protected, like some trees in Scotland, where the law permitted the landlord to punish

with severity the stealers of some trees, while they might cut others with impunity. The old rhyme runs thus,—

> "The aik, the ash, and elm tree,
> The laird may hang for all three;
> But for saugh, hobburn and bourtrie bush
> The laird may flyte, but mak naething o't."

The object of the British Government, which is now supreme in India, is the preservation of all sorts of timber, and both fruit and fuel trees, for the supply of the governmental departments, naval and civil service, erections, railroads, for great public works, and for the requirements of the ryots or cultivators, and for the supply of firewood to all classes.

The Government and the ryots alone will be henceforward permitted to cut and carry away wood *ad libitum* (at their pleasure).

The space at our disposal will not permit us to give a detailed account even of the contents of this work. Even if we could, they would not be of such interest to our readers as to warrant their being printed in this miscellany. We may have time hereafter to select a few notes, and for the present this work is heartily commended to all who are concerned in the prosperity of India, the most important dependency of the British realm.

We have much pleasure in reprinting a single quotation from the Report of Mr. William New, formerly one of our correspondents, and now in the service of the Government of India. It is on the germination of seeds. (See 'Cleghorn's Reports on the Forests and Gardens of South India,' p. 44.) "Mr. New, superintendent of the Lall Bagh garden, Bangalore, has raised a large number of seedlings in a nursery, and finds the seeds germinate readily if sown within a fortnight after removal from the tree; but they do not bear carriage well to a distance, and few germinate if a month old."

It is also gratifying to learn from this work that Major Drury's 'Useful Plants of India,' published at our office, 45, Frith Street, Soho, has had a rapid and extensive sale (in India), and has to a great extent supplied the present want, viz. of a botanical manual of Indian plants, which is preparing by Dr. Cleghorn, the conservator of the forests in South India.

BOTANICAL NOTES, NOTICES, AND QUERIES.

New Material for Making Paper.

Indian-corn straw, it seems, was used for the manufacture of paper in Italy last century; but the manufacture declined, and the art was lost. An Austrian, M. Moritz Diamant, has re-discovered the process, and Count Charles of Lippe-Weissenfeld and some Swiss paper-makers are working it. The paper made from the Indian-corn straw is reported to be much better than from rags, being stronger and more tenacious, and a very small quantity of size is necessary to fit it for writing-paper. It is easy to bleach the fibre, and when used for packing-paper no bleaching is requisite. The paper has none of the brittleness peculiar to ordinary straw paper, arising from the large quantity of silica present in the straw. No machinery is requisite to convert the Indian-corn straw into pulp; and as the mode of manufacture is altogether much simpler than that followed in the case of rags, it is said that the paper will be much cheaper.

Helleborus viridis.

"We knowe (sayth Columella) a present remedy of the roote whych the shepherdes cal consiligo, that groweth in great plentie in mersis mountaynes, and it is very holsume for all cattell. They saye it shulde be used thus; the brodest parte of the ear must haue a rounde circle made aboute it wyth the blood that tyneth furth, wyth a brasene botkyne (bodkin), and the same circle must be rounde lyke unto the letter O; and when thys is done wythout, and in the hygher part of the eare, the halfe of the foresayd cyrcle is to be bored thorowe wyth the foresayd botkyne (bodkin), and the roote of the herbe is to be put in at the hole, whyche when the newe wounde hathe receyued, holdeth it so faste that it wyll not let it goo forthe: and then all the myght and pestilent poyson of the disease is brought so into the eare. And whyles the part whyche is circled aboute dyeth and falleth away, the hole beast is saued wyth the lose of very smalle part."—From *Turner's Herbal*, part i., page 65.

Castanea vulgaris.

I observe that this tree, in some of our *modern* works on botany, is called an *alien*, but why I know not. If length of abode in *plants*, as in many other things, constitutes *naturalization*, I think the chestnut cannot properly be called an *alien*.* It appears from Lambard's History of Kent, date 1570, that "this county had whole woodes that beare chesnut:" and Dr. Wm. Turner, in his Herbal, notices the tree, and says, "*Chesnut-trees grow plentuously in Kent, abroad in the feldes*, and in many gardens in England." Evelyn in his 'Sylva' gives a full description of the chestnut, and tells us "of a famous chestnut-tree at Tamworth in Gloucestershire, which has continued a signal boundary to that manor, in King Stephen's time as it stands upon record." The fruit of the chestnut is also noticed in Sir Thomas Elyot's 'Castle of Health,' as being eaten when roasted under the embers or hot ashes, *to nourish the* body and to help a *man of the cough*.

* Sir W. J. Hooker, in his 'British Flora,' speaks of the chestnut as growing in woods *apparently wild*.

I think it is quite time that some of the great guns in botany should decide the line which we are to draw so as to distinguish plants indigenous and non-indigenous, for as the question is still open, it is difficult to know what plants are British and what are not. I hope the Editor of the 'Phytologist' will give us some rules on this subject, for at present I do not know whether to include the *Castanea vulgaris* in my collection of British plants. S. B.

Japanese Botany.

"While upon the subject, I may introduce another distinguished German now well known in Europe, namely, Dr. Siebold. This veteran botanist now lives in the country a short distance to the north of Nagasaki, entirely away from Europeans, and his society consists of his plants, his books, and the Japanese. He has an excellent library of works on natural history, which he showed me with some pride, and also led me over his garden, which is rich in Japanese plants, many of which are new to Europe. An account of this garden, with the others about Nagasaki, must form the substance of another article. On taking my leave of Dr. Siebold, he accompanied me a little way down the hill. He speaks the Japanese language like a native, and seems to be a great favourite with the people around him, amongst whom he has great influence. 'Doctor,' I said to him, 'you appear to be quite a prince amongst the people in this part of the country.' He smiled, and said he liked the Japanese, and that he believed the regard was mutual. And with a slight cast of sarcasm in his countenance, continued, 'It is not necessary for me to carry a revolver in my belt like the good people in Decima or Nagasaki.'" R. F.

"The Green Immortal Shamrock."

In the last number of the 'Phytologist,' "S. B." says, "It is now generally agreed that the true Shamrock, which St. Patrick gathered to illustrate the doctrine of the Trinity, was *Trifolium repens*," etc. Now, the following extract will, I think, prove to "S. B.," and all those "now generally agreed," that they are agreed wrongly. History of Ireland, from 1599 to 1603, by Fynes Moryson, Secretary to the Lord Mountjoy, then Lord Deputy, page 375:—"They willingly eat the herb Schamrock, being of a sharp taste, which, as they run and are chased to and fro, they snatch like beasts out of the ditches." The "sharp taste," which Moryson refers to, is a well-known quality of the *Oxalis;* and, as none of the Clovers yield any such, we may safely conclude that the *Oxalis* is the true Shamrock. The above extract is also worthy of note, as it shows to what straits the "poor persecuted Irish" were reduced by the oppression of England, before they finally succumbed to her rule. William J. H. Ferguson.

To the Editor of the 'Phytologist.'

In your number for December, at page 379, there is an incidental mention of the parties who made "a Botanical Ramble on Ben Ledi" meeting with abundance of *Saxifraga cernua*. As Ben Lawers is, perhaps, the only known British locality of this plant, it is desirable that, if it have been really found on Ben Ledi, the fact should be more fully confirmed, or if there is any mistake about it, this may be corrected. I was once

told that *Saxifraga cernua* had been found on Lochnagar, but on the finder taking me to the place, the plant proved to be *Saxifraga rivularis*.

S. cernua is found abundantly on the mountains of Norway, chiefly on blackish places, where the snow has lain long; and in these places it is from six to twelve inches high, and has from one to three large, white flowers. It is more slender by rills at a lower elevation in higher latitudes, as in Tromsdale, by the path leading to the huts of the Lapps. This is a fine botanical locality, near the thriving, Arctic town of Tromsö. Among other interesting plants found in it in 1860, near to a large, permanent snow-patch, was *Woodsia glabella*, also *Cystopteris alpina*. *Woodsia glabella* was previously known, so far as I am aware, only as a native of North America, but the Norwegian plants present no difference, that I can perceive, from the American ones in the herbaria of Sir W. J. Hooker and Jas. G. Baker.

Saxifraga cernua is noted in the 'Botanical Guide,' on the authority of the Fl. Scot., as upon Craigcalleach, but this locality wants confirming.

In p. 381 of your December number, mention is made of *Rubus laciniatus* being found near Plymouth. I venture to express a doubt of *R. laciniatus* being more than an accidental variety of some other *Rubus*, and, probably, the laciniated varieties are not confined to one species.

York, Dec. 1861. JAS. BACKHOUSE.

"MISELTO."

(*From the 'Gardeners' Chronicle,' May 9th,* 1860.)

Your correspondent "Dorset" (see p. 433) writes learnedly upon the parasitical character of this plant, which he spells as above, but does not seem equally well acquainted with the derivation of the word. In Mudie's 'British Birds,' under the head "The Missel-Thrush, *Turdus viscivorus*," may be found the following paragraph:—"There is a sort of double naming in this bird; it is called the missel-thrush because it missels (soils) its toes with the viscid slimy juice of the mistletoe berries, of which it is very fond in the winter; and the mistletoe gets its name because it soils the toes of the bird." Both the Latin and English name of the bird seem to attest the truth of this observation, and it may perhaps not be without interest to some of your readers.

Fundenhall, Wymondham, May 15th. GERARD BARTON.

Germans, and others conversant with the German language, would probably give another but not a more delicate reason for the etymon of the name both of the bird and the shrub. The Latin scholar will recollect the classical proverb "*Turdus malum sibi cacat*," or, as a Scotchman would say, "He cuts a wand for his own back."

The old tradition about the origin of the Mistletoe was that only the partly digested seeds of the plant would grow, or, in other words, it was necessary that the seed should pass through the digestive apparatus or alimentary organs of a thrush.

MISTEL (German).—*Mistletoe* is derived from MIST, *muck*, in old English *mixen*, and *mistel-beere*, *mistletoe-berries*, and *mistel-drossel*, *mistle-thrush*, are its derivatives; the latter is so called from its feeding on the fruit of this parasite. The latter part of this compounded word is from Mœso-Gothic

tain, a 'toe' or 'branch,' changed into the Scottish *tae* and the English *toe*. Miller, the celebrated horticulturist and botanist, gives the most sensible history of the propagation of Mistletoe which I have seen. This author informs us that the thrush delights in the slimy part of the berry surrounding the seeds, and that in its efforts to disengage its beak it strikes or presses it on the branch of some contiguous tree, and if the bark be smooth, the seed will take root and grow. He also tells us that it grows best on smooth-rinded trees, as the ash, apple-tree, etc. Also that "whenever a branch of an oak-tree hath any of these plants growing upon it, it is cut off and preserved by the curious in their cabinets of natural curiosities."

"Down with the rosemary, and so
Down with the bays and mistletoe,
Down with the holly, ivy, all,
Wherewith ye deck the Christmas hall;
No one least branch leave there behind,
For look, how many leaves there be
Neglected there,—maids, 'tend to me,—
So many goblins ye shall see."

KAPPA.

NEW ZEALAND APPLES.

(*From the 'Lyttelton Times,' an Australian Paper.*)

The great superiority of the apples grown in Canterbury over those imported from the other settlements is abundantly exemplified by the beautiful specimens of splendid fruit to be seen in Mr. Wilson's seed-shop in Christchurch. A number of apples known by the names of the Emperor Alexander, Mobb's Royal, and the Kentish Fill-basket, measure each one foot two inches round, and weigh fourteen ounces; whilst Ribston Pippins and other choice sorts are not less remarkable for their colour, size, and flavour. Canterbury certainly gives promise of being a first-rate fruit-growing country, wherever due precaution is taken to provide the first requisite of successful gardening, namely, good shelter.

HONEYSTALKS OF SHAKSPEARE.

Will the following, taken from Nares's Glossary, answer S. B.'s question on this? and will the Editor of the 'Phytologist' tell me if he agrees with Dr. Nares?

"*Honeystalks.*—Clover flower which contains a sweet juice. It is common for *cattle to overcharge themselves with clover, and die.*"

"With words more sweet, and yet more dangerous,
Than baits to fish, or *Honeystalks* to sheep."—*Titus Andro.*, iv. 4.

HARRIET BEISLY.

NOTICE.

To Microscopic Botanical Observers, and others who are interested in similar researches.—Mr. Winter's List, which was announced in the December number of the 'Phytologist,' is not yet full: a few more subscribers can be supplied with sets of the Fen-productions of the county of Norfolk. Any further information will be afforded on application to Mr. Winter, Bressingham, near Diss, Norfolk.

ANCIENT SCOTTISH BOTANY.

By Charles Howie, *St. Andrew's.*

'Scotia Illustrata,' an illustrated work on the Natural History of Scotland, comprehends, among other matters, certain chapters on Scottish plants. The learned author, Sir Robert Sibbald,* divides botany into three heads, divisions, or classes, viz. in the first book of the second part of his 'Prodromus,' he describes the spontaneous or indigenous vegetation of Scotland; and in the second book he treats of the medicinal and economical herbs cultivated in the Botanic Garden in Edinburgh, then under the curatorship of James Sutherland. Between these two books there is a catalogue of the natural vegetation of the King's (Queen's) Park, Edinburgh.

His method is the following:—First, he states the name of the plant, with the authority, usually Bauhin's 'Pinax,' or J. or C. Bauhin; second, the characteristic marks of the species or genus; third, its quality (*vires*, qualities); lastly, its application, viz. external, internal, etc.; and occasionally he gives the locality.

The following is not a sample of his elaborate treatise, but a selection from it.—

One of the most important of the rarities enumerated by Sibbald is *Lavatera arborea*, Tree Mallow; which grows "in Inch Garvie and Mykrie Inch, in the Firth of Forth" ('Scotia Illustrata,' part ii. p. 37, cap. xii.).

Inch Garvie is a small steep rock, accessible only on the west, where it slopes down to the beach. Mykrie is about a quarter of a mile in diameter.

Cochlearia officinalis grew, in Sibbald's time, upon the rocks of Inch Columb, in the north, by the seaside. Also, the round-leaved form (*C. rotundifolia*) is found on hills near the river Tweed. Inch Columb is about half a mile long, and one hun-

* This eminent naturalist, physician, and historian was born before the middle of the seventeenth century, and was educated for the medical profession in Scotland and in Holland. He was appointed Physician to his Majesty King Charles II., and also Royal Historiographer. His 'Scotia Illustrata,' or 'Prodromus Historiæ Naturalis Scotiæ' was the result of his appointment. Dr. Andrew Balfour, the founder of the Edinburgh Botanic Garden, was his associate in his botanical excursions. 'Scotia Illustrata' was published in folio at Edinburgh, 1684, and was the labour of twenty years.

dred and fifty yards wide. It is on the north coast, about two miles from Aberdour.

In a garden adjoining the remains of the old monastery there are still (?) to be seen the female Peony, bearing seed. It is inferred that this single form of Peony is the original form from which the double Rose Peony or Hunder-bladed Tulip is derived. Here grow also Borage, Pellitory, Dwarf Elder, *Atropa Belladonna*, and other introduced plants.

Chenopodium olidum grows on the islet or rock called the Haystack, about half a mile from Inch Colm (Inch Columb).

Inchkeith, which adds much to the picturesque attractions of Edinburgh, produced the following plants when visited by this learned botanist, viz. many Docks and Chenopods, *e.g. Tota bona, Chenopodium Bonus-Henricus*, Scabious, Thyme, Spattling Poppy, Plantain, Thrift, Ground Ivy, Henbane, *Xanthium Strumarium?*, Blessed Thistle, Horehound, etc., sufficient for the cure of most diseases with which the inhabitants of braw and bonnie Scotland are afflicted.

The Bass, which the French called the Isle of Geese, from its being the resort of myriads of sea-birds and solan geese especially, in addition to the well-known Tree Mallow, yields another plant whose identity is not yet very satisfactorily determined. Hector Boece, the elegant, veracious historian of Scotland, has left a description both of the Rock and of some of its productions; and his account was rendered into the then Scottish vernacular by John Bellenden, the Archdeacon of Moray and Canon of Ross, as follows:—The Bass is "a wonderful crag, risand within the sea, with sa narro and strait hale that schip nor bait may arrive but allanarlie at ane part of it; it is unwynnabill be ingyne of men." Besides the ordinary herbs, the *Malva arborea marina* and the *Beta marina* grow here. Boethius probably refers to the following culinary vegetable, viz. "In this crag grows ane rycht delicius herbe and quhen it is transportit or plantit in ony ither part it is of little sapor or gust."

The following list of Bass Rock plants is from an account of the vegetation of the Bass supplied by Dr. Balfour, the eminent Professor of Botany in the University of Edinburgh. The list is published in a work descriptive of the civil and natural history of this historic locality:—*Hypochœris maculata, Calendula pluvialis, C. arvensis, Hieracium chondrilloides, Tragopogon porrifolius,*

Narcissus Pseudo-Narcissus, N. biflorus, Beta maritima, Lavatera arborea, Crambe maritima, Vicia lathyroides, Carduus palustris. From the above it appears that exotics have intruded among the native productions of this small, remote, insulated rock.

The principal plant found on the Isle of May is *Armeria maritima,* a plant which is used for the edging to garden-walks; and those who have only seen in it in this utilitarian state, where it appears flat and tame, but not unprofitable, do not know the brilliant hues it assumes in this islet, where it grows in the greatest profusion. Its varieties are of all shades of colour, from pure white to the intensest and glossiest shade of pink or carnation. *Asplenium marinum* ornaments a cave on the south side with its rigid fronds; and here also *Artemisia maritima* is found in fine condition. To the lovers of lichenology this island will afford the greatest gratification. Here the isolated rocks, both large and little, in their lower parts wet and dripping from the incessant surge dashing or rippling against them, are densely clothed on their upper portion with Lichens, which grow in the greatest luxuriance and beauty.

BOTANY OF SPAIN.

A few Days' Botanizing in the North-Eastern Provinces of Spain, in April and May, 1860.

No. IV. Spanish Pyrenees; Andorra.

A short excursion from the French to the Spanish side of the Pyrenees, about a fortnight after the termination of our tour in Spain, yielded some botanical acquisitions which deserve to be added to the brief records already given of Spanish botany. The interval had been passed in the richest botanical districts of the Eastern Pyrenees, but with results unexpectedly scanty, the backwardness of the season having deprived me of the majority of the plants which I might otherwise have reasonably expected. I hoped that on the southern side of the chain I might have better fortune; nor was I altogether disappointed.

We crossed the watershed of the Eastern Pyrenees at the head of the long oblique valley of the river Tet, which during the greatest part of its length forms, not a right, but an acute angle

with the general direction of the mountain-chain. The range is crossed, not by a pass, but by a considerable breadth of gently sloping and waving corn country, which, though flanked by lofty summits and dark fir woods, is as easily traversable by an army as Salisbury Plain, and an invasion of either country from the other at this point would meet with no physical obstacles near the summit, whatever they might possibly find in the defiles lower down. Accordingly, the deficiency of natural is made up, on the French side at least, by artificial defences. A green knoll on the border of the waving country is crested by one of the most strongly fortified military posts in the country, the town of Mont Louis,—for a town in all respects it is, though with only a few hundred inhabitants,—overtopped by a citadel, the work of Vauban, larger than the town itself. At this point the French territory projects for some miles on the Spanish side of the Pyrenees, as the Spanish territory does on the French side about the head-waters of the Garonne. French Cerdagne, as it is still popularly called, forms a richly cultivated valley, or rather, inclined plane, of such width as to make the high mountains which bound it appear what I might almost call distant. This fertile slope is terminated by a little stream, which separates Bourg-Madame, the frontier village in the French territory, from Puycerda, the capital of Spanish Cerdagne, a genuine Spanish town of some importance, on a height which projects far into the valley, and commands, from a small planted promenade on its southern side, a view over the Spanish part of the valley and the adjoining mountains, which it was worth the whole journey to see. From Puycerda to Urgel, the chief place in this part of the Spanish Pyrenees, is a long day's journey on foot or on muleback. The valley differs from mountain valleys in general in being more picturesque in the descent than in the ascent, the upper extremity, as may be gathered from what has already been said, being the tamest instead of the boldest part of its Alpine panorama. The beauty seemed always to increase as we descended the valley, Urgel itself being the most beautiful place in the whole descent.

The Flora of this district, as usual on the southern declivities of mountain ranges, is a mixture of mountain plants with those of the plains below. In the upper part of the valley the meadows have the floral magnificence characteristic of the Pyrenees, where the open mountain pastures in June, before the grass has been

cut or the cattle driven in among them, are often one mass of bloom, giving its colour to the mountain sides from a great distance. The meadows for many miles below Puycerda were of this character. They were as white with *Narcissus poeticus* as English meadows at the same season are yellow with Buttercups. In other places the dark variety of Columbine (*Aquilegia vulgaris*) divided the honours with the Narcissus, or engrossed the larger part; while several Umbellifers in full flower contributed a different kind of white colour to the mixture, particularly *Chærophyllum hirsutum*, with a plant resembling *Pimpinella magna*, and, I believe, *Ligusticum pyrenæum*; the fruits of neither being yet in a state to admit of their being determined. The other plants of which I made a note are the following:—

Of *Ranunculaceæ*, the finest, besides the Columbine, was *Adonis flammea*, with flowers of the same bright colour but greater size than those of *A. autumnalis*. *A. pyrenaica*, though common among the corn near Bourg-Madame, I did not see on the Spanish side of the frontier. The remaining *Ranunculaceæ* were *Clematis Vitalba* and *Flammula*, *Helleborus fœtidus* (a plant universal in the Pyrenees), and *Caltha palustris*. The *Papaveraceæ* I saw were *Papaver Rhœas*, *Chelidonium majus*, and *Hypecoum procumbens*. There were, as usual, many Crucifers. Of Alyssums, there were (besides *A. calycinum*) the plant which I had found at Alcolea, and called *A. perusianum*, and a yellow species akin to *montanum*, *A. cuneifolium*. *Erysimum lanceolatum*, a frequent plant of the Pyrenees, was there, with its large bright yellow flowers; and three *Sisymbria*, *S. Sophia*, *obtusangulum*, and a common Pyrenean species, with a mass of flowers succeeded by long spikes of slender highly curved pods, *S. austriacum*, the most common variety of which is otherwise known as *Sinapis pyrenaica*. The only *Arabis* I noticed was, I believe, *Gerardi*. The *Biscutella* was not the Monserrat species (or variety), but the common Mediterranean plant, *B. ambigua*. I had previously found in the valley of the Tet, near Fonpedrouze, a much rarer species, *B. cichoriifolia*, resembling the former in little except the twin shields, from which the genus derives its name. Of other *Siliculosæ*, I noted *Iberis amara*, *Thlaspi arvense*, *Lepidium heterophyllum*, the plant of which our *L. Smithii* is classed by French botanists as a variety, and the stately spreading *Neslia paniculata*, with its nearly globular pods. The genus Cistus seemed wanting in this district,

though one of its noblest species, a Gum-Cistus, *C. laurifolius,* abounds where it was less to be looked for, on the sloping side of the corresponding French valley, a short distance below Mont Louis. The only Helianthemum I saw was either *H. vulgare* or one of the plants which are sometimes reckoned varieties of it. As might be expected, there were *Reseda Phyteuma* and *fruticulosa* and *Polygala vulgaris.* The *Caryophylleæ* visible were *Saponaria ocymoides* and *vaccaria,* the common *Lychnis vespertina* and *Agrostemma Githago, Silene inflata,* and the elegant *S. saxifraga,* with its funnel-shaped flowers, so common in the mountain valleys of the south of Europe. There were two splendid Linums, *L. narbonense* and a smaller plant with paler flowers, which I suppose to be *decumbens,* intermediate between *tenuifolium* and *suffruticosum.* The *Malvaceæ* were the common *Malva rotundifolia* and *sylvestris.* The *Geraniaceæ* were *Erodium cicutarium, Geranium Robertianum, sanguineum,* and *pyrenaicum.* The name of the last, mysterious to those to whom it is only known as a plant of Surrey and Kent, is intelligible to those who have seen its abundance in the Pyrenees. The Wild Vine (*Vitis vinifera*) spread its climbing stems and grasping tendrils over the bushes.

Of *Calyciflorœ,* I begin with the Terebinth-tree, *Pistacia Terebinthus. Leguminosæ* were, as usual, one of the most abundant of all the Orders. Along with the *Genista Scorpius* of the plains there was *G. sagittalis* of the mountains, and *G. pilosa* of both; all plants which by their beauty do credit to this fine genus. Of *Cytisi,* there was the beautiful *C. sessilifolius.* The only Trefoils I observed were *T. pratense* and *repens;* but the prevailing Medicago was a special plant of the Eastern Pyrenees, *M. suffruticosa.* The *Viciæ* were in number five: *V. sativa, sepium, crassa,* a glorious dark-purple species (*V. onobrychioides*), and the duller-coloured *V. pannonica. Lotus corniculatus* and *Hippocrepis comosa* abound here as everywhere. I saw but one Astragalus, I believe *A. purpureus,* a purple-flowered, erect, rather dwarfish plant, approaching to *A. hypoglottis.* I conclude the Order with the small decumbent Sainfoin of southern Europe, *Onobrychis supina.* Of the Order *Rosaceæ,* there were *Cratægus Oxyacantha, Amelanchier vulgaris,* and *Poterium Sanguisorba;* but the genus *Rosa,* above all, was in profusion. The town of Urgel is in the midst of a sort of garden of wild Roses: every hedge and enclosure is loaded with them in a quantity and of a size to which I

never saw even an approach elsewhere. The species must be numerous, but I regret my inability to record them. The fatigue of the journey, the multitude of other plants to determine and put into paper, and the difficulty of dealing with this genus without the fruit and without proper books, deterred me from the attempt. *Rosa tomentosa*, or some species near to it, appeared to be one, and another resembled, in the appearance of its stem, *R. spinosissima*, but with much larger flowers; in fact, as I have already mentioned, the size of the Roses was quite as remarkable as their profuse abundance.

Saxifraga Aizoon, now in full flower, one of the common mountain species of the Alps and Pyrenees, dotted the rocks of the valley with its white rosettes of spatulate coriaceous leaves. Sedums were numerous: among others, *S. acre*, *Telephium*, and (though not in flower) *altissimum*, like a large white-flowered *S. reflexum*. Another plant of the same Order, *Umbilicus pendulinus*, as common on moist rocks and walls in the south of Europe as in our western counties, was also present. *Bryonia dioica* was visible, and *Paronychia serpyllifolia*, a mountain species, takes the place of *P. argentea*. Of Umbellifers, besides those already mentioned, I saw *Heracleum Sphondylium* (unless it was the very similar *H. pyrenaicum*), *Bupleurum rotundifolium*, and, I believe, *Orlaya platycarpa*. The Cornel-tree (*Cornus sanguinea*) was as common here as elsewhere. Of the Order *Caprifoliaceæ*, there were the common Elders (*Sambucus nigra* and *Ebulus*), and two Honeysuckles, *Lonicera implexa* of the plains, and *Xylosteum* of the mountains. There were the blue *Asperula arvensis* and several *Galia*; two *Valerianeæ*, *V. officinalis* and *Centranthus angustifolius*; *Dipsacus sylvestris*, and a *Knautia*, apparently a variety of *K. arvensis*.

Compositæ were of course less numerous than in the plains or at a later period of the year. There were, however, several. *Achillea odorata*, a plant of southern Europe, like a dwarf *A. Millefolium*, with a sweet smell of camomile, was one. With this was a Santolina, probably *S. Chamæcyparissias*, an *Artemisia*, probably *campestris*, and the universal *Leucanthemum vulgare*. Of Thistles on this occasion I have no note. The Centauries were *C. Cyanus*, *C. Scabiosa*, and another species, not uncommon on the less elevated mountains of the South, *C. pectinata*, deriving its name from the comb-like structure of its involucral appendages.

Of Cichoraceous *Compositæ*, I noticed *Scorzonera humilis, Tragopogon pratensis*, a Hieracium (*H. murorum?*), the fine blue Lactuca of Continental cornfields, which almost reaches our own latitudes, *L. perennis*, and two much rarer plants, both of which I only found within a short distance of Urgel, one in the bed of the torrent, a stiff, widely branched plant, coated all over with a fine white wool, which I guessed rather than ascertained to be *Andryala macrocephala* of Boissier; and, growing within the spray of a waterfall, a Sonchus, with undivided leaves, allied to *S. maritimus*, which was certainly *S. crassifolius*.

Passing now to the *Corollifloræ*, I did not find in this day's journey either *Gentianeæ* or *Primulaceæ*, plants which, for the most part, require higher elevations, or at least cooler and moister valleys. *Vincetoxicum officinale*, so abundant on calcareous soils, even far north, and which ought to grow in England, was there; so also Privet (*Ligustrum vulgare*), a plant equally at home in north and south; and the only European Jasminum, *J. fruticans*, a yellow species, and rather frequent in the south of France, but not beyond the Mediterranean region. Our northern Ash, *Fraxinus excelsior*, grows here, which, in the south, is principally a mountain tree. I saw no *Convolvulus*, except *C. arvensis*, though I should have expected *C. cantabrica*, which comes up as high, or higher, in other southern mountains. The *Borragineæ* were not remarkable: *Echium vulgare, Lithospermum arvense* and *officinale, Anchusa italica, Lycopsis arvensis*, and our common Cynoglossum, *C. officinale*. The *Solaneæ* were *Solanum Dulcamara*, as common in the south as in the north, and *Hyoscyamus niger*. There were several Verbascums, *V. floccosum* apparently being one. *Scrophularineæ* and *Labiatæ* were, as might be expected, the most numerous Orders; of the former there were *Scrophularia canina* and *nodosa, Rhinanthus glaber, Veronica Teucrium* and *serpyllifolia*, the stately *Digitalis lutea, Linaria supina*, and two Antirrhinums proper—the pale-flowered *A. Asarina*, which, as in many other parts of the Pyrenees, hangs like tapestry on the perpendicular rocks, and *A. latifolium*, looking like a yellow variety of *majus*. The *Labiatæ* were *Lavandula Spica* and *Mentha sylvestris* (the British plant so common in Switzerland), *Salvia clandestina*, and another (I believe *phlomoides*), our ugly *Ballota fœtida, Lamium maculatum, Stachys recta*, which, like *Digitalis lutea,*

reaches northward as far as Normandy; both the Thymes, *T. vulgaris* and *Serpyllum;* and in great abundance a common Sideritis, *S. scordioides. Globularia nana,* as elsewhere in the Pyrenees, coated the rocks with its small leaves, its numerous heads of flowers, and its clumsy woody stems, so creeping that they seem adherent to the soil. An Armeria, seemingly *A. plantaginea,* represented the Order *Plumbagineæ;* and *Plantago* was represented by *P. media,* and the mountain species, *P. carinata.*

Of *Apetalæ,* the most worthy of notice was *Aristolochia Pistolochia,* with its almost black flowers, one of the smallest species of this curious genus. The *Polygoneæ* were *Polygonum Bistorta,* as abundant as it usually is in moist mountain meadows, *Rumex acetosa,* and *R. scutatus,* with its singular leaves, a plant as common in the vineyards near Coblentz as in the south of Europe. The *Euphorbiæ* were *E. serrata, Cyparissias, Characias,* the polished *E. nicæensis,* and another, to me unknown. To these may be added the shrubs or trees, *Quercus coccifera, Buxus sempervirens,* and *Celtis australis.*

The *Monocotyledoneæ* were finer than I expected, and finer than I found in my next day of botanizing. There were *Orchis mascula, O. galeata* (by some reduced to *militaris,* but the form of the flower, admirably figured by Woods, is decidedly different), *Aceras anthropophora,* which recalled pleasing memories of the Surrey hills; *Narcissus poeticus,* as already mentioned; one of the plants common to alpine and maritime situations, *Allium Schœnoprasum* (but I am not sure this plant does not belong to the next day's district); the Grasses, *Bromus tectorum, Briza media, Ægilops ovata, Melica Magnolii;* and the Ferns, *Asplenium Trichomanes* and *Adiantum Capillus-Veneris.*

Urgel, properly La Seu (or Seo) de Urgel, better known locally as La Seu simply (*the See,* its bishop having for many centuries been one of the chief princes of the country), is the most characteristic, old-looking, and picturesque of small Spanish towns. We entered it after nightfall. I shall never forget the moonlight look of its dark streets, its *jalousies* and overhanging balconies. The situation is one of the most glorious in the whole Pyrenees. It lies far down in the long valley which we had been a day and a half in descending; but the valley does not open to the plain; it is crossed, and, in appearance, closed a little below the town, by a low range, with a striking peaked outline, which

regaled our eyes as we saw it before us during the latter half of our day's journey, and appeared more beautiful still when seen from the promenade outside the walls of Urgel, or from the terrace or *loggia* of our very Spanish, but quite habitable inn. All experienced travellers know how much the beauty of a range of mountains, under a glaring sun, is improved by seeing it on its shady side. Of the little narrow plain into which the valley expands immediately round Urgel, I can say nothing botanically, except to repeat that is a perfect paradise of Roses.

We had decided to find our way back to France by the valley of Andorra. Of this curious middle-age republic, independent equally of Spain and France, though under their joint protectorate, a description may be read in the 'Edinburgh Review' for April last. The writer has given a very interesting account of its history and of its institutions; but he seems somehow to imagine that he is the discoverer of Andorra, at least to Englishmen. It was however explored as long ago as about 1824, by two eminent English botanists—Mr. Bentham and Mr. Walker Arnott; the former of whom, in the narrative of his tour in the Pyrenees, prefixed to his valuable catalogue of their plants, gave a clear and succinct description of the country. Since then it has been occasionally visited by English tourists, one of whom, Mr. Erskine Murray, devoted to it no small portion of his well-known book. Respecting the institutions of the country, much was left for the reviewer to do; and he has done it, to all appearance, well. He makes one statement, however, which I hope is not correct, that "in this republic education is a thing almost unknown." I cannot affirm that this is not the fact; but the standard French 'Guide to the Pyrenees,' the elaborate volume of Joanne, affirms that "l'instruction publique est plus répandue en Andorre que dans les territoires voisins de l'Ariége et d'Urgel; les écoles sont gratuites, et la plupart des jeunes gens aisés vont faire leurs études à Toulouse ou à Barcelone."* The reviewer's description of the local features of the country is that of one who has only visited it from the French side. He says it is "isolated by mountains on every frontier." This is neither more nor less true of the Val d'Andorre than it is of every other Pyrenean valley. None of them have more than one outlet into the plain. An-

* Public education in Andorre is superior to that of Ariego and Urgel. Instruction is gratuitous; pupils can easily complete their studies at Toulouse or Barcelona.

dorra is simply the upper end of a Spanish valley (one of several which meet at Urgel), with the addition of two other valleys branching out of it. From France of course they can only be reached across the main chain, but the access from Spain is not more difficult nor mountainous than that to any other place in the Pyrenees.

In the lower or Spanish part of the valley the plants were chiefly those which I had seen in the descent from Puycerda, with one or two additional, particularly *Phalangium Liliago*, an elegant white-flowered plant of the Order *Asphodeleæ*, and a fine Thistle, which I had seen in a former year on the Spanish side of another of the Pyrenean passes, *Cirsium rivulare*. When however we entered Andorra, the Flora soon assumed a far more mountain character, though here also occasionally varied by southern plants, the most remarkable of which was a Maple, *Acer monspessulanum*, with three-lobed coriaceous leaves. To begin at the beginning, *Trollius europæus* now raised its globular heads in the rich meadows; and I saw, for the first time in Spain, two mountain *Ranunculi*, *R. Villarsii*, L., towards the head of the valley, and the tall white *R. aconitifolius*, the stateliest of its tribe. Of Crucifers there were now a *Barbarea* (probably *B. arcuata*), *Arabis thaliana* and *turrita*, *Sinapis Cheiranthus*, *Nasturtium pyrenaicum*, which, in spite of its name, is not a peculiarly Pyrenean plant; and one which is more so, *Cardamine latifolia*, like a greatly magnified *C. pratensis*, with leaves shaped liked those of the Watercress. Two of our common Violets now appeared, *Viola canina* and *V. tricolor;* while to *Silene Saxifraga* was added *S. nutans*, and a very beautiful common plant of the Alps and Pyrenees, *S. rupestris*, as well as *Stellaria Holostea* and *Cerastium arvense*. Along with *Geranium Robertianum* and *pyrenaicum* there was in abundance *S. sylvaticum* of the English mountains. I saw also *Oxalis corniculata*. A tall bush, belonging to the Flora of the high mountains, *Rhamnus alpinus*, was here in full flower. The *Leguminosæ* were fewer than usual; they included the Broom of the middle region of the southern mountains, *Sarothamnus purgans*, *Coronilla Emerus*, the stiff, but not inelegant *Trifolium montanum*, *Astragalus monspessulanus*, and the red variety of *Anthyllis Vulneraria*. Of *Rosaceæ*, there were added to those already recorded, *Rosa rubiginosa*, *Potentilla verna*, and *Alchemilla vulgaris*. Of *Saxifragæ*, besides *S. Aizoon*,

there was our beautiful *S. granulata* (a mountain plant in the south of Europe), and a far rarer species than either, *S. media*. The Umbellifers appeared to be the same as in the previous day. To the common Elders was added *Sambucus racemosa*, now in full flower; it bears red instead of black fruit, and in that state I had found it in some of the forests near the Rhine, especially that of Stolzenfels, near Coblenz. Of *Rubiaceæ*, I only noted *Galium cruciatum*. The only additional plant of the Order *Compositæ* (except the *Cirsium* previously mentioned) was *Achillea chamæmelifolia*, a plant of the Eastern Pyrenees. The *Corolliflorœ* also were mostly those which I had seen in the other valley. I must however add *Pinguicula grandiflora*, a plant common in the Pyrenees, often mistaken for a Violet by the non-botanical traveller; the exquisite *Primula farinosa*, of the Alps and the north of England; the large Alpine Forget-me-not (*Myosotis alpestris*); a tall *Pedicularis, P. verticillata*, growing profusely in the meadows near the principal village of the Republic; and, lastly, *Marrubium vulgare*. Of *Polygona*, besides *P. Bistorta*, there was a peculiar and curious mountain species with panicled inflorescence, *P. alpinum*. *Rumex scutatus* re-appeared, with *R. Acetosella*. Among monocotyledonous plants, *Paradisia Liliastrum* reigned supreme; a stately plant, with flowers of the purest white, of the shape and almost the size of a Hemerocallis, which Pyrenean tourists will see abundant, at its season, in the Vallée de Lys, near Bagnère de Luchon. *Narcissus poeticus* was as plentiful as ever; *Platanthera bifolia* was another ornament; *Muscari comosum* made its appearance, and in the lower and warmer part of the valley our blue garden Iris (*I. germanica*) grew. A *Veratrum*, probably *V. album*, so common in the Alps and Jura, not yet in flower, raised its strong, thick, green stems. The following plants, all of which were common to this with the preceding valley, I will simply enumerate:—

Clematis Vitalba.
Caltha palustris.
Aquilegia vulgaris.
Helleborus fœtidus.
Chelidonium majus.
Sisymbrium Sophia.
Sisymbrium obtusangul.
Sisymbrium austriacum.
Lepidium heterophyllum.
Reseda fruticulosa.
Saponaria ocymoides.
Erodium cicutarium.
Medicago suffruticosa.
Lotus corniculatus.
Cratægus Oxyacantha.
Amelanchier vulgaris.
Bryonia dioica.
Sedum dasyphyllum.
S. Telephium (& others).
Umbilicus pendulinus.
Lonicera Xylosteum.
Achillea odorata.
Tragopogon pratensis.
Fraxinus excelsior.
Convolvulus arvensis.
Lithospermum arvense.
Cynoglossum officinale.

Hyoscyamus niger.
Veronica Teucrium.
Veronica serpyllifolia.
Rhinanthus glaber.
Scrophularia canina.
Mentha sylvestris.
Stachys hirta.
Lamium maculatum.
Sideritis scordioides.
Globularia nana.
Armeria plantaginea.
Buxus sempervirens.
Euphorbia serrata.
Euphorbia Cyparissias.
Orchis mascula.
Bromus tectorum.

At the foot of the ascent to the lofty pass (the Col de Puymaurin) we encountered in profusion four of the most interesting plants we had yet seen; the tall *Anemone alpina*, with its great flowers, of the sulphur-coloured variety (which I have found the commonest both in the Alps and Pyrenees); the mountain Umbellifer (*Meum athamanticum*), a plant rare in the English mountains, common in the Pyrenees and Cevennes; *Orchis sambucina*, with its great spikes of flowers, both purple and yellow; and the delicately beautiful *Tulipa Celsiana*, also a plant of the Cevennes. As we wound our way up the face of the mountain towards the Col, we came among decidedly Alpine plants; the three Gentians which light up the lofty pastures with their dark blue flowers, *G. acaulis* and *verna*, known to all Alpine explorers; *G. pyrenaica*, peculiar to the Eastern Pyrenees; the small white-flowered *Ranunculus pyrenaicus*, the lovely *Hepatica*, *Crocus vernus*, and a pink *Androsace*, common on the Pyrenean summits, long confounded with *A. carnea* of the Alps, but to be described, as I am told, in the Supplement to the 'Flore de France,' under the name of *A. Lagerii*. One plant, though I did not see it till just on the French side of the pass, I cannot help mentioning, and with this I close my list: that exquisitely fringed and strangely coloured plant, one of the most delicate of Alpine vegetable products, the plant so much admired by Mr. Ruskin, *Soldanella alpina*. From this place a long and gradual descent brought us into the beautiful valley of the Ariége; and being now in a country well explored, and possessed of excellent Floras, I at last end this long memorandum, and finally take my leave.

Maianthemum bifolium *in Caen Wood, Hampstead, June*, 1861.

To the Editor of the 'Phytologist.'

It is now many years—above thirty—since I first had the good hap to discover this rare gem of Flora's diadem among the Beeches on that side of Caen Wood which is between Highgate

and Hampstead, and on the very summit of the hill, nearly opposite Kentish Town.

The way to reach it is by the garden which lies at the Highgate extremity of the park and woods; and of course leave is to be obtained of the gardener, who will civilly give liberty in the morning, say from nine to ten o'clock, or at other times of the day, if the noble owner and family be absent at the time of application.

The visitor will be directed to walk down the gravel path, which has a shrubbery on one side (the left), and the park on the other (the right), to cross the valley at the head of the small reservoir, or pond, and to keep the grassy opening, having the meadows on the left and the wood on the right. After about five minutes' walk the Fir-trees appear, and there are under them two paths, one bearing a little to the left, close to the verge of the wood and adjoining the meadows, another leads straight onwards, up a little acclivity to a few large Beech-trees and a summer-house, and it is on the open space before this erection, surrounded by Beeches, that the plant grows.

When I first detected this rare British species, many years ago, as above related, there were two patches of it visible; one close to the path, about halfway up the hill to the place where the larger patch was and is. The former has long since disappeared.

The area covered by the *Maianthemum*, then, was probably about twelve or sixteen square yards, and the shape of the bed whereon it grew was almost square. About ten years ago it had very much enlarged its borders, but its figure remained still the same. It has no longer its former regular shape; though the space over which it spreads is closely carpeted with the plant, which maintains sole possession of the ground to the exclusion of other plants. With the exception of some Mosses, and a very few stray plants of the Wood Hyacinth, it is still the undisputed possessor of the soil.

I will not assert that it is native in this locality; but it may safely be said that there is no historical nor traditional evidence of its introduction. The only things planted here are Laurels and Rhododendrons, with neither of which was it likely to have been introduced.

Bishop's Wood, below the Spaniards Hotel, still produces the fine Rush *Scirpus sylvaticus*, also *Cardamine amara*, *Equisetum*

sylvaticum, Pyrus torminalis, and *Viburnum Opulus, Chrysosplenium oppositifolium,* etc.

It is probable that *all* the woods about Hampstead and Highgate are coeval with the creation of the world; that is, they have existed now nearly six thousand years; they are as old as the very oldest of the Yews on Merrow Downs; they were planted by Nature, many years before Noah's Flood, and therefore both they and the frail vegetation which they shade, may be presumed to be natives of English or Middlesex soil.

The great bog behind Jack Straw's Castle yields, as it did half a century ago, abundance of the beautiful bog plant *Menyanthes trifoliata,* also *Drosera rotundifolia, Viola palustris,* and several Carices, such as *C. stellulata, C. ovalis, C. Œderi,* etc. *C. pulicaris* has been reported from this very place, and I hope it was not a starved form of *C. stellulata.*

The Lily-of-the-Valley was seen on the heath not many years ago; this is one of the few species of interest recorded by Johnson, more than two hundred and thirty years ago, as a Hampstead plant. *Orobanche major* was collected more than twenty years ago on the broomy marly part of the heath, near the lower pond, at the back of North End, and probably this species is still to be found here occasionally.

History of the Original Notice of the Publication of Maianthemum bifolium *as a Hampstead Plant. From a Correspondent.*

I will take the liberty of paying the debt of gratitude which British botanists owe to Mr. Hunter, the first observer of this rare plant, and who is the original authority for the first published notice of its growing in Ken Wood (Caen Wood).

The following short list of rare Hampstead plants is taken from the history of Hampstead, published by Mr. James Park in 1814; the names and localities were contributed by Mr. Hunter, who was then land-steward to the noble owner of this fine park.

Note. The locality is Ken Wood, unless where an additional locality is given, and the authority is that of the above-mentioned Mr. Hunter, his Lordship's steward. A few remarks will be subjoined:—

1. Stipa pennata.
2. Empetrum nigrum.
3. Myosurus minimus.
4. Scilla verna.
5. Convallaria maialis.
6. Convallaria Polygonatum.

7. Convallaria verticillata.
8. Convallaria bifolia.
9. Paris quadrifolia.
10. Sorbus domestica.
11. Rosa villosa.
12. Helleborus viridis.
13. Lathyrus Nissolia.

The first plant in this list (No. 1), quoted from Mr. Park's history, and resting solely on Mr. Hunter's authority, is one of the most doubtful or uncertain of all the dubious British species. *Empetrum nigrum* (No. 2) is truly native, but does not now grow near Hampstead, or surely it would have been recorded by the many botanists who have resorted thither during the last century and a half.* Mr. Hunter very probably observed *Myosurus minimus* (No. 3), but not in the wood. The habitat is possibly erroneously entered by the historian, whose botanical knowledge was probably neither very extensive nor exact. I will take the liberty of acquitting Mr. Hunter of this mistake. This gentleman was too well acquainted with rural affairs to have mistaken an agrarial weed for a sylvan plant.

That *Scilla verna* (No. 4), which grows here abundantly, may have crept into the text instead of *Scilla nutans*, good-natured people will readily admit.

Two out of the four Convallarias (Nos. 5 and 8) still grow in Ken Wood, and they are living testimonies of the accuracy of the gentleman by whom their occurrence there was first recorded.

That the other *two* (Nos. 6 and 7) are not there, who will venture to say?

The way to reach the only remaining station of the *Maianthemum* is by the gardens of Ken Wood, and to the gardener or steward, Mr. Cockburn, I have always applied when I wished to revisit this station. But many other lovers of rare plants as well as myself are indebted to this worthy official for permission to go up the hill to look at the plant. I beg to thank him publicly for his courtesy.

If the botanical visitor be an entire stranger, he should request the aid of one of the gardeners; and if this be not obtainable, he should follow the gravel walk to the reservoir at the end of the

* Dr. Soame remarked (1734)—"The Apothecaries' Company very seldom miss coming to Hampstead every spring, and here have their herborizing feast; and I have heard them often say that they have found a greater variety of curious and useful plants near and about Hampstead than in any other place" (Dr. Soame's Analysis of the Hampstead Waters, p. 27).

lawn which lies towards Highgate; crossing at the pond-head, a grassy, open walk leads up the hill not far from the verge of the wood which is opposite to Kentish Town. About two hundred yards from the pond, the path diverges to the left, both to avoid a rather steep acclivity and to keep nearer to the outside of the park; but the way to the spot where the rare plant grows is straight onwards up the mossy path, and not far from a rustic summer-house in a level spot almost surrounded and overshadowed by large Beech-trees. The plant does *not* grow under the Firs which grow on and about this hill, and which are prominent objects from the path across the fields between Hampstead Heath and Highgate, but near the Beech-trees, as above said, and between the summer-house and the fields through which the path leads to Highgate.

Some conjectures about the nativity of this rare species may naturally be expected from the present reporter, who has visited the locality many times during the lapse of years between 1830 and 1861.

When I first observed the species, I inquired of an old man who had known both the plant and its station for many years. He was an aged man, probably about seventy, when Mr. Cockburn and myself were young; and he asserted positively that it had not been planted there in his remembrance. No herbaceous plant grows there now, nor for many years previously to the present year, 1861, which is not indisputably of British growth or origin. The usual sylvan plants grow there, viz. the Wood Anemone, the Primrose, the Lily-of-the-Valley, the Wood Hyacinth or Bluebell, the commoner Grasses, Luzulas, and Ferns.

The introduced species are mostly shrubs and trees, and there is none of any account but the common Rhododendron, which has here, by the want of space and too much shade, been drawn up to an extraordinary height.

The *Sorbus domestica* (No. 10) I have never seen near Hampstead; but a Sorb often mistaken for its much rarer relation is not uncommon in the vicinity, both in the woods and hedges near Highgate, Muswell Hill, Hendon, Hampstead, and Finchley.

Helleborus viridis (No. 12) and *Paris quadrifolia* (No. 9) were observed by Mr. Collinson a century ago in this district (see 'Phytologist,' vol. v. p. 172). That they have not recently

been reported from Hampstead, is no sure proof that they are not there.

Rosa villosa and *Lathyrus Nissolia* (Nos. 11 and 13) are among the doubtful species. They may have been erroneously recorded as Hampstead plants; and, after the example of the learned authors of the 'London Catalogue,' probably they should be put into the *Index Expurgatorius*, the limbo of British plants.

SIGMA.

British Museum, January 10th, 1862.

KENTISH BOTANY.

A Chapter on the Botany of Thanet.

The first week of August, 1861, was spent in the investigation of the indigenous or spontaneous vegetation of the north-eastern coast of Kent. Since the publication of Mr. Cowell's 'Floral Guide for East Kent,' there has been nothing published on the botany of this part of the county; and the present contribution is offered in the hope of inducing botanists to direct their attention to the Isle of Thanet.

Like most visitors who come here by water, we landed at Margate, and lost no time in sallying out to view the productions of the country which our London folk, with their usual good sense and sound judgment, have selected as the best locality where marine-bathing, land and sea breezes are to be had in perfection.

This part of Kent, its north-eastern corner, presents a singular contrast to the general aspect of this picturesque county in being almost flat and destitute of trees. It is a table-land in miniature, not supported by lofty mountains, but rising, as it may be said, out of the ocean's lap, and resting on a bed of chalk which is elevated from two hundred to three hundred feet above the level of the sea. Consequently the soil on the cliffs, and for some miles inland, is what is called marly, or chalky, or gravelly, and on the west and south-west the alluvial or river deposits predominate.

The most elevated parts are on the brink of the sea, and the general slope or declivity is towards the west, to the depression once filled by the ancient channel which separated this island, as it is called, from the rest of the county. This channel existed in days long past, and it is no myth; there was anciently a chan-

nel or strait which flowed in the direction of the Stour and Wantsume, and which was navigable down to a recent period of the history of England. In those times the sea flowed through the strait, entering at Reculver and flowing out at Richborough, or entering by the latter and joining the main ocean at the former.

Between Reculver on the north and Richborough on the south-east corner, an extent of nearly thirty miles, there is no stream nor streamlet which flows into the sea. The island is drained toward the western or land side, and the little water it yields is carried to the sea by the small rivers Stour and Wantsume; the latter enters the German Ocean near Reculver, and the other forms the haven of Sandwich, flowing into the sea near Richborough.

The soil of Thanet appears to be very fertile, the husbandry good, and the crops abundant, and this was to be expected from the traditionary character of the island, which is proverbial,—

> "When England wrings, (wails for want,)
> The Island sings," (for corn is dear, and plentiful here.)

To a botanist the isle is not so promising as it is to a cultivator, for there is no waste ground, no commons, and no bogs; there is a general uniformity of exposure, surface, soil, and tillage, consequently there is no great variety in its natural productions.

Another cause which restricts the botany of Thanet is the want of an undercliff. With the exception of a little bit of the rock at Broadstairs, the sea side of the cliff is destitute of vegetation.

Our first walk, on the west and south of Margate, not more than two or three miles from the town, afforded a sufficient sample of what we subsequently ascertained to be the prominent plants of Thanet.

Mercurialis annua and *Diplotaxis muralis** abounded everywhere, both in the fields and by the roadsides. *Note.* The fields

* This plant, evidently an intruder, was described by a now almost forgotten historian of Thanet in the following uncomplimentary terms. The farmers would then, and probably still would, rather have its room than its company:—

"A weed begins to infest the lands here which is not a little alarming to the farmers, as it is of a prolific kind and very difficult to be eradicated. It was produced a few years ago among some oats, which were freighted on board a vessel wrecked on the coast, and being washed by the tides along shore, was carried among the seaweed used for manure to different lands at the same time. It is of the class *tetredynamia* (*sic*). . . . The inhabitants call it the *Stinkweed*, from its fetid smell. It seems to be either the *Brassica muralis* of Hudson or a variety from it."—'New Margate and Broadstairs Guide;' by C. Le Bas, Esq. 1802.

in Thanet have no fences, and the roads are all without skirting walls, trees, or hedge-shrubs. Paths are also very common in almost all directions. Hence there is no impediment to the botanist; if he wishes to learn what grows on the ground, he need but look at his feet or on his right hand and on his left, and he will have to blame himself if he does not see everything which grows, both natural and cultivated.

There are several plants here which are both natural and artificial. The chief of these are semi-naturalized species, viz. *Trifolium pratense, Onobrychis, Hedysarum,* and *Medicago sativa.* We saw a very few starved examples of *Trifolium incarnatum,* but this latter species manifested no tendency to become spontaneous here.

The roadside plants, omitting the very common ones which appear everywhere, were *Smyrnium Olusatrum,* though now (August the 7th) long past its flowering-time, and *Pastinaca sativa* just coming into perfection. *Erigeron acris* and *Salvia verbenaca* grew on banks here and there, but the latter was neither in abundance nor of luxuriant growth.

We traversed the island along the cliff and inland in all directions, and a long list of what we did *not* see, though we hoped to see them, might easily be drawn up, but it would be a much longer one than the list of plants we *did* see.

Our first long excursion was across the fields to St. Peter's and along the cliff to Ramsgate and Pegwell Bay. At Pegwell there is a very thick deposit of plastic clay on the chalk, and something of an undercliff. *Note.* There is no undercliff between Reculver and Pegwell; the sea approaches to the base of the chalk and washes away the silt constantly falling from the upper surface and from the face of the rock, for atmospheric causes are in continuous operation, although their effects are only perceptible by the gradual diminution of the land on this side. These inroads of the sea have reduced the island to one-half of its area since the seventh century, as we learn from the Venerable Bede, who, in his 'Ecclesiastical History,' informs us that its extent in his time was about double its present dimensions. At the Ramsgate side of Pegwell Bay there is about half a mile of undercliff, similar to that at Kingsdown, on the western side of the Bay, three miles beyond Deal, but not nearly so productive of objects of interest to the botanist. We found this little bit, although

chiefly composed of clay, with the adjoining beach, the best botanizing ground of the island.

The botany of Thanet may be subdivided into, first, the agrarial plants, or those which grow on cultivated ground or in small portions of waste, so called, but really places where manure is laid up and prepared for the fields, or by roadsides. The species that grow in the fields grow also by roadsides, because the fields are in close proximity to the roads; there is no fence and rarely a bank for separating the one from the other. The viatical plants, as they are called, though with more pedantry than truth in their nomenclature, do not exist here as a separate or distinct class. There are indeed some plants growing by the roadsides which do not grow in the fields, such as two of the *Calaminthas, Verbena, Salvia, Anthyllis,* etc. These also grow on the cliffs. All the field species grow by the roadside, but all the roadside species do not grow in the fields.

The second class will contain the maritime plants, and with these are always associated certain species which are not strictly coast plants, being found in inland situations; but these are conveniently grouped with the former. The aquatic and marsh plants will comprise all that we saw about Minster, Monkton, and Reculver, belonging to the third section.

In the first class, or cornfield plants, *Papaver hybridum* was not scarce in cultivated ground near Margate. As a Kentish plant it is not uncommon in almost all parts of north and east Kent where the chalk crops out, and where the land is in cultivation; the whole county is arable. Heaths and commons are comparatively rare in Kent, and do not exist in its extreme eastern portion.

Diplotaxis muralis was more common than Groundsel or Shepherd's-purse. This plant is by no means particularly attached to rich or marly soil; it thrives well on gravel.

Scabiosa arvensis (*Knautia*) in both its usual forms was common; so was *Galeopsis Ladanum* and *Stachys arvensis*. *Galium tricorne* appeared in some considerable plenty in a beanfield near Minster. *Linaria spuria* and *L. Elatine,* with *Reseda lutea* and *Mercuralis annua,* bring up the rear of a very small list of cornfield species.

There was one of the Grasses particularly plentiful in Thanet, and to which special attention was given because it has been

classed, on high authority, among the suspected natives, and probably some would not hesitate to reject its claims even to a place among the excluded species. In Thanet and North Kent (between Lee and Keston Common, see 'Phytologist,' vol. v. p. 384) it is by far the most conspicuous of its genus. In the clover-fields especially, but in the fields generally, it is quite as common as *B. mollis*. There is in these places no grass so common, with the exception of the commonly cultivated Ray grass, *Lolium perenne*. As a "temporary straggler" this plant does not appear in Thanet, nor in North Kent. The corn and clover fields in the island are full of it. If *Bromus arvensis* is not yet naturalized, it is in a fair way of speedily becoming so; no grass is more common here than this, except *Lolium perenne* as above said, which is universally cultivated. Are there any botanists who question its claims to rank among acknowledged British productions? *Lolium multiflorum*, a more valuable grass than *L. perenne* for either green or dry fodder, is neglected in Thanet: a few straggling plants only were seen near Margate. This Grass is increasing in the vicinity of London, a proof that it constitutes a no small portion of the hay consumed in the Metropolis. When the Kentish farmers have ascertained its value, we may expect to see it dispersed as a weed and as plentiful in their tillage-lands as is now *Bromus arvensis*.

The maritime or coast plants are far more numerous and important than the agrarials, or than such of them as we saw in Thanet last August (1861).

From Margate we searched the entire coast by Fairness, Kingsgate, the North Foreland, Broadstairs, Ramsgate, and Pegwell to Pegwell Bay, with the following results. At Broadstairs the entire face of the cliff, which is here nearly perpendicular, and in some parts probably near two hundred feet high, was covered with the following plants, viz.:—*Centranthus ruber*, most abundant and very luxuriant; *Cheiranthus Cheiri*, very fine and nearly as plentiful; *Matthiola incana*, not quite so numerous as the two former, but equally well naturalized; *Beta maritima* and *Arenaria marina* grew both on the rock and also on the débris at its base.

The most remarkable maritime plants observed at Pegwell Bay were *Frankenia lævis*, not very common; *Althæa officinalis*, only one plant or bush, but a large one; *Cakile maritima*; *Eryngium*

maritimum; the marine *Atriplices,* viz. *A. marina, A. laciniata,* and *A. portulacoides,* with several other commoner coast species, for whose names there is no room in this article.

The variety *Artemisia gallica* was seen near the river which forms the modern haven or roadstead of Sandwich. This variety, it may be remarked, is not the same as the maritime species of this genus which grows on the French shores of the Mediterranean, and which is so called by Continental botanists.

The plants observed on the top of the cliff, and in other places between Ramsgate and Sandwich, and which are found here and there in most parts of the island, were, Fennel, of gigantic size, *Smyrnium Olusatrum, Medicago sativa, Onobrychis sativa,* wild Parsnip, wild Carrot, etc. Wild Celery grew about the ditches, almost always associated with *Œnanthe Lachenalii.*

Those who are sceptical about the existence of *Smyrnium Olusatrum* as a wild plant, and also have doubts about the complete naturalization of *Medicago sativa* and *Onobrychis sativa,* should visit the Isle of Thanet in August or in the end of July. Then and there they cannot help seeing the former in great plenty at a distance from the ruins of religious houses, and, indeed, far from all dwellings whatever. Also the two latter may be seen as well established as the common Clover, *Trifolium pratense,* which nobody has ever suspected to be an escape from cultivation.

The rarest and most remarkable plant which we saw in Thanet, and which belongs to this class, was *Lepidium Draba,* found growing in no great quantity, and very stunted in its growth, on the extreme verge of a very lofty cliff about halfway between Margate and Birchington. This has already been recorded as a Thanet plant on the authority of the Rev. M. J. Berkeley, who saw it at Broadstairs and St. Peter's: the former locality produces several species usually deemed alien. This plant, which is rapidly gaining ground, is recorded from near Herne Bay, which may also be called in question as a spurious station; but let the plant once get a footing, and there it will remain till the ground is used for some purpose other than the production of stray plants. This is not the case with the locality near Margate. Here there is nothing either in the place itself, nor in the associates of the plant, which throw any suspicion on the origin of the species, which, for anything that appears to the contrary, may have existed on this lofty exposed situation ever since the rock was

clothed with the vegetation which still covers it. This cannot be a permanent station; it must soon disappear in the sea, which here is incessantly encroaching.

We have still to record a few important species which were observed about the shore between Reculver and St. Nicholas.

The first of these is *Sambucus Ebulus,* which grew in a ditch beside the ancient wall of this interesting remnant of Roman dominion, and of early Anglo-Saxon piety.* This locality will, by some botanists, be reckoned among the *loca suspectiora* (spurious localities).

Near Reculver, outside the sea-wall, *i. e.* between the sea-wall and the beach, there grew abundance of *Ruppia,* but whether *R. marina* or *R. rostellata* we could not determine, for want of sufficiently developed fruit. In the same ponds there was also plenty of *Zostera,* but without the slightest vestige of fruit.

From Reculver, and all along the shingly beach for a mile or so towards St. Nicholas, the usual beach plants, such as *Glaucium luteum, Salsola, Salicornia, Statice, Glaux, Arenaria marina, etc.,* abound. *Carex distans* also occurred, and the much rarer *C. extensa,* a Carex hitherto, so far as known to the writer, unreported in the 'Phytologist.'

One of the principal objects of our recent visit to this remote nook of Kent was to trace the anciently-known river, or rather rivulet, *Wantsume,* from the Stour to the sea.

The ancient historians of England, beginning with the Vener-

* The sole remnant of the church of Reculver, one of the most ancient in Kent, is the west gable, flanked by the "sister spires," [a] a venerable memorial of bygone times. It is preserved from falling into utter ruin by the Trinity House Corporation, because it is a good sea-mark to the mariners navigating that part of the German Ocean. The north and east walls have long disappeared. The exterior wall of the ancient Roman fortification is only visible on the west; all the rest have been swallowed up by the sea centuries ago.

In the Bibliotheca Topographica Antiq. Kent, there is a long description of the church and monuments then existing, and there it is mentioned that the Fig and Dwarf Elder grew among the ruins:—

"The Fig-tree, *Ficus Carica,* appears among the bushes along the south wall, and the dwarf Elder, *Sambucus Ebulus,* abounds there.—William Boys, Sandwich, 1783" (Bib. Topogr. Antiq. Kent, No. 18).

[a] There is a legendary story or a tradition that these twin spires were erected by a lady of some Religious Order, whose sister, an abbess, perished opposite Reculver. To commemorate her sister's fate and her own escape, and to preserve others from a similar fatality, it is said that she caused to be built the *Sister Spires.*

able *Bede*, or *Beda*, as the Rev. Josh. Stevenson would have us write his name, relates that, in his time, the channel separating Thanet from the mainland of Kent was at least half a mile wide. Subsequent writers inform us that, down to so recent a period as that of Henry VII. or Henry VIII., ships of small burden in winter sailed up this strait, and thus both shortened the distance and escaped the perils of the stormy sea by the North Foreland.

Modern historians and geographers do not inform us when this passage was abandoned, but they are very circumstantial in their accounts of the present state of this channel, which was anciently several miles broad. The popular belief is, that when the river Stour, which flows by Ashford, Wye, Canterbury, etc., approaches the island near Grove Ferry,—a name significant of the ancient condition of this locality,—its stream separates into two rivers, one of which flows north and the other south. "Here the Stour," writes a modern authority, "parts into two branches, one of which falls into the estuary of the Thames, and the other into Pegwell Bay. A short walk along the river, from Minster to Grove Ferry, will satisfy the curious inquirer that the river Stour does not produce an off-shoot, or bye-blow, or bastard river, or a little Stour, but keeps in its own channel, which is not wide, but pretty deep, for it is navigable above Grove Ferry, and conveys all the water it has at Canterbury, and all that it receives in its course from the city to the island, and discharges the whole into the sea not far from Richborough. In brief phraseology, the account universally given and credited is a myth; or, in plainer terms, there is no division nor separation nor parting of the waters of the Stour. It is another and a distinct streamlet that flows to the northward, and falls into the sea or the Thames estuary near Reculver.

Review.

Vorgefasste Botanische Meinungen, vertheidigt von Dr. Johannes Roeper, Prof. in Rostock.

This pamphlet, which has reached us lately from a kind Continental correspondent, to whom the Editor of the 'Phytologist' gladly acknowledges his obligations for other contributions, is

not written in commendation of the New Theory of arranging plants, by Prof. Agardh.

This New Theory has been a theory, and nothing else, in England; no practical results have been visible hitherto. Its announcement in a very few of our periodicals, and a somewhat elaborate notice in our columns, have produced no sympathetic response.

New systems seldom experience a hearty welcome in England, even when introduced by a native, but when propounded by a foreigner, both the inventor and his inventions meet with a cool reception. Every reader of botanical history knows how Linnæus was treated in this country by the celebrities of his era: for example, by Sir Hans Sloane and Dr. Dillenius, the one the great patron, and the other the great leader or chief of the botanists of that period.

The ancient Swedish system, the Linnæan, was so easy that it could be learned, even by a child, in a few minutes. Its application was in most cases as certain as it was simple. The modern system, viz. the New Theory of Classification, by Prof. Agardh, has neither of these characters. It would be a labour to acquire it; and would it answer the learner's expectations when he understood it?

The Linnæan practice of counting the stamens and styles was of no great advantage when learned, for the learner soon knew by other more obvious and not so variable parts of the floral and vegetative organs, whether any given plant submitted to him had usually five or ten stamens, or an indefinite number, and, consequently, belonged to Class Pentandria or Decandria, or Icosandria, or Polygynia. He also readily knew such as had four or six stamens, from the shape of the corollas, the form of the stem, the disposition of the leaves, etc. There was nobody, even in those remote times of ignorance and blind submission to authority, who counted styles and stamens; though the system was universally praised, it was in practice universally repudiated.

If it be asked, what was the use of the Linnæan system?—the answer is, very much; it amused and gratified its possessors, and its learned terminology tickled the ears of groundlings, as "words of learned length and thundering sound" passed current among the vulgar as the representatives of genuine scientific information; and those who could rap them out with more than ordinary fluency and force, were deemed a race of superior beings.

If Linnæus had done no greater thing than that of inventing and teaching the doctrine of the sexuality of plants, his claims to distinction and to the gratitude of posterity would have been very slender; his fame would have rested on a narrow basis.

Jussieu and his followers, among whom we will persist in placing Prof. Agardh, and we will not hesitate to express our belief that he is one of the most meritorious, have done something, to say the very least, to rescue botany from the reproach justly cast on it, in our youthful days. That Agardh's systematic arrangement of botanical orders is exactly the *right one*, we will not maintain, for we do not know; but that he has laboured hard in evolving relationships, affinities, and other accidents of plants, is very manifest from every page of his great work on this subject. He has wrought well, if not wisely, and he shall have our unqualified and disinterested thanks for his pains.

Dr. Roeper, the author of the pamphlet set at the head of this article, entertains views of classification not in unison with those of his contemporary, the learned Swede. Well, why not? One man's opinion may be as good as another man's. The relationships of genera and families are so numerous, and are viewed under so multifarious aspects, that botanists may be excused when they express different opinions about their value.

For example, Professor Agardh believes that *Adoxa* should stand near *Ranunculaceæ*, and Professor Roeper that it has a closer connection with *Sambucineæ*, a section of the Order *Caprifoliaceæ*. "Who can decide when doctors disagree?"

When the great luminaries can only cast fitful, glimmering flashes on the dark domains of science, what can be expected from the smaller orbs, which shine only with borrowed lustre? Nothing, but to make darkness visible. The perplexed neophyte is the more bewildered the further he proceeds, and in his despair of being able to extricate himself from the entangling maze, is disposed to abandon all systems and resort to the ancient alphabetic method of arrangement.

An imperfect system is better than none, on the principle that half a loaf is better than no bread; and it little boots the learner whether it be called a natural or an artificial system of classification. If it serves his purpose, he may well be thankful, and need not cavil at the name. No doubt it would be more conducive to the progress of the science if professors, teachers, lec-

turers, and authors, would condescend to expound the science on some well-known uniform method, till a decidedly better system was promulgated, one which, like the Linnæan, might be almost certain of universal approbation and adoption in every botanical and medical school. But it is idle to speculate on the possibility of fettering the human intellect, or to imagine that the appetite for notoriety can be regulated by public wants in an age when every teacher is expected to be an author, and when every author is an inventor or an innovator, which is much the same.

The *Araliaceæ*, or family of the *Aralias*, do not agree very well with each other. Few points of obvious resemblance exist between our two British species, *Adoxa moschatellina*, and *Hedera Helix*, Common Ivy. The former is a very humble, tender, almost succulent plant, only a few inches high, and of short duration; the Ivy is a very tough arborescent climber, sometimes a hundred feet long, and possessed of almost everlasting vitality.

As the *Ranunculaceæ* are a very heterogeneous assemblage, and of so miscellaneous a family, a little plant and single species, like the *Adoxa*, could not much disturb the harmony, and it might be joined to this Order, as Dr. Agardh suggests, without any very violent infringement of the laws of relationship and affinity. The other genus, viz. *Hedera*, might be combined with *Caprifoliaceæ*, with which it agrees better in popular characters than it does with the little-known obscure genus wherewith it is associated.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Ova *for the* "Nidus Equæ" *of the* 'Phytologist,' *No.* 50, *June* 1859, *p.* 189; *and a* Reply *to No.* 60, *April* 1860, *p.* 104.

Ovum 1.—This and all the other ova are as mysterious as the nidus in which they may one day be hatched. As there were none but Scottish Ferns amongst those in pots out-of-doors, Mr. W. thought that the gardener might have mixed those in the greenhouse with the hardy; but the gardener being questioned on the subject, he denied having done so; besides which, the lady on her return from Scotland recognized her *special beauty*.

Ovum 2.—"Telling the exact spot," together with the former assertion, and both verified by the husband on the following day by letter, would be strong circumstantial evidence in favour of no mistake.

Ovum 3.—How could Mr. W., either by visiting the spot or by his own personal evidence, ascertain whether *Blechnum alpinum* "really grows on

an old stone wall," etc., when, by his query No. 1, he shows it was a *solitary plant*, and brought away from the habitat?

Ovum 4.—Mr. W.'s query No. 2, "Can it have been planted?" will exculpate him at least from wishing the public to swallow the *ovum* raw, or in other words, to take it for granted either that the Fern was of British origin, or that the occurrence of a single root should be conclusive of its wildness.

Ovum 5.—"Mistakes will happen in the best-regulated families," and it is therefore possible that one or more may have occurred in this instance; but, as before stated, the circumstantial evidence is so strong that it would be but gallant to give the fair finder the benefit of the doubt, and admit that a *solitary plant of Blechnum alpinum* was found in Scotland, when and where specified.

G. B. WOLLASTON.

Chiselhurst, April 2, 1860.

List of Plants which Flowered in May, 1861, near Ross, Herefordshire.

Ranunculus hederaceus, *L.*
Ranunculus auricomus, *L.*
Ranunculus repens.
Ranunculus aquatilis, *L.*
Aquilegia vulgaris.
Papaver Rhœas.
Fumaria capreolata, *L.*
Fumaria officinalis, *L.*
Coronopus Ruellii.
Lepidium campestre, *Br.*
Arabis hirsuta, *Br.*
Cardamine impatiens, *L.*
Sisymbrium officinale.
Sinapis nigra, *L.*
Nasturtium officinale.
Sinapis arvensis.
Helianthemum vulgare, *Gært.*
Viola canina, *L.*
Polygala vulgaris, *L.*
Lychnis Flos-cuculi.
Spergula arvensis, *L.*
Arenaria serphyllifolia.
Sagina procumbens, *L.*
Stellaria graminea, *L.*
Stellaria uliginosa.
Cerastium triviale.
Malva rotundifolia.
Linum catharticum.
Geranium molle.
Geranium dissectum.
Geranium lucidum, *L.*
Euonymus europæus, *L.*
Rhamnus Frangula, *L.*
Medicago lupulina.
Spartium scoparium, *L.*
Lotus corniculatus.
Trifolium repens, *L.*
Trifolium pratense.
Vicia sativa, *L.*
Vicia angustifolia, *R.*
Vicia hirsuta, *Koch.*
Hippocrepis comosa, *L.*
Spiræa Ulmaria, *L.*
Prunus avium, *L.*
Potentilla anserina, *L.*
Potentilla Tormentilla, *Sibth.*
Potentilla, β, nemoralis, *Nestl.*
Geum urbanum, *L.*
Rosa canina, *L.*
Rosa arvensis, *L.*
Pyrus Malus, *L.*
Pyrus torminalis, *L.*
Pyrus Aria, *Sm.*
Pyrus Aucuparia, *Gært.*
Alchemilla arvensis, *L.*
Alchemilla vulgaris, *L.*
Bryonia dioica, *L.*
Montia fontana, *L.*
Saxifraga granulata, *L.*
Saxifraga tridactylites.
Chrysosplenium alternifolium, *L.*
Adoxa moschatellina, *L.*
Ægopodium Podagraria.
Sanicula europæa, *L.*
Bunium flexuosum, *With.*
Œnanthe crocata, *L.*
Anthriscus Cerefolium, *Hoffm.*
Scandix Pecten-Veneris, *L.*
Chærophyllum temulum, *L.*
Sambucus nigra, *L.*
Viburnum Lantana, *L.*
Galium Aparine, *L.*
Galium cruciatum, *With.*
Asperula odorata, *L.*
Sherrardia arvensis, *L.*
Fedia olitoria, *Vahl.*
Valeriana dioica, *L.*
Tragopogon minor, *L.*
Apargia hispida, *Willd.*
Hypochœris radicata, *L.*

Crepis virens, *L.*
Hieracium Pilosella, *L.*
Hieracium murorum, *L.*
Lapsana communis, *L.*
Chrysanthemum Leucanthemum, L.
Convolvulus arvensis, *L.*
Vinca minor, *var.* alba, *L.*
Veronica montana, *L.*
Veronica Anagallis, *L.*
Veronica Beccabunga, *L.*
Veronica serpyllifolia, *L.*
Pedicularis sylvatica, *L.*
Pedicularis palustris, *L.*
Thymus Serpyllum, *L.*
Rhinanthus Crista-galli, *L.*
Melampyrum pratense, *L.*
Myosotis cæspitosa, *Schultz.*
Anagallis arvensis, *L.*
Cynoglossum sylvaticum, *Hænke.*
Cynoglossum officinale, *L.*
Lysimachia vulgaris, *L.*
Euphorbia helioscopia, *L.*
Urtica urens, *L.*
Urtica dioica, *L.*
Rumex Acetosa, *L.*
Rumex Acetosella, *L.*
Plantago lanceolata, *L.*
Quercus robur, *L.*
Quercus sessiliflora, *Sm.*
Orchis latifolia, *L.*
Orchis maculata, *L.*
Orchis Morio, *L.*
Listera ovata, *Br.*
Ophrys muscifera, *Huds.*
Paris quadrifolia, *L.*
Allium ursinum.
Scirpus palustris, *L.*
Potamogeton natans, *L.*
Eriophorum polystachyum, *L.*
Carex pallescens, *L.*
Carex divulsa, *Good.*
Carex vulpina, *L.*
Carex paludosa, *L.*
Carex sylvatica, *Huds.*
Carex paniculata, *L.*
Carex fulva.
Carex, β, speirostachya, *Sm.*
Carex riparia, *Curt.*
Carex hirta, *L.*
Carex panicea, *L.*
Carex pilulifera, *L.*
Carex flava, *Huds.*
Carex acuta, *L.*
Carex Pseudo-Cyperus, *L.*
Carex stellulata, *Good.*
Carex pulicaris, *L.*
Carex vulgaris, *Fries.*
Carex muricata, *L.*
Carex intermedia, *Good.*
Carex remota, *L.*
Alopecurus pratensis, *L.*
Milium effusum.
Poa nemoralis, *L.*
Poa pratensis, *L.*
Melica nutans, *L.*
Melica uniflŏra, *Retz.*
Bromus mollis, *L.*
Glyceria fluitans, *Br.*
Equisetum arvense, *L.*

Ferns found at Weston-super-Mare.

I send a list of Ferns I found at Weston-super-Mare and its vicinity last autumn:—*Lastrea Filix-mas*, with vars. *Borreri* and *dilatata*; *Athyrium Filix-fœmina*; *Pteris aquilina*; *Polystichum angulare*, with var. *acutum dissectum* and var. *subtripinnatum*; *Polystichum aculeatum*; *Scolopendrium vulgare*, with vars. *submarginatum* and *multifidum*; *Polypodium vulgare*, *P. canariense* (this foreign specimen I found at Breame Head), and *P. calcareum* (found at Cheddar); *Asplenium Adiantum-nigrum*, *A. Ruta-muraria*, with var. *variegatum* (at Woodspringe Priory), and *A. Trichomanes*; *Ceterach officinarum*; *Cystopteris fragilis*, and *C. angustata*. I do not know if a list of Ferns found at Weston has appeared in the 'Phytologist;' if not, perhaps you would like to insert it.

Chase Cottage, Enfield. Henry Aston Walker.

A few Botanical Scraps.

Epipactis purpurata.—There are many botanists who suppose this Orchis to be a *variety* of *E. latifolia* or *E. media*, but are these not sufficient botanical characters to entitle it to the rank of *species? E. latifolia* can be grown year after year, either in the open border or in pots, and is

a very common Orchis in Kent, and in most of the counties in England; but, on the contrary, *E. purpurata* is *parasitical* to either Hazel or Beech, and cannot be grown artificially even with the greatest care. It is also very rare in Kent, having only seen one Kentish specimen, which I found near Dunton Green, and was one hour and a quarter in taking it up, so that I might neither by accident or haste injure its fibrous roots. It was seated (if I may use the expression) upon the root of a Hazel, and removed without damage to my garden. I again planted it, covering it with a handlight, on the root of a Hazel, and I suppose by its partial contact it did just appear the following year, and then dwindled away. Is *E. media* a parasite, or only a synonym of *E. purpurata?* If not, let them be separated, and give this last its true position, viz. that of a *species*. *E. media* I am unacquainted with, unless it be the same as *E. purpurata*, which I have invariably found to be parasitical. It is abundant in Dorsetshire, etc. *E. latifolia* is not a parasite.

Erigeron canadensis.—This plant, supposed to be of exotic origin, came up in the greatest profusion, together with small quantities of *Melilotus leucantha*, at the Beckenham station of the Mid-Kent Railway, *immediately after the excavation for the same*. It appeared in *virgin soil* of sand and gravel, at depths varying from five to ten feet. The above must be very strong presumptive proof of its indigenous growth.

Claytonia perfoliata.—Is this pretty delicate-looking plant known to be an alien? It has been sent to me by E. J. Lawrence, from near Muddiford in Hants; and more recently, by a lady, from near Woking (December 1861) in Surrey. In both localities apparently wild, certainly perfectly naturalized.

Scrophularia vernalis.—I had the gratification of finding this plant in considerable quantity in April, 1861, in the parish of Chiselhurst, Kent, growing with the common Nettle (*Urtica dioica*), and resembling it so nearly, except in its floral spike, that any ordinary observer might easily overlook it. I am not aware that this rarity is recorded for Kent, although it is for the continguous counties of Surrey and Middlesex.

Rubus laciniatus.—This Bramble is a common weed in my garden, seeding itself everywhere, and is too unlike any of our British *Rubi* to lead me to doubt its specific character. The fruit is much larger and of a different shape to the ordinary Blackberry. In the December number, 1861, of the 'Phytologist,' Mr. T. R. A. Briggs mentions having found it near Plymouth; I have also found it, August 1861, at Swinnerton, near Stone, in Staffordshire. But, in my case, I am persuaded that it is a *variety* only of one of our common *Rubi* (*R. corylifolius?*), although the cutting of its leaves exactly resembled those in my garden, except in their lesser size.

Oxalis Acetosella *versus* Trifolium repens.—Although I at one time fully coincided with Mr. W. J. H. Ferguson, who writes in the 'Phytologist' for January, 1862, in supposing the *Oxalis* to be *the* Irish Shamrock, and am still doubtful on that point, I cannot by any means "safely conclude" that, because the poor Irish snatched a plant of "sharp taste" from the *ditches*, it was an *Oxalis;* but rather, that the plant was the common Watercress (*Nasturtium officinale*), which has a *sharp biting taste*, and grows in ditches, its natural locality. The *Oxalis*, on the contrary, but rarely; dry shady banks and woods being the places it delights in.

May I suggest the possibility of the true Shamrock being neither the one nor the other of the plants in question, but *Oxalis corniculata*, plucked by St. Patrick from the gardens of the monastery, or elsewhere, to illustrate the doctrine of the Three in One. I have two reasons for suggesting this; first, that most Irishmen on St. Patrick's Day, wear a piece of gold leaf mingled with the Trefoil, which may represent the *golden flower* of *O. corniculata;* and secondly, that it is hardly likely that *Trifolium repens*, Dutch Clover, was introduced into Ireland so early as St. Patrick's time.

Geranium pyrenaicum.—Is plentiful in two localities in this neighbourhood; in one of which it is as apparently wild as any other hedge plant, but in the second it is the hedge of a garden.

G. B. Wollaston.

Pale Primroses.

Mr. Todd's note to Milton's Poetical Works, 'Lycidas,' vol. v. p. 45, on "the Primrose that forsaken dies," asks (referring to Shakspere's "pale Primroses that die unmarried,") why does the Primrose die unmarried? and then answers, Because it *grows in the shade uncherished and unseen by the sun*, which was supposed to be in love with some sorts of flowers. Would some of the readers of the 'Phytologist' inform me whether pale Primroses produce seed or not? If not, then I think the meaning of Shakspere is clear.

H. B.

Our readers will be sorry to hear of the demise of William Borrer, Esq., F.R.S., F.L.S., etc., at his residence, Henfield, Sussex, one of the oldest contributors to the 'Phytologist,' and one of its most steadfast friends and zealous supporters. The mournful event happened on the 10th instant, and the deceased was in his eighty-first year. A short memoir of this eminent botanist and exemplary man may be looked for in our next number.

Notice to Correspondents.

If W. Ashley and Ruricola of Sheffield will send their address to A. I., 28, Upper Manor Street, Chelsea, they will receive a private communication, which has been as far as Sheffield and returned undelivered, because the address was not sufficiently explicit.

Communications have been received from

John Sim; C. J. Ashfield; W. Pamplin; James Backhouse, jun.; S. Beisly; W. Winter; G. B. Wollaston; W. L. Notcutt; J. S. M.; W. Ashley; Ruricola; P. T. O.; Rev. R. H. Webb; H. Beisly; T. R. A. Briggs; Charles Howie; W. P.

RECEIVED FOR REVIEW.

The Preston Chronicle, November 30th. Notes on Books.
The Malvern News and Journal, December 4th.

THE OPENING YEAR.

"Sicker (surely), Willy, thou warnest well;
For winter's wrath begins to quell,
And pleasant spring appeareth;
The grass now gins (begins) to be refreshed,
The swallow peeps out of her nest,
And cloudy welkin cleareth."

It is difficult to convey to a person brought up in a large town, "to one who long in populous city pent," the effect which the varied aspects of Nature—for example, the arrival of migratory birds, the flowering of plants, the leafing of trees, and atmospheric variations—have on one who has been nursed in Nature's lap, or who has been born and educated in the country. The latter has an additional sense to which the former is a stranger. Reminiscences and associations link his own history with the surrounding objects of his notice, and the mysterious energies of Nature operate on his own being, and his feelings are an index to the seasonal changes of the year. When Nature wakes up from her winter's sleep and is shining in earth and sky, her activities are felt within, and, without any other monitor to warn him of the lapse of time, his inward perceptions tell him that the season of flowers is come—he seems to hear a voice wooing him to the fields. In autumn, too, when Nature's grand operations are almost over, and she is, in some of her departments, already undressing herself before retiring to rest—the pale light thrown over the landscape, and the solemn stillness which almost universally reigns, exert an influence upon his mind widely different from that buoyancy of spirit produced by the advent of spring.

But there are more obvious phenomena accompanying the opening year, and which can be recognized by the senses. We might draw many illustrations from the feathered tribes and the insect world, but shall confine ourselves to the mention of a few, drawn principally from the vegetable creation.

First comes the *Snowdrop*, emblem of modesty and innocence. While Winter yet scowls, or his angry voice is heard in the north, commanding silence from almost every feathered songster, and Desolation still holds his sway, it comes, though with drooping head, like a friend in adversity, to cheer our drooping spirits, by telling us of verdant meads and sunny skies that are soon to follow.

It was in the days of our childhood, and at a season when winter was still howling in storms, that we were first captivated by the "shame-faced maidens," with their modest faces partly hidden under a veil of snow. Pressed down by a burden their fragile stems are ill able to bear, they look cheerless under such circumstances, it is true, but they whisper hope; and the *Crocus* comes next, announcing the joyous season that approaches.

Even at this early season of the year, the missel-thrush is seated on yonder tall elm, as if on purpose to sound out, in loud, wild, flute-like notes, the welcome intelligence that Spring is coming: but, when the sky has relented and the clods are beginning to dry, a walk into the fields and woodlands becomes deeply interesting.

The *Adoxa Moschatellina* is another of the harbingers of spring,* and though *without glory*, as its name imports, is a pet flower with the ladies. We shall not soon forget the look of complacency and chastened pleasure with which it was once handed to us by a young Quaker lady, who in her first walk in the opening year had been so fortunate as to find it. This flower seems to shrink from the gaze of the vulgar, and is not often found, except by the prying botanist. We have often been asked to describe it, by those who are fond of wild flowers, yet had never seen it; and we have been in the habit of saying, "Look low down in the hedge-bank for a little green flower, or rather an assemblage of five flowers,—one flower looking east, another west, another north, and another south, with one at the top, looking up to the sky—and you have the *Adoxa*." Of course, all that is meant is, that each succeeding flower is at right angles to the one preceding it; so that, if one indicates a point of the compass, all the others must, except that one at the top. This flower, though so unobtrusive, has not wholly escaped the notice of artists, for we have seen it modelled on a picture-frame, where it has a very pretty effect, as both leaves and flowers are very graceful and admit of grouping in so many different ways.

The *Hazel* now tempts the feet of many a child to the margin of the wood, to gather its pendent catkins; and we are not ashamed to own that, as often as the season comes round, we are in the habit of directing young minds to such sources of plea-

* We have gathered it in Yorkshire as early as January 27th, and with the flowers fully expanded.

sure, and of joining the little exploring party in their search after those objects of natural history that accompany the opening year. These "lessons on objects" we have always found to be far more interesting to children than anything that can be told *about* them; for they are never tired of *seeing*, though they may not be fond of sermonizing; and, when the microscope is taken out of its case, there is sure to be a rush made to get the first peep at the tiny wonders thus revealed.

We often smile at the simplicity which characterized us in the days of our childhood, when the schoolmistress used to tell us, with so much apparent gravity and earnestness, that "as soon as the ducks had eat all the dirt up," all who were big enough to walk so far should go with her down to Drew's Pond, a distance of little more than a mile, to gather *pussy-cats* (catkins of the hazel) and violets. We seem to see, even now, the yellow pollen of the catkins on the noses of our little schoolmates, and cannot forget how, before we saw the violets, our senses were regaled by their fragrance, which was exhaled from a mossy bank. The two plants have always been favourites since; but we were not taught to look a little lower down on the sprays of the hazel for the beautiful crimson styles of the female flower.

As the season advances the light clouds hover about; there is also a softness and transparency in the air; the buds are opening and emitting their peculiar odours, which are very perceptible after a shower; the cottager is out trimming his garden, and star-like primroses are seen. Oh, what recollections are awakened by the mention of this flower! We remember how we used to assemble outside the school, to appoint a place of meeting for one o'clock, from which we would run, rampant with joy, down to Rundas Water, and bound over the rivulets to gather primroses, which we intermixed with blue-bells and stuck round our hats on our return. These were sunny days, and the recollection of them is dear to us still; and the flowers have become endeared to us by a thousand associations connected with the scenery where they grew.

A little later in the season, and the *Gandigosling* (*Orchis mascula*) comes into flower; and we remember, as if it were but yesterday, with what exuberant joy we listened to the welcome announcement made by the good old dame already mentioned, that on the morrow, if we were good, we should go out walking with

her, to get Cuckoo-flowers and Gandigoslings. We often regret that we filled so many pinafores with the latter flower, which abounded in the neighbourhood of Devizes; for drainage and the improvement of the land, we believe, have made it far less plentiful than it was then. Many years ago, when we had removed into the north, we got a friend to send us two or three specimens of this much-loved flower, as the first spring had passed without our meeting with it and we feared it was not found in this neighbourhood, which happily proved to be a great mistake.

We could say much on such a theme as this; but, fearing to be too prolix, we will leave it for the present, and perhaps take another view of the matter on some fitting occasion.

RURICOLA.

POTAMOGETON CRISPUS.

Hybernaculum of Potamogeton crispus; *by* TREVIRANUS. *Translated from the "Botanische Zeitung," No.* 41. *October* 9, 1857.

It is well known that the delicate structure of water-plants renders many of them unfit to withstand, for any length of time, the destructive effects of the element in which they live; and their seeds, therefore, do not always come under the conditions necessary for ripening them. But their reproductive power has been preserved by means of gems (hybernacula, Linn.) in a manner that offers several peculiarities. In the third volume of the Transactions of the Botanical Society of France for 1856 (p. 350), Clos describes a particular mode of propagation of *Potamogeton crispus.* On the 16th January he remarked, among a mass of *Vallisneria,* some brownish-coloured bodies of a horny consistency, formed of four, five, or six leaves, sessile, on an axis of three to five centimètres in length. They were kidney or heart-shaped, toothed, sharp-pointed and placed horizontally. From the axil of one of them sprang a stem, which had thrown out, from its rather distant knots, rootlets and leaves, proving it to be *Potamogeton crispus.* About the middle of June, Clos made the following observations on the origin of these bodies.

From the axil of the upper leaves, of the flowering as well as of the barren stems, springs a short branch, not exceeding four to six centimètres, the axis of which is of a horny texture. Its lower leaves are of the usual consistency, but the following have a hardened broad base, toothed at the edge (which forms a sort of sheath for the undeveloped bud), and a strap-shaped fleshy tip, the two parts separated from each other by a notch (or joint?) as in *Dionæa muscipula*. These little branches, each of which bears a bud in its axil, separate very readily from the parent stem, and fall to the bottom of the water, where they acquire a brown colour and horny consistency, but do not undergo any further change till the following January, when one of these axillary buds is developed into a runner. This becomes a rhizome and brings forth branches.

HYBERNACULUM OF POTAMOGETON CRISPUS.

a. Axis and horny leaves of the hybernaculum of *Potamogeton crispus*. *b*. Undeveloped bud. *c*. A vertical section of *a*, showing three axillary buds.

I am able fully to confirm these interesting observations. As far back as the 18th of November, in the warm autumn of 1818, I noticed on the edge of a half-dried pond an immense

quantity of shoots of the weed in question, springing from a thick body buried in the sand. This proved to be a cylindrical stem, round which were four to six sessile, round, leathery scales, with a toothed base and lengthened point. From the short spaces between these scales, sometimes from the axil of one of them, grew a young stem with leaves and rootlets, but only one, the buds visible in the axils of the other scales remaining undeveloped.

The accompanying drawing, which I made at the time, gives a tolerably correct representation of it.

IN MEMORIAM.

In Memory of the late William Borrer, Esq., F.R.S., F.L.S., of Henfield.

"Can flattery soothe the dull cold ear of death?"

The brief obituary on the 64th page of the present volume tells us, in plain terms, that there is no dallying with death; to the reflective reader it will bear the same message that the prophet delivered to the king, viz. "Set your house in order," for no one can say who may be the next victim.

> "Death's shafts fly thick. . . .
> On this side and on that men see their friends
> Drop off like leaves in autumn.
> Oh, slippery state of things!"

While it is just and becoming, to acknowledge our individual and personal obligations to him who has recently departed, and to sympathize with his relatives who have suffered this bereavement, and to condole with his numerous surviving friends, so far as is tolerated by the usages of society, our main object will be to exhibit, in these short and simple records of a good man's life, a subject not for the admiration but rather for the imitation of his contemporaries and posterity.

The lovers of nature, or, as they may be more correctly called, the admirers of the visible creation, who contemplate and enjoy the manifold works of the Creator, and who in the broad page of this book of knowledge learn the power, wisdom, and goodness of the almighty hand which made them, have no immunity from

the lot common to all mankind. The most zealous and most successful partisans of Botany must submit to that destiny which, like time, devours all its offspring. As "the flowers of the field, they fade, die, and disappear." Botanists however rarely figure in obituaries before attaining a mature age.

But the memory of the just is imperishable, for "the righteous shall be in everlasting remembrance." Their memorial is written among the eternal records—in that dread book, which will be opened when all the dead, both small and great, stand before God to be judged and rewarded according to their works.

That all our literary and scientific offences and shortcomings, our social, moral and religious delinquencies, may be blotted out of that awful record, is our earnest prayer for ourselves and for all our fellow-sinners.

Botanists are not exempted from the numerous ills which "flesh is heir to;" but most of the fraternity are better fitted, by their attachment to the out-of-door exercise of their innocent pursuits, to bear some, at least, of the evils incident to humanity with rather more equanimity and cheerfulness than those can who are enervated by torpidity of mind and body, indolent habits, and all other seductive indulgences which hinder people from leading useful, healthy and happy lives.

The votaries of Flora are not much tormented with the spleen, the megrims, and other sullen vapours which becloud the brain and enchain the spirit. They inhale the invigorating breezes of the hills, the freshness of the fields teeming with vegetation, enjoy the ever-changing aspects of nature, and admire the variety, the beauty and the utility of every object which the ground spontaneously brings forth for the blessing and gratification of mankind. In the shady wood or forest, in the sequestered vale, on the mountain side, among rocks, by rivers, lakes, and the sea-shore, they converse with nature and with themselves—

> "Enjoy the cool, the fragrant, and the silent hour,
> To meditation due and sacred song."

It is always to be admitted, as a matter of course, that the great secret of living happily is "to keep a conscience void of offence both towards God and towards man;" but, as subordinate conditions of happiness, the preservation of a sound mind in a healthy body (*mens sana in corpore sano*) is not one of the least

important duties of reasonable beings—to preserve the health of the body and the peace and cheerfulness of the mind by temperance and exercise. If the amusements and operations of botanists be less exciting and not so brilliant as those of some people, their lives are healthier and happier than most.

But whatever be the cause of this more enviable condition, it is a fact that botanists for the most part die in a good old age and generally leave behind them, as a legacy to posterity, an honest report, a respectable reputation, "a good name better than precious ointment." This is the true "odour of sanctity" which, in primitive times was believed to emanate from the bodies of the recently-departed saints.

It would have been most satisfactory to have had a sketch of the deceased's character from some of his relatives or from some one of his numerous friends who had long enjoyed his friendship and who were intimately acquainted with his habits, his intellectual predilections, his moral sympathies, and his religious opinions, his faith and his hopes. On these topics the writer of what follows has no information to give, the following commemorative token is offered as an act of duty to our readers, most of whom knew Mr. Borrer, and as a small tribute of affection and piety which is due to the memory of one of the oldest and most estimable of our scientific correspondents.

The readers need not expect a genealogy of the late gentleman, a subject unknown to us; and if it were, there is no room for it in these pages. For equally good reasons, all anecdotes of Mr. Borrer's childhood, of his education and the part he performed in the great battle or drama of life, must be passed over in solemn silence.

The readers of this sincere though humble memorial were familiar with the name of Mr. Borrer as an amateur botanist, as a contributor to the 'Phytologist,' as a liberal donor of specimens, and as a reliable authority for the genuineness of many assigned localities of plants, and as a good judge of their claims to rank as native productions.

Some time must elapse ere any other equally influential botanist, who is able to devote his time and labour to the investigation of local botany, will be found to take his place; for our late friend had much experience, was singularly well qualified by his long habits of observation and by his clear judgment, for being an

impartial umpire on all such questions. He was also by nature truthfully disposed, and by long practice he was trained to nicety of description and accuracy of detail. It will be "long ere we look on his like again," as a trustworthy painstaking historian of what he had observed in the numerous journeys he undertook in the pursuit of his favourite science.

One of the most amiable traits in this part of our late friend's character was his affability and condescension to all who solicited his help. His botanical creed and practice were founded on the most cosmopolitan, catholic, and comprehensive principles. Nobody, whatever might be his social status or acquirements, applied in vain to Mr. Borrer. Every one who had or professed to have a knowledge or only a simple love of the science of which he was not only a promoter but an ornament, found in him a willing listener and a zealous and efficient instructor or informant. Everybody who carried a vasculum was welcome at Henfield. The botanist needed no introduction; science, like freemasonry, can dispense with the usual conventionalities, which are necessary to prevent our treading on the kibes of one another, but are sometimes troublesome impediments, disturbing or checking the social intercourse of those engaged in kindred pursuits. They were no hindrance to the freedom and frequency of intercourse of communication with Mr. Borrer.

Mr. Borrer's knowledge of British plants was extensive and accurate, and, consequently, among the few botanists who still devote their attention exclusively to our native species his authority was supreme; but his merits were acknowledged by some whose studies are not restricted within so narrow limits as the four seas which bound the British Isles.

The eminent director of the Royal Botanic Gardens, Kew, Sir W. J. Hooker, surely no mean judge, places him at the head "of the most able botanists of our country." (See Preface to the third edition of the 'British Flora,' p. x.) He further informs his readers in the same preface that "the first of these gentlemen (Mr. Borrer) has kindly undertaken a complete revision of the genera *Myosotis*, *Rosa*, and *Rubus*."

This eminent author, in many parts of his 'British Flora,' and especially in the first part of the second volume, that on *Musci*, *Lichenes*, *Algæ*, etc., bears ample testimony to Mr. Borrer's celebrity as an acute observer and as a successful discoverer.

The renowned Lichenologist, Acharius, has styled the subject of these memoranda "*Lichenologus eximius*," which means that his acquaintance with Lichens was profound.

His name is honourably preserved in several species and in one genus of plants. *Borrera* is a genus of Lichens which will transmit Mr. Borrer's name to succeeding generations of lichenologists; also several species of Algals, Lichens, and vascular plants bear honourable testimony to his knowledge of these obscure objects, and testify by their names to his success in discovering and distinguishing species: for example, *Sclerochloa Borreri*, *Luzula Borreri*, *Parmelia Borreri*, *Meloseira Borreri*, *Calthamnion Borreri*, etc.

These testimonials from the greatest botanists of this or of any preceding age—these ample honorary rewards ungrudgingly paid to an amateur, to a gentleman who did not make botany the sole or chief employment of his life, but who only cultivated it as a relaxation from business, or as the amusement of his leisure time—must be received as satisfactory proofs of his botanical merits. *

It is hoped that our readers will not be inquisitive about how his time was spent when he was not engaged on botanical studies, for on this subject their humble servant, the writer, cannot afford them the slightest information; but he can tell them instead several truths that are far more important and interesting, not merely to the lovers of British plants, but to the students of the science in general.

The present generation of British botanists are more indebted to Mr. Borrer than to any one of the last or the present century for precise information about the distribution or localities and the distinctions of British plants. His labours on these subjects, if not more striking, are surely as meritorious and of as much utility to the students of our native vegetation as the discovery of new plants—a species of good luck which is of more importance to the discoverer himself than to science or to its cultivators.

But of this fortuitous kind of merit Mr. Borrer has his full share, at least as much or more even than usually falls to the lot of botanists living in a country so long and pryingly searched as England has been.

* To a very few botanists the subject of this sketch is known as one of the authors of 'Lichenographia Britannica,' a history of British Lichens, printed by C. Sloman, Yarmouth, 1839, 8vo. This work, which was never published, was the joint production of Dawson Turner and William Borrer.

It was his well-known reputation for trustworthiness, for accuracy, fidelity, comprehensive views, and the like, that rendered his judgment on the questions of nativity, spontaneous growth, etc., so peculiarly valuable. It is well known that he personally visited every locality where unheard-of plants were to be seen, or had been reported as seen. He spared no expense, and underwent much toil, in order to ascertain the truth of whatsoever was reported on this subject.

For many years his exertions were incessant to ascertain by personal observation what truth there was in any reported new acquisition; and he underwent much toil to verify old and long-known stations for rare plants. There were few interesting botanical localities in England, Ireland, Scotland, and Wales which he had not at some time or other, in the course of his long and active life, personally visited. In proof of this, the pages of 'Sowerby's English Botany,' and especially those of the supplementary volumes, also the excellent 'British Botany' of his friend Sir W. J. Hooker, may be cited as ample evidence that he spared no labour and endured much fatigue in his many botanical excursions in pursuit of these objects.

In order to the identification or the distinction of species, he cultivated probably more British species than were ever previously brought within the boundaries of a garden, with the exception of the late Mr. Forster's collection. Here, in the country, at Henfield, under his own eye and at his leisure, he grew the doubtful or critical species side by side, that he might be the better qualified to decide about either their distinctness or their identity.

One of the most amiable traits in this humble man's character was his readiness and zeal in aiding authors of established reputation. He was more solicitous to assist others than ambitious himself of enjoying the honours of authorship. Of fame he appears to have been more singularly negligent than most men, but few appear to have enjoyed in a greater measure than he did the luxury of doing good. His liberality, his carefulness in describing, the truth-loving character of all his communications, are notorious to those who had the honour and privilege of corresponding with him on scientific subjects.

Science might still profit, and our contemporaries and posterity might still gain something from the labours of our lamented

friend, especially if there exist any notes or remarks on the results of his experience derived from the cultivation of *quasi*-species side by side in his large collection. His extensive knowledge of plants and his appreciation of forms, as distinguishing species, might still be available in promoting that sound critical acquaintance with the science which he laboured to improve, if any memoranda exist which might be published for the instruction of the less informed and inexperienced.

During his long and busy life he delighted in imparting instruction to all who would receive it. His notice and encouragement were generously granted to all who availed themselves of his aid, or appreciated the information he had to give, or who had a fellow-feeling with him in his admiration of the good, the beautiful, and the useful, as manifested in plants, to all whose pursuits and tastes were congenial to his own. To such he was always accessible, whatever might be the grade of the applicant; no introductions or recommendations were necessary to procure admission to view Mr. Borrer's extensive collection of living plants, or to inspect his Herbarium, or to consult his library.

The catholicity of science was never more prominently and practically exemplified than it was by Mr. Borrer, who honoured with his notice and patronage and encouraged with his favour every attempt to get or to spread knowledge, however humble the applicant, and however feeble the attempt.

To the 'Phytologist' he was always a steady friend, a valued contributor, and a staunch supporter, from its commencement up to the latest period of his life; and, as long as health and strength permitted, he took a deep interest in its management and success.

He recently made the following remark in addressing an eminent botanical friend: "When my periodicals arrive, I always look first at the 'Phytologist.'"

In giving publicity to Mr. Borrer's merits as a scientific man, we are performing a duty incumbent on us by the accident of our public connection with science; in recording our love and admiration of his character as a man of singular gentleness and humility, we are doing an act very gratifying to our own feelings.

The character of our late correspondent has far higher claims to our veneration than that he was distinguished by tastes, pursuits, and studies congenial to our own feelings and disposition;

it is as a Christian gentleman that we cherish his memory. The former features are amiable and praiseworthy, they ornament and embellish life, they contribute to the enjoyment of the possessor, and like other means augment his opportunities of extending his influence and of doing good. Mr. Borrer was a philanthropist in the best and widest sense of this sometimes prostituted term.

His benevolence was not confined to the inmates of his own neighbourhood, but was nearly as wide as the world or as extensive as destitution and misery.

During the life of his very intimate friend Mr. Edward Foster, who acted as the dispenser of his bounties to metropolitan charities, his subscription list was intrusted to this gentleman; and from this and other memoranda it appears that the Orphan Institution, the Destitute, the Idiot, and similar societies, were aided by his purse and influence.

The sterling goodness of our deceased friend's character is not to be inferred alone from what has been above stated about his trustworthiness as an observer and his faithfulness as a narrator of what he observed, nor from his disinterested journeys in pursuit of truth, nor from his liberality as a man of wealth who ever evinced greater delight in helping others than in enlarging his own fame. These are all most amiable traits of a character which every friend of humanity takes pleasure in admiring and describing. His efforts in the cause of God and of eternal realities are imperishable, being recorded in Heaven's chancery; his personal labours to prepare the youthful members of his humble neighbours for a higher station than wealth, influence, and science can confer, is that feature of his character which will be valued as the impress of divinity, as the fruit of the spiritual life which is enjoyed and manifested by every true believer in the doctrines of Christianity—by all who are themselves convinced that they are candidates for the kingdom of God, and who consider the present condition of humanity merely as the state of preparation for a more permanent and glorious existence.

We are solely indebted to a friend for much of what has been already advanced, and, it may be said, for all the following statements.

The writer of this brief sketch of a good man's scientific, benevolent, and liberal actions, knew Mr. Borrer only as a botanist

and a friendly correspondent on botanical subjects. But he knew him many years before the period when the 'Phytologist' dates its commencement, consequently he is competent to bear a faithful testimony to the integrity, kindness, and liberality of one whom he long knew by report and with whom he occasionally corresponded; he is indebted to another hand for what he has now the pleasing task of recording. Our friend writes as follows:—

"But it was not by purse and by proxy alone that Mr. Borrer lent his influence and his aid to the cause of God and of Christian truth; he laboured to advance both by more active exertions. His personal services, his individual energies were devoted to the spiritual as well as to the temporal relief of the necessitous. He laboured to prepare subjects for the kingdom of heaven.

"In his own house he assembled, on Sunday evenings, the children of his neighbours, who were taught such doctrines and duties as come legitimately within the scope of instruction proper for the Lord's Day.

"Here he himself taught one of the classes, and, to the members thereof he might be seen, and heard too, imparting such instruction as befits those to receive, who are members of the Body of Christ and inheritors of everlasting life."

"This work and labour of love which he cheerfully performed, adds the correspondent above quoted, "is an unmistakable evidence that he was 'ready to every good work;' and now he rests from his labours and his works do follow him."

To the justice and truth of this remark we believe that every one of our readers will heartily respond, and utter the fervent prayer that they may, like "the righteous," be had "in continual remembrance," and that their last end may be peace. Our friend concludes with the remark that "his loss will be long felt and, by not a few, much lamented; and that our botanists (we leave out the sons and daughters of affliction—God will raise up another helper for them) at present do not know where to look for an equally able, equally willing and influential promoter and friend of science to fill up the gap left in our ranks by his decease."

The preceding brief and imperfect sketch is but a humble though sincere tribute to the memory of a gentleman who was universally either esteemed or loved. The writer does not pretend to have had many opportunities of knowing and appreciating

the amiability of the character which he has done his best to describe, for he never had much personal intercourse with the deceased, and he never had any pretensions whatever to the enjoyment of his intimacy or friendship. Therefore what has been advanced may be unhesitatingly received as the belief of one who is neither biassed by interest nor by social friendly tendencies. The writer, as above stated, would rather that this duty had devolved upon some one who was more intimate with the deceased than he, and consequently better qualified to do justice to his memory; but, as no one has come forward to supply the readers of a periodical held in high estimation by the departed with a brief sketch of one of its most distinguished supporters, it was incumbent on him to perform the task himself according to his ability.

It should also be stated that this is composed for the readers of the 'Phytologist,' and exclusively for them. Most of the contributors knew their late co-contributor personally, and all of them know the high rank he held in the estimation of British and foreign botanists. None of them, we are confident, will deem this simple sketch a too highly-coloured panegyric of our lamented friend. It is a plain honest statement of facts, notorious to all who are conversant with the literature of botany during the past forty years.

No more needs be stated about the scientific eminence and the liberality and personal sacrifices of Mr. Borrer. These facts are on record, they are attested by testimony which will not be disputed, and they are well known to many of our readers. We rely on the fidelity of our correspondent for the truth of our statements about his benevolence, his charity, his personal exertions to ameliorate humanity, and to raise up the fallen, to relieve the distressed, to reform the bad, and to prepare the younger members of society for another life.

We are far from stating or believing that the efforts of our late friend in improving mankind, relieving destitution under its many forms, in mending the morals of his neighbours, and in imparting religious truth, are in the present day singular and isolated facts. We know and are thankful that there are many who delight in doing equally praiseworthy deeds. Therefore we take courage, and we pray that their number may be increased a hundredfold.

We have the greatest pleasure in bearing this testimony, imperfect though it be, to the character of the deceased, because there are in this age, which calls itself an enlightened one, persons of some influence in the world who both think and say that science is hostile to religion. This notion has its foundation in the freedom which some writers have indulged in their disquisitions on certain astronomic and geological facts which appear to contradict sacred history. It is quite a mistake. The deeper the knowledge of physical truth, the more profound will be the apprehension of divine realities. That there have been scientific unbelievers in revelation is not denied. The subject of this sketch was not one of them.

Again, if it be said that a panegyrical propensity has been indulged, the soft impeachment may be admitted without mantling the cheek with the faintest tinge of crimson. We never heard anything but good of him who is now no more and whose loss we all lament, and we deferentially ask our readers to study the prominent points of his character and to imitate his example. The writer will not deny that it was his purpose to compose this memorial in a laudatory strain. If he had done it otherwise, he would have been unfaithful to his own convictions and feelings, and could have expected no sympathetic echo from the hearts of his readers.

"The evil which men do lives after them, while the good which they do too often perishes with their lives." We have done our best that the reputaton of our friend's good deeds shall not perish. Though but a feeble effort to perpetuate the memory of departed worth, it is sincere. It is not as a mere memorial tribute, however willingly offered, that it is composed, but with the further view, the charitable intention, of stimulating our contemporaries and posterity to imitate so good an example.

Our departed friend worked well and wisely in the cause of science, humanity, charity, and religion; and those who survive are encouraged to imitate him and to labour that they may leave the world better than it was when their career commenced, by enlightening the ignorant, stimulating the conscience by diligence "in season and out of season," by reproof, encouragement, and consolation in imitation of HIM who will reward every one according to his works.

Heroic, strange, and striking events are rarely to be met

with in the records of a good man's life. Heroism has its proper place in the history of mankind, but not in the simple annals of botany. Hero-worship is no part of the belief or the practice of botanists. Their simple innocent labours and their peaceful though useful lives require no trophies reared to transmit their memories to posterity. Yet their memorials, though only a tree, a shrub, or an herb, or even a shorter-lived object, are permanent, perennial, evergreen, and everywhere present. The antiquity and the durability of their monuments far exceed those of the ancient Egyptian kings, the Pharaohs, Cheops, and Sesostris, who are commemorated by the famous Pyramids; they have existed since the Creation, and, for anything we know to the contrary, they may form an ornamental and useful part of the earth when it is renovated and has again become the abode of justice, peace, and blessedness. They will exist after the proudest structures have crumbled into dust, and their names and their very sites have disappeared from the memory of man and from the face of the earth.

Where are *now* the ancient cities of Bâbylon, Nineveh, Memphis, Tyre, etc.? Where is ancient Troy, claimed by the poet? The very sites of most of these monuments of greatness, tyranny, and oppression are unknown. On the other hand, the *Linnæa,* the *Borrēra,* the *Woodsia,* the *Lonicera* and *Lavatera,* commemorative genera of shrubby or herbaceous plants, have existed since the Creation, and will exist to the end of time; when statues, pillars, and monumental towers and palaces have become as the baseless vision, and leave not a trace of their former magnificence and beauty. The Pæonies, the Parsley, the Lobelias, and the Stocks will be as attractive for their grace, their forms, their colours, and their smell, as when they were first scattered over the earth from the bountiful Creator's hand.

It is idle to expect that the world will ever go a-wondering after simplers. Although there be more marvels concealed in the cup of a flower, and in the pouch or pod which contains the seed, than in the most ingenious and complex human invention, few will condescend to look into either. Wisdom speaks to people from the stars, and from the deep recesses of the earth, and from the humble floweret that grows and blushes unseen in the lovely vale. How many listen to her, or learn the lesson she is qualified to teach?

It is true that the sciences of astronomy, geology, and even the so-called science of phrenology, do *not* lack admirers, nor are their votaries denied a respectful meed of praise. Contempt, or at least neglect, is the botanist's sole reward. His revelations are not novel and astounding, like those of the geologist and astronomer, which shake the faith of some in the book of Genesis, and in the history of the wars of Joshua, and in that of the reign of King Ahaz, when the sun travelled in a direction contrary to his usual course.

The modern philosopher, like the ancient, says, in reference to the science of vegetation, *Cui bono?*

It is very much to be wished that modern botanists would condescend to tell simple but earnest inquirers something more instructive about plants than their names and place in a botanical system; and that, instead of wrangling about their affinities and relationships, their nativities and their specific origin, they would say more about their utilities in their application to the common wants of mankind, their immense importance in the decorative arts of design, whether plastic or pictorial, their influence on the taste, the judgment, and the imagination of those who observe them, their humanizing tendencies, their adaptation for conveying religious instruction, etc. "Consider the lilies how they grow."

But over, though not above, these important considerations on the multifarious uses of plants, they supply their possessors with an easy way of gratifying other collectors at very little cost to the donor himself. The finder of a rare plant has as much pleasure in the gratification it will afford his friends as he has in placing it in his own herbarium.

The above considerations are advanced to justify a pursuit; and honesty will not permit us to apologize for it, even though it be misunderstood or unappreciated by the bulk of mankind, and by some it is disparaged as the sheerest folly. If botanists will be true to themselves, and stand by their order, they can dispense with the popular applause so liberally bestowed on amateur students of other sciences; and, if their labours be of real practical advantage to society, they will ultimately succeed in attracting the approbation of those who are best qualified to pass a correct judgment on the value of their operations.

They must make their own way, as Shakspere expresses this

thought, by the force of their own merit, "a gift which Heaven gives, which buys a place next to the king."

KENTISH BOTANY.

A Chapter on the Botany of Thanet.—No. II.

One of the chief objects of our visit was to trace the upper stream, the 'Wantsume,' or northern fork of the Stour as some might call it, in order to observe the site of the ancient channel, and to see whether or not any vestiges of an ancient sea-beach were still discernible.

At a very remote period the River Stour flowed into the sea or strait, which then was between the island and the mainland, and it neither joined the sea at Pegwell Bay, near Sandwich, nor at Reculver, on the estuary of the Thames. Since these times, this channel or strait has been so completely filled up by sudden convulsions and by the gradual accumulation of alluvial deposits, not unaided by artificial means, that where ships once sailed there are now rich meadow-lands, grazed by thousands of cattle, horses, and sheep. The flat marsh extending from Pegwell Bay to Herne Bay still bears the traces of its ancient condition, to which it would probably return in the course of a very few centuries were it not well protected from inundations by strong barriers, which resist the force of the tides and waves.

We investigated first the southern branch of the Stour, viz. that which is alleged to separate itself from the main stream at Grove Ferry and to flow south into Pegwell Bay. Some days subsequently we surveyed the northern branch, that which is said to flow into the estuary of the Thames at Reculver. Formerly, that is before the period of authentic history, this north-eastern part of Kent was separated from the kingdom of Kent by the sea, or the sea flowed round it both on the western side as well as on the north, the east, and the south sides. Bede, in his 'Ecclesiastical History,' gives the following account of this island and strait, as quoted by Leland:—

"There is on the east side of Kent the Isle of Tanet of a

considerable bigness, that is, according to the English way of reckoning, consisting of 600 families, which the River Wantsume divides from the continent, which is about 3 furlongs broad, and passable over only in two places, viz. the *Sarre* and *Sandwich*, and goes into the sea at both its heads."—*Bede, H. E.*, 1-25.

The river now called the Stour discharges *all* its waters into the sea at Pegwell Bay. Of this fact anybody may have ocular proof if he will take the trouble of walking along the bank of the river from Monkton Marshes to Grove Ferry: the distance between Monkton Marshes and Sarre, where the ancient ferry was, is not above a couple of miles. Grove Ferry derived its name from this portage. Here it will be observed, that the river is so securely confined between high banks, river-walls, or bulwarks of earth, that only in excessive floods any water of the Stour can escape, and so flow into the northern marshes between Chislet and St. Nicholas. On the left bank of the Stour there is a hill or rising ground, and, though of small elevation, an effectual barrier to this river on the northern or Reculver side.

But to clear up this point, viz. the non-continuity of the Stour in the direction of Reculver or its non-identity with the Wantsume, we went to Grove Ferry, and from Grove Ferry to Reculver. The whole tract through which both rivers flow is so level, that the Stour might easily be forced to flow either to the south or to the north, or both ways, by the division of its water. This is not the case, for, except in great floods, none of the water in the Stour flows into the marshes at Sarre.

The Wantsume, which joins the sea at Reculver, rises in a rather flat boggy tract of land lying between the eminence on the north side of the Stour and the parish of Chislet, a village on the Canterbury side of the marshes, and between Reculver and Grove Ferry. This insignificant rivulet was described by the Rev. John Lewis one hundred and forty years ago as a river with more mouths than the Nile:—

"The Wantsume is now no continued stream, but dispersed among the lands for the convenience of watering the cattel (cattle) kept on them."—*Rev. John Lewis, 'History and Antiquities of the Isle of Thanet.* (Second Edition. London. 4to. 1736.)

In the whole course of our walk from Grove Ferry to Reculver—the distance is about five miles—no traces of an ancient

beach were discovered, nor are there any on the surface to be discovered. The main stream of the Wantsume is now confined to a narrow channel by high artificial banks; and the level tract through which it flows is intersected by numerous ditches, which are always nearly brim-full of water, in which many aquatic plants grow most luxuriantly.

Several causes, and some very inadequate, have been assigned for the disappearance of the ancient channel or arm of the sea which encircled this isle and divided it entirely from the mainland. One author assumes that the Wantsume channel failed when the great catastrophe occurred by which a great part of Holland was submerged and the Zuyder Zee formed. This inundation so reduced the waters of the sea in its vicinity, that it has not yet recovered its former level. Another gravely asserts, that the disappearance of the ancient forest of Andredsweld* has altered the moistness of the atmosphere; and that, where forty inches of rain fell in a year, there now only fall about twenty-five. It is marvellous, on this theory, that there is still some water in Father Thames, who has been denuded of all his forests! And what will become of the Severn and the Wye when Wyre Forest and Dean Forest have succumbed to the woodman's axe?

We mused on the gradual effects of modern improvements, without great apprehension for the future fate of our rivers, streams, and fountains, till we reached the gap or depression between Reculver, on the Herne side, and St. Nicholas on the Thanet side, of this ancient channel. Here the mystery was cleared up; and we learned, to our great satisfaction, that the felling of ancient woods, and the grubbing up of wide hedges, had no more to do with the drying up of the Wantsume than Tenterden Steeple had to do with the encroachments of the Goodwin Sands—nor so much, if we believe honest Dr. Thomas Fuller. The cause was palpable, viz. a huge dyke a mile long, nearly twenty feet high, and of a proportionate breadth, with strong flood-gates to prevent the ingress of the sea and to permit the egress of the fresh water.

If the sea were allowed free ingress and egress, the former

* This forest anciently extended for above a hundred miles, over the weald of Kent, Sussex, and Surrey. St. Leonard's, Tilgate, Ashdowne forests are the remnants of this wooded wealden tract.

channel might soon be restored to its former magnitude; but it is certain that the owners of the marshes of St. Nicholas, Chislet, Sarre, and Monkton, will do all that money and engineering skill can accomplish to avert so great a calamity.

This walk along the sea-wall explained the cause of the disappearance of the ancient channel.

The marsh plants, or the vegetation of the flats from Pegwell Bay to Reculver may be soon despatched.

Apium graveolens was universally associated with *Œnanthe Lachenalii*, fringing the margins of the dykes, drives, or ditches; and in the ditches themselves grew, *Sium angustifolium*, *Nuphar lutea*, *Myriophyllum spicatum* and *M. verticillatum*, *Utricularia vulgaris*, *Callitriche* of several forms, *Butomus umbellatus*, very abundant and luxuriant *Sparganium simplex* and *S. ramosum*, *Potamogetum lucens*, *P. perfoliatus*, *P. pectinatus*, and, very sparingly, *P. compressus*, *Zannichellia palustris*, *Scirpus lacustris*, the variety *glaucus*, with several *Charas*, of which *C. hispida* was one.

The plants on the meadows appeared to be very few; but *Hordeum pratense* and *H. maritimum* abounded.*

The stragglers as they are called, the awkward squad, were not numerous. The only plants we saw belonging to this ill-favoured class above and beyond those already recorded were *Phalaris canariensis*, on a dung-heap near Minster; and *Hypericum calycinum*, by the roadside near St. Peter's.

This is but a meagre list for so large a portion of Kent as the Isle of Thanet occupies, but it was all that we saw of an interesting character during a week's stay, when every day was fine, and without a shower, or even a cloud, except one, and the

* "In a piece of marsh land near Meregate, called the Brooks, botanists, before it was overflowed by the sea, have observed jagged Sea Orach, English Colewort, prickly Samphire or Sea Parsnip, Besome Plantaine, and in the marshes near the road to Sandwich the round-rooted bastard Cuperus (*Cyperus*), Stone Bramble, or Rasp."—*Lewis, Hist. Tenet.*

In botanical terms, the plants found by botanists in a place now covered by the ocean were, *Atriplex laciniata*, which is still found near Reculver and in Pegwell Bay; *Crambe maritima*, which may grow about Broadstairs, though we did not see it, but it still grows on the Western side of Pegwell Bay, near Kingsdown (see 'Phytologist' v. p. 241); *Echinophora spinosa*, or Sea Parsnip, which once grew on the coast of Kent as well as on that of Lancashire, and which grows on the opposite side of the channel: *Besom plantaine* is *Rose plantain*, a variety of *Plantago major*; *Cuperus* is *Scirpus maritimus*, which is plentiful everywhere in these salt marshes.

temperature about 80° in the shade. We were out either by the seashore, or on the cliffs, or travelling over the fields, or looking into ditches at least twelve out of the fourteen hours that the sun was above the horizon.

A few remarks on the botany of Thanet, and some reflections on the ancient and modern state of the island and of its population, will not be out of place in a botanical journal.

First, if a botanist, totally unacquainted with the natural vegetation of Britain, and ignorant of the prevalent views of botanical writers on native, naturalized, and alien plants, were to begin his study of botany in Thanet, he would be puzzled and mystified by our classifications, both in relation to the origin and distribution of this portion of our spontaneous Flora.

A tyro could not understand on what principle English botanists call *Trifolium pratense* native, and *Medicago sativa* and *Onobrychis sativa* aliens. Until he had learned the history of the modern scientific classification and had studied plants in other parts of England, he could not apprehend the propriety of placing *Lolium perenne* in one class (the native one), and *Bromus arvensis* in another (the alien class). He would see all the above-named plants universally distributed, and all equally well established and abundant both in a wild and in a cultivated state.

Again, it would not be very easy for our assumed tyro to guess the reason why *Papaver hybridum* and *Galeopsis Ladanum*, which grow cheek-by-jowl in the cornfields of Thanet, are placed in different categories, the former in the class of *Colonists*, and the latter in that of *Native agrestals*. It might be a puzzle to him to find, for example, *Diplotaxis muralis* called a *denizen viatical and glareal*, and its constant associate, both here and in north, east, and south Kent, *Mercurialis annua*, classed among genuine *native viatical* plants. In Kent these two plants are inseparable companions.

Cultivation is believed to have a greater effect on the naturalization and dispersion of exotic species than appears to be the case in Thanet. Here every rood of ground is in tillage; there are no woods, no commons, no moors, scarcely so much as a hedge, and very few trees; parks, and extensive lawns and gardens do not exist in this arable corner of England. If tillage were favourable to the production of plants grown from imported seeds, the Isle of Thanet should be the richest botanizing ground in England.

This is not the case, as the list of cornfield or agrarial weeds or plants will show. Many parts of Kent and Surrey, too, exhibit a much richer stubble Flora than this island.

The only newly-introduced plant (we mean into books, not into the country) observed in our brief stay here was *Lepidium Draba*, which had not the slightest appearance of being a recent introduction, for it had probably lived a miserable life on the bare exposed part of the coast, where it was found by us, for hundreds or probably thousands of years.

The extent of the island has been considerably diminished since the period when the Apostle of Britain, St. Augustine, landed here, and published the good tidings of salvation. At that period, viz. in the sixth century (A. D. 597), as we learn from the ecclesiastical history compiled or composed by the Venerable Bede, Thanet contained six hundred families; and according to the computation of its modern historian, the Rev. John Lewis of Margate, who wrote in the beginning of the eighteenth century, it was only half as large as it had been in the seventh century, when Bede wrote. What it gained on the west by the filling up of the ancient channel of the Wantsume it appears to have lost by the constant inroads of the sea on the north and east. Between twenty and thirty miles of coast is exposed to the incessant attacks of the waves, and to the slow process of disintegration by atmospheric influences; the portions thus broken down and carried away have diminished the area of the island to one-half the extent since the earliest recorded historic period.

But if the surface is less, the population is more than tenfold greater than it was when it was the cradle of the Anglo-Saxon race. The towns of Margate and Ramsgate when full, and they are crowded with visitors "when summer days are fine," contain at least 80,000. Broadstairs, Kingsgate, Pegwell, and the ancient villages of Minster, Monkton, Birchington, St. Nicholas, etc., contain at least 10,000 more. During a few months in summer Thanet is swarming with people.

Then the most important places in the island, or close to it, were Richborough and Reculver, both strongly fortified. The former city, or town, is quite deserted; and the latter has, since the removal of the church, dwindled away to a few ruinous cottages, occupied by seafaring folks, whose external appearance is not very much superior to that of their humble habitations.

Since Bede wrote in 710 what a change has taken place in the ecclesiastical condition of Thanet! Minster, the ancient metropolis of Thanet, and still venerable for its antiquities, is certainly the most ancient, but is no longer the most considerable town in the island. Unless the visitor were reminded of its departed greatness, dignity, and glory, he might pass it by as only one of the many interesting villages of England.

The myriads who now resort to this popular watering-place probably have little sympathy with mediæval matters, whether civil or sacred. They come to renovate their physical and mental energies by rest or relaxation, or by taking exercise, and by enjoying fresh air, which is abundant in this isle. But the pleasure of a residence here, whether for one week or two months, would be much enhanced by remembering, or by being reminded, that this island was once a forest, that the ancient Britons issued out of this and other contiguous woods to oppose the Roman forces under their most celebrated leader—that here Hengist first got a footing in England, from the feeble Vortigern, the King of Kent, if not of England (Britain). Hence Thanet is the cradle of the Anglo-Saxon race. The babe was a strong and healthy bantling, and therefore could bear rough rocking.

But whatever we, as practical people, may think of the antiquarian and ethnological character of Thanet, as Christians, as believers in the ever-blessed Gospel, we cannot feel other than warmly attached to a portion of our land, first visited by the zealous missionaries of the Cross, and from which, as from a centre, the light of truth, the knowledge of salvation by Jesus Christ shone into the darkest corners of pagan England, and gladdened many a humble heart. If Canterbury be entitled to the honour of having the first Christian church, Thanet, and probably Minster, may claim the second.

The visitors to Thanet in those days were like white crows, few and far between. Monks and lay-brothers with their picturesque costume have vanished centuries ago. Minster, the capital of the island, and the site of the oldest church in England excepting St. Martin's in Canterbury, has been shorn of its ancient grandeur by the demolition of its wealthy and splendid monastery, and it now offers only its fine church to distinguish it from hundreds of English villages equally picturesque, but none equally famed for traditionary and written monkish legends, smacking

strongly of the credulity and superstition of those primitive times: and none more renowned in the early annals of the sanguinary wars of the Saxons and Danes. The father of our first Danish king burnt down the religious house, scattered the poor nuns and seized on their lands, which were duly restored to the Church when Canute became a good Christian.

Those who wish to study the progress of our country in domestic, social, and political economy will, at a very little expense either of time, or travel, or money, learn it by first visiting the Isle of Thanet and studying on the spot its ancient and modern condition, and then, if they go as we did, to Romney Marsh, where progress appears to have been arrested by natural causes, they will perceive that though light, and knowledge, and curiosity may be increasing, still the outward and visible signs of material progress or improvement do not strike the eye in this the south-eastern nook of England so forcibly as they do in the Isle of Thanet.

JAPANESE BOTANY.

The following "Notes on the Vegetation of Japan," are by Mr. Veitch, of Chelsea, and were originally printed in the 'Gardeners' Chronicle.'

The vegetation of Japan is remarkable for the immense variety of trees and shrubs growing throughout the length and breadth of the land. Three-fourths of these may be said to be evergreens, giving the country almost as fresh an appearance during the winter months as in summer. The country we travelled through during our trip is probably second to no other in point of general vegetation; from the lowest valley to the mountain summits it is one dense mass of luxuriant trees and shrubs. The trees of considerable size which we met with consisted of Pines, Oaks, Maples, etc. Others of less dimensions, viz. Beech, Lime, Alder, Chestnut, etc., give a pleasing variety of foliage. The main roads are planted wherever practicable, with pine avenues. These trees often attain the height of from 150 to 180 feet; their higher branches forming a perfect covered archway. The splendid effect thus produced by miles of noble trees, can scarcely be described. *Cryptomeria japonica* (the Cedar of Japan) must un-

doubtedly be placed as one of the finest trees found in the country. It grows throughout the entire empire, attains a great height and circumference, and in point of beauty is truly admirable. Amongst the many splendid specimens we met with, I noted the following as being the most striking:—1st. On the main road from Ha-tu-jikee to Hakone, an avenue of several miles in length, three trees which I measured in succession were 15 feet, $14\frac{1}{2}$, $13\frac{1}{2}$ feet in circumference at 3 feet from the ground. 2nd On the road from Messima to Atame I met with three noble specimens, standing singly in the midst of a small village, about 170 feet high, and 16 feet 6 inches in circumference at 3 feet from the ground. Near Atame we passed a forest remarkable for the peculiar straight trunks of the trees. They had grown in close proximity to each other, and consequently had lost the greater portion of their branches. The effect produced was very similar to that of an immense number of ships' masts. Mount Hakone, 7000 feet in elevation, is clothed to the top with dense forests of *Cryptomeria, Thujopsis dolabrata, Thuja pendula* and *orientalis, Retinispora obtusa* and *pisifera*.

The following are some of the most striking trees and shrubs met with during our journey:—*Abies leptolepis, A. firma, A. bifida, A. Tsuga*, on Mount Fusi Yama, many species of Maple growing commonly; *Adiantum, sp. nova* (a new species), Mount Hakone; *Alnus glutinosa* (Alder), the foot of Fusi Yama, and other parts; *Aralia edulis*, near Atame; *A. Sieboldi*, common in all valleys; *Aucuba japonica*, common; *Asplenium fontanum*, slopes of Mount Hakone; and three or four new species. Azaleas; splendid bushes, plentiful in all forests at a low elevation. *Bambusa Metake*, very common in lowland forests; cultivated in gardens. *Benthamia japonica*, Mount Hakone. *Berberis japonica*, seen commonly throughout the journey. *Broussonetia papyrifera*, planted on the roadsides. *Buddlea* sp., grown largely at the foot of Mount Fusi Yama; the Japanese manufacture paper from the bark. *Camellia japonica*, splendid trees, common in all valleys. *Cephalotaxus* sp., resembling *C. Fortuni*, Mount Hakone; another with foliage very pointed and sharp, Mount Fusi Yama. *Castanea vesca*, near Messima.

Chamærops excelsa is seen constantly the whole trip to the foot of Fusi Yama. *Citrus japonica* is common in valleys and gardens. *Clematis*, two or three sp., not seen in flower.

Convolvulus major, many varieties, very common. *Corylus Avellana* (the Hazel), Mount Fusi Yama. *Cycas revoluta*, common in all temple gardens. *Daphne japonica, foliis variegatis*, near Messima. *Deutzia scabra*, common on the sides of hills. *Diervilla*, two or three sp. on Mount Hakone, not seen in flower. *Eriobotrya japonica*, near Omio. *Euonymus japonicus*, a common shrub. *Fagus sylvatica* (Beech), foot of Mount Fusi Yama and Hakone. *Forsythia suspensa*, near Kanagawa. *Funkia*, two variegated varieties at the foot of Mount Hakone. *Hibiscus mutabilis*, single and double, purple and white, common. *Hydrangea japonica, bracteata*, and *hirta*. *Illicium floridanum* and *religiosum*, near Odawara. *Ilex*, sp. unknown, ten to twelve feet high, near Hakone and in the valleys. *Iris* sp., one red, one white, unknown, near Minady; another is planted on the ridge of the thatch of cottages in all villages.

Juniperus sp., thirty to forty feet, unknown; Atame. *Laurus Cinnamomum*, Omio, and most forests. *Lilium callosum*, foot of Hakone. *Magnolia sp.*, Mount Fusi Yama; foliage similar to that of *M. macrophylla*. *Musa paradisiaca*, the Plantain, Muryyana and Messima. *Nerium japonicum*, Muryyana. *Gardenia florida* and *radicans*, common. *Orontium japonicum*, common throughout the woods; a variety, *foliis variegatis*, grown in pots. *Onoclea, sp. nova*, foot of Mount Fusi Yama. *Paulovnia imperialis*, Muryyana, and other parts. *Pernetya, sp. nova*, habit dwarf, nine inches, berries pink, Mount Fusi Yama. *Pinus Massoniana*, common; the avenues are often formed of this Pine: *Pinus parviflora* is common on Mount Hakone and other parts. *Pittosporum Tobira*, a common shrub in lowlands. *Podocarpus macrophyllus*, foot of Mount Hakone, also near Kanagawa. *Poinciana regia*, Odawara. *Quercus cuspidata*, common: *Q. glabra*, between Hara and Messima; sp. unknown, foliage very large, between Hakone and Fusi Yama. *Retinispora obtusa*, thirty to forty feet, common throughout; *R. pisifera*, thirty to forty feet, common throughout. *Rubus*, sp. unknown, foot of Fusi Yama. *Spiræa Thunbergii*, common in most valleys; also a sp. unknown, Mount Fusi Yama. *Smilax*, sp. unknown, a common plant trailing over slopes. *Thea Bohea*, straggling bushes throughout our journey; plantation near Omio. *Thujopsis dolabrata*, forty to fifty feet high, forests on Mount Hakone. *Thuja pendula*, Mount Hakone; *T. orientalis*, foot of Mount Hakone. *Weigela rosea*,

foot of Mount Fusi Yama; another species not seen in flower. *Wisteria sinensis*, rambling throughout the woods. *Woodwardia japonica*, on slopes of Mount Hakone.—*From the 'Gardeners' Chronicle.'*

BOTANICAL NOTES, NOTICES, AND QUERIES.

Botanical Notes for Malvern.

In the 'Phytologist' for September last, the writer of this article observes, that the *Ranunculus Ficaria* (Pilewort or Lesser Celandine) was the "Cuckoo-bud" of Shakspere, noticed in the song ("Love's Labour's lost," Act 5, Scene 2):—

> And Cuckoo-buds of yellow hue
> Do paint the meadows with delight.

I quite agree with this, although I believe that not one of the commentators on Shakspere says so; and I would also observe that this flower, before it expands with the sun's heat, is like a *bud closed*. As I look to the pages of the 'Phytologist' for information, I should feel obliged if the writer of this article would inform me whether the *Ranunculus Ficaria* is called Cuckoo-bud in any book of an early date. The *Orchis mascula* is certainly a vernal flower and truly called *early purple Orchis*. It is, I doubt not, *the flower* Shakspere intended by *Long Purples*, which the young and beautiful Ophelia gathered to add to her fantastic garland; but will the writer kindly tell me if he knows whether the *Orchis mascula* was called *Dead men's fingers* by the cold maids of Warwickshire in the time of Shakspere, or whether it is now so called? As the *Orchis mascula* has not a *palmated root*, how can it be compared to dead men's fingers? I have seen *Lythrum Salicaria* (purple Loose-strife) called Long Purples, and I think it is so called in a Glossary of Northamptonshire; but I cannot believe that Shakspere referred to this, as it is not a flower *of the Spring*. Ophelia also added to her garland *Nettles* and *Daisies*, but the writer of 'Malvern Notes' says, DEAD Nettles. Is this intended for an emendation of Shakspere? As to Ophelia being demented according to the opinion of some, I rather take that of Dr. Johnson, who calls it 'the mournful distraction of Ophelia.' S. B.

Hen-and-Chicken Daisy.

A proliferous variety of the common Daisy, *Bellis perennis*. We are all pretty well acquainted with that curious state of the cultivated garden Daisy, which is known as the Hen and Chicken Daisy. But I confess I was surprised to learn from our valued friend John Jones, the clerk of this parish, that he has met with a similar state of the wild *Bellis perennis* in this immediate neighbourhood. He gathered the specimen, which I have here enclosed for your acceptance, in 1851, in a field called Cae ffynnon, upon the farm Maes Hen Blas. This farm is situated a short distance north of the village; but this remarkable state of the plant has

not come under his notice, either there or elsewhere in the neighbourhood, since the above date. W. P.

Llandderfel, September, 1861.

Hen and Chicken Daisy.

Ex Sibbaldo, in Prodromo Nat. Hist. Scotiæ, p. 2, cap. ii., *Bellis* :— "B. minor, sylvestris, simplex, flore albo, prolifera. Eam inveni in colle prope villam *Welhouse* dictam in vicinia *Tarpichen*."

I have observed the proliferous variety of the common Daisy (Hen and Chicken Daisy) on a hill, near a village or farm called Welhouse, not far from Tarpichen.

Japan Crops.

Rice is the staple cereal of Japan, and of this grain immense quantities are produced. Millet is also grown. *Solanum esculentum* (Egg-plant), sweet Potato, etc., are all extensively cultivated as vegetables. Mr. Veitch states that all Japanese productions, both of fruits and vegetables, are more or less insipid; and he hints that this flavourless state is caused by the excess of manure, which produces rank and tasteless crops.

The fruit, he further remarks, is not only scarce, but bad. The Japanese paying little or no attention to the cultivation of fruit, few varieties are found among them; for example, of Pears, Peaches, and Grapes, only one variety of each is known. The following are met with :— Cherries, Chestnuts, Figs, Grapes, Oranges, Pears, Peaches, Plums, Walnuts. Of Melons there are two or three sorts.

Rare Plants found in Bedfordshire.

Isatis tinctoria: *Woad.*—This plant is cultivated in this country in this manner. They every year sow the seeds and pluck up the old Woad, unless it be saved for seed. It is sown about the beginning of March, and cropped about the middle of May following, as the leaves comes up. It is best in quality in a fair and dry summer, but most in quantity in a moist one. Then they crop it four or five times according as it comes up; the first crop is best, every crop after is worse in order, and the last worst of all. As soon as it is cut it is carried to the Woad-mill, and ground as small as it can be until it becomes fit to ball. When it is balled they lay the balls on hurdles to dry, and when it is perfectly dry they grind them to powder in the mill as small as possible; thus ground, they throw it upon a floor and water it, which they call "couching," and let it smoke and heat, turning it every day until it be perfectly dry and mouldy, which they call "silvering." When it is silvered they weigh it by the hundred, and bag it, putting two hundredweight in a bag, and so send it as fit for sale to the dyers, who try how it will dye, and then set the price accordingly. The best Woad is usually worth £18 per ton. With the tincture of this plant the ancient Britons were wont to dye their bodies, that they might appear more terrible to their enemies. The Romans called this herb "Vitrum," witness Cæsar, Vitruvius, Mela, Pliny, and Marcellus Empyricus; which word being manifestly an interpretation of "Glastum," it appears that Glassa or Glasse signified the same thing among the ancient Britons that it does among us, and not a blue colour,

as Mr. Camden tells us, as it now does among the Welsh. Why the Britons should call this herb "Glasse" I know no better reason than because it resembles some kind of glass in colour, which we know hath often a tincture of blue in it; whence also a dilute blue is called "*color hyalinus.*"—*From Bishop Gibson's 'Camden.'*

Erysimum Alliaria, or Alliaria officinalis.

This plant is brought into gardens in some parts of Wales, cultivated and used in broths, etc. (*testibus* the worthy rector and clerk of our parish); also I have heard of its being boiled and eaten as greens. It is rather remarkable, that here in North Wales this plant is known to the common people by our ordinary English name, "Jack by the Hedge."

W. P.

Llandderfel, September, 1861.

Cape Geraniums.

"I was most gratified on meeting, as with old friends, with several sorts of Geraniums growing in their native state. The horse-shoe and plain-leaved scarlet were quite large shrubs, sometimes six or seven feet high. The dark Oak-leaved kind grew vigorously. The Ivy-leaved variety spread its creeping branches over the adjacent trees, and opened its pink blossoms in great abundance. In other places I noticed several of the finer-leaved *Pelargoniums*, with small and delicately-pencilled flowers."—*From Ellis's 'Tour in Madagascar,'* p. 199.

Cocos nucifera, var. *pygmæa.*

The 'Gardeners' Chronicle' says that "a very great and wholly unexpected event has occurred in the history of English horticulture." The Cocoa-nut Palm has flowered. At Syon, this, the most valuable of all the products of the vegetable world, has expanded its flowers on a specimen of the pigmy breed from the neighbourhood of Galle, in Ceylon. "The trunk of the Palm at Syon is not, we should say, above two feet high, and it is from among the magnificent leaves that form a bright green plume of unrivalled stateliness that the yellow blossoms have sprouted out. It must be highly gratifying to the noble duke in whose celebrated garden this success has been achieved, to find that he alone in Europe is the possessor of so rare a specimen." There are few trees more useful than this. The fruit supplies the Orientals where it grows with both food and drink; the leaves form an excellent thatch for their humble cottages; and the fibres both of the leaves and fruit are made into soft and elastic mattresses, mats, carpets, etc. The coarse fibres make good brooms. The stem, which is about the thickness of the ankle, furnishes fuel.

International Exhibition.

New Zealand Wood for the Exhibition of 1862.—The Maire is another tree the wood of which is of remarkable toughness. It grows pretty extensively in the Northern island. From its extreme hardness, the natives have always used it for making their delving implements. The Maire takes a polish like burnished iron. It is very easily worked in a semi-green state, but when thoroughly dried it is as difficult to work as

iron-wood. It would make excellent bearings for machinery, and would be much less costly while quite as durable as metal. There could not be a better wood in a ship-builder's yard for laying keels and gunwales. It has been used in this country for rowlocks, tool-handles, and for any purpose in which hardness combined with durability is required. The Maire possesses the peculiar quality that, although a nail or trenail might be easily driven into it in a green state, it would be impossible to remove them if allowed to remain until the timber had dried.—*New Zealand* (*London*) *Examiner.*

Ranunculus sceleratus.

Besides the *R. aquatilis* (Linn.), a variety of which has been found about Saharunpore, this is the only species of Crowfoot hitherto discovered in the plains of tropical India. The natives have no name for it, nor do they use it. It is a very acrid plant, when applied fresh quickly producing a blister. It is a native of Bengal, where it appears in shady places during the cold season, a straggler from some temperate countries.—*Roxb. Wight, from* '*Useful Plants of India*,' p. 374.

Economical (Superstitious?) Uses of Plants.

"If Mugwort be put into the shoes, a footman may travel forty miles before noon and not be tired."—*Cole's* '*Art of Simpling*.'

"Wild Tansy, laid to soak in buttermilk nine days, will make the complexion very fair."—*Ibid.*

Epimedium alpinum.

A correspondent has sent a specimen of the above-named plant with the locality of "Snowdon" annexed, and without the usual voucher of the collector's name. Can any reader verify this station, or is *Epimedium alpinum* known as a plant of North Wales? Omicron.

Herbarium for Exchange.

Having recently had placed in my hands the herbarium of an amateur botanist, consisting of some 800 or 900 species, I shall be glad to exchange with any gentleman having any of our rarer British plants in duplicate. I should be willing to send three or four species of the above collection in exchange for each received, if required. A list of desiderata will be forwarded on application to

Charles C. P. Hobkirk, *Huddersfield.*

Communications have been received from

Fred. Webb; James Backhouse, jun.; S. Beisly; W. Pamplin; John Sim; R. P. Burcham; W. Ashley; Charles Howie; Earl of Ilchester; A. G. More; W. P.; R. Kennedy; C. P. Hobkirk.

RECEIVED FOR REVIEW.

The Brisbane Courier, November 14*th.*
The British Workman, February 1*st.*
The Children's Friend, February 1*st.*

BOTANICAL LETTERS FROM ARGYLESHIRE.

By James Lothian.

No. III. *An Hour at Machrihanish Bay.*

Sir,—To talk of field botany and botanical excursions in drear December and bleak January is pleasant enough seated beside a cheerful parlour fire, or to look back on excursions made during the long sunny days of July and August, or even to chalk out, in our mind's eye, a series of ramblings when the merry month of May has once more sprinkled our banks and lanes with golden Primroses and blue Violets,—when the beautiful May-tree, the poet's

> "Milk-white thorn that scents the evening gale,"

has again filled the air with its balmy perfume,—when our meadows teem with beauty and verdure, and

> "Daisies and buttercups gladden the sight
> Like treasures of silver and gold;"

the very air thus giving buoyancy to our spirits, and the swiftness of the roe to our feet, giving the botanical wanderer an eye of far keener edge than the most expert detective.

To take the fields however in reality in the midst of a January's pitiless storm is a very different thing, even although having the prospect of being amply rewarded by a full vasculum of Ferns or Mosses, or a choice basketful of *dulse*. But after all, there are days, times, and seasons, which, as we *trudge* on our way on the journey of life where duty leads, often compels us to take the fields during the brumal period of the year; and, if only for a few minutes, it is seldom that the botanist and naturalist will fail to profit by them.

During the Christmas and New-year's holidays, many who, as Cowper says, are immured during the season in the "city's smoke and dusky alley," so often longed for, now escape, for a few days at least, from the vicissitudes of its pent-up atmosphere,—glad, ay glad, even amidst the rigours of a winter's storm, to escape and revisit the valleys and the hills, where the breeze is balm, ever fresh, ever free. Many a youthful student who, during the preceding months, has pored over his studies by the midnight lamp, now, as soon as his instructors have announced in the class-room that he and his colleagues are free for a week or ten

days, then, like the fiery courser, he is at once ready for the road. Thoughts crowd upon him, his spirits are up, and if a Botanist or Naturalist, or a lover of the country sweets and wilds, the moments will seem too long till he is beyond the walls of the city. Such is his buoyancy, that on reaching his lodgings he waits not to eat, scarcely to turn the key in his trunk. He casts his cloak over his shoulders; his knapsack strung, and doffing his blue Balmoral or Glengarry, he is off with the train, with nearly the same rhapsodies in his *noddle,* if not actually repeating the words of the lyric bard when he exclaims—

> "Hurrah, for the highlands, the stern Scottish highlands,
> The home of the Clansman, the brave and the free!"

Whether this may be the train of thoughts of all those youths I shall not particularly affirm, neither does it matter; but this, I know, has been the feeling of one at least on similar occasions.

Many of those youths, as well as others, visit our shores at those seasons of the year; and to those who make the Scottish Land's End their rural retreat during a few winter holidays, I would say, spend an hour, even a solitary hour, if time or weather will not admit of more, at "Machrihanish Bay," a place visited by hundreds during the summer months. I shall not promise you much in an hour; but this I can assure you of, that you shall enjoy the fresh sea-breeze, and moreover a basketful of eatable dulse.

This famed bay is distant five miles from Campbelltown, on the west coast of Cantyre. It is of easy access by an excellent road, firm and level as a bowling-green, which passes through a fertile agricultural district, studded with cottages and homesteads. I may further hint, that on reaching Machrihanish Bay, that should the strong sea-air sharpen the botanist's appetite, some Highland cheer is obtainable at mine host of the "Saltpans Inn" in the vicinity.

Taking for granted that the rambler has made up his mind to visit this locality, leaving Campbelltown by the Southend road, he passes some distilleries and gardens on the left, the Poorhouse and its ground, and the lands of Gallowhill on the right, and in a few minutes more he reaches the hamlet of Witchburn, consisting of a few cottages on either side of the highway, through which a small rill or burn passes, sweeping through a small

meadow, discharging itself into the sea behind the town. This hamlet is said to be the birthplace of Burns's Highland Mary; her parents' cottage, rebuilt, is still pointed out. By ascending to the top of White Hill or the Gallow Hill, two conical hills in the neighbourhood, some beautiful views can be obtained. A considerable sprinkling of wood and hedgerows at this point add much to the beauty of the locality. Leaving this hamlet and the Whinnyhill in the rear, the rambler soon passes the farms of Low Knockrioch and Strath,—localities, by the way, of which I may have something to say perhaps in another letter,—and reaches the village of Drumlemble, chiefly inhabited by the miners employed at the Drumlemble colliery close by the village. Here there has been erected, some two years ago, an excellent school in connection with the Established Church; and although within the bounds of the parish, a missionary and the ministers of the parish hold meetings on Sabbath evenings for the aged and infirm of the miners in the schoolhouse. Passing Drumlemble, the rambler soon reaches Killkeran, where there is an ancient burying-ground, containing some curious stones and inscriptions, and the ruins of an old chapel, presenting the same style of architecture that all those chapels common on the west coast of Scotland present. While musing on this sequestered spot for a moment, reflecting on all that tradition and local history relates of this chapel and its saint, the eye soon detects a beautiful variety of *Hedera Helix palmata* clothing a part of those old walls, adding much to the charms of the spot; but a bitter bleak day in January is not the time to stand long musing in the fields; the cold air and hazy atmosphere make the pedestrian go ahead. Turning his face to the west, rising on his left are the Sossel hills, forming the northern extremity of the Moile range. In the extreme distance on the right are Ballinaglaic and Largie hills, and a considerable part of the west shores of Cantyre. The islands of Gigha and Cura, with the Forest mountains of South Knapdale, towering their lofty summits to the grey skies. Immediately in front are Islay and Jura, and the broad blue Sound separating them from the mainland. Proceeding a few yards further on, he comes in sight of the small village of Saltpans; on his right, at this point, is the Bay of Machrihanish, its finely sweeping sea-margin stretching away northwards towards West Ports,—a locality, I may here mention, will of itself form the

subject of a botanical excursion as the season advances. It is a locality that will amply repay an excursion to it.

This bay presents a magnificent beach of fine pebbly sand and shells, backed up in the rear by great hills of sand covered with Sea Bent, *Arundo arenaria;* and leaving the public road a few more paces enables the botanical rambler to place his foot on the shores of Machrihanish, which, if it has happened to be the first time that he has visited it, he will in all likelihood stand gazing for a moment on the vast mountain waves as they roll inwards towards where he stands, with their snowy crests and phosphorescent shades. Presently, however, other objects attract his attention: vast heaps of drifted seaweed line the tide-mark: to search these heaps he now proceeds. Some are decayed, and have evidently been there since the last storm, but the greater portion are fresh, sent in by the preceding day's gale, and a considerable quantity left by the last tide. He turns and returns the mass, from which he picks up specimens of *Fucus nodosus, Fucus vesiculosus, Padina pavonia, Chylocladia articulata, Corallina vulgaris, Fucus serratus, Delesseria Hypoglossum, Delesseria sanguinea, Ulva latissima, Plocamium coccineum, Dictyota dichotoma, Bryopsis plumosa, Chondrus crispus, Flustra foliacea, Cladophora arctica, Iridæa edulis, Porphyra laciniata, Ectocarpus siliculosus, Laminaria digitata,* with its roots like great claws, eaten much on the coast by youngsters, as well as the dulse; *Nitophyllum punctatum, Ptilota plumosa, Rhodymenia bifida, Enteromorpha compressa, Zostera marina, Sertularia filicula,* with many others which memory fails to furnish. Many years ago, some distance northwards from this locality, on the same coast, I picked up a most beautiful zoophyte: I did not know it, and transmitted the same to the late Dr. Johnston, Berwick-upon-Tweed, who very kindly returned it to me named, with the additional remark that I was to take care of it, being one of the rarest of the British zoophytes; but alas! by the time it reached me, the ponderous stamp of some post-office official had crushed it into dust.

But a lurid glare of sunshine gilds the dark frowning headlands of Antrim; and to the far west, beyond the entrance to Lochfoyle towards Sligo, the Isle of Rathlin, lying low, skirting the Irish coast, is seen close at hand, in the peculiar transparency cast over it by the mocking glare of sunshine, invariable precursor of a coming storm. Our botanist, who has some knowledge of meteorology,

sees it and guesses what is to follow, and strapping his vasculum over his shoulder, and with staff in hand, he bids adieu to Machrihanish bay, but not without feeling with Byron that—

> "There is a pleasure in the pathless woods,
> There is a rapture on the lonely shore,
> There is society where none intrudes
> By the deep sea, and music in its roar."

Should time and weather permit, if the rambler steps off the highway some two hundred yards at the road leading towards Chiskom House, and following the course of the lead supplying the dye-works with water, he will meet with some Potamogetons, *Ranunculus aquatilis* abundantly, with other pretty aquatic plants. But I must for the present refrain, until I have an opportunity of directing my botanical friends to the ferny recesses of Jirfiryn's Glen; its dusky banks even now glowing in golden spots in the distance by the first blossoms of the Whin (*Ulex europæus*), as Wilson says:—

> "A glimmering glow, like the breast of the deep,
> When the billows scarce heave in the calmness of morn."

Yes! cold, cloudy, and bleak as the day has pended over our Botanical Wanderings, that same golden-flowered shrub meeting us at almost every step does even more than this: it tells us that—

> "The finger of God hath touched the earth,
> And it starts from slumber in smiling mirth."

A COMPARATIVE LIST OF BRITISH PLANTS.

Showing the different Names and Species adopted in the four best-known English Works.

The order here followed is that of Babington's 'Manual' (ed. 4,) from which the names are in the first instance taken, omitting the species enclosed in brackets.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Hieracium boreale.	*H. boreale.*	*H. boreale.*	*H. sabaudum.*
Lobelia Dortmanna.	L. Dortmanna.	L. Dortmanna.	L. Dortmanni.
Lobelia urens.	L. urens.	L. urens.	L. urens.
Jasione montana.	J. montana.	J. montana.	J. montana.
Phyteuma orbiculare.	P. orbiculare.	P. orbiculare.	P. orbiculare.

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Phyteuma spicatum.	P. spicatum.	P. spicatum.	P. spicatum.
Campanula glomerata.	C. glomerata.	C. glomerata.	C. glomerata.
Campanula latifolia.	C. latifolia.	C. latifolia.	C. latifolia.
Campanula Trachelium.	C. Trachelium.	C. Trachelium.	C. Trachelium.
Campanula rapunculoides.	C. rapunculoides.	C. rapunculoides.	C. rapunculoides.
Campanula rotundifolia.	C. rotundifolia.	C. rotundifolia.	C. rotundifolia.
Campanula persicifolia.	C. persicifolia.	C. persicifolia.	(Not established.)
Campanula Rapunculus.	C. Rapunculus.	C. Rapunculus.	C. Rapunculus.
Campanula patula.	C. patula.	C. patula.	C. patula.
Specularia hybrida.	*S. hybrida.*	*Campanula hybrida.*	*Campanula hybrida.*
Wahlenbergia hederacea.	*W. hederacea.*	*Campanula hederacea.*	*Campanula hederacea.*
Arbutus Unedo.	A. Unedo.	A. Unedo.	A. Unedo.
Arctostaphylos alpina.	*Arbutus alpina.*	*Arctostaphylus alpina.*	*Arctostaphylos alpina.*
Arctostaphylos Uva-ursi.	*Arbutus U.-ursi.*	*Arctostaphylus U.-ursi.*	*Arctostaphylos U.-ursi.*
Andromeda polifolia.	A. polifolia.	A. polifolia.	A. polifolia.
Calluna vulgaris.	*C. vulgaris.*	*C. vulgaris.*	*Erica vulgaris.*
Erica Tetralix.	E. Tetralix.	E. Tetralix.	E. Tetralix.
Erica Mackaiana.	*E. Tetralix.*	*E. Mackayi.*	*E. Tetralix.*
Erica cinerea.	E. cinerea.	E. cinerea.	E. cinerea.
Erica ciliaris.	E. ciliaris.	E. ciliaris.	E. ciliaris.
Erica mediterranea.	*E. mediterranea.*	*E. mediterranea.*	*E. carnea.*
Erica vagans.	E. vagans.	E. vagans.	E. vagans.
Phyllodoce cærulea.	*Menziesia cærul.*	*Menziesia cærulea.*	*Menziesia cærulea.*
Dabeocia polifolia.	*Menziesia polif.*	*Menziesia polifolia.*	*Menziesia polifolia.*
Azalea procumbens.	*A. procumbens.*	*A. procumbens.*	*Loiseleuria procumbens.*
Vaccinium Myrtillus.	V. Myrtillus.	V. Myrtillus.	V. Myrtillus.
Vaccinium uliginosum.	V. uliginosum.	V. uliginosum.	V. uliginosum.
Vaccinium Vitis-idæa.	V. Vitis-idæa.	V. Vitis-idæa.	V. Vitis-idæa.
Vaccinium oxycoccos.	V. oxycoccos.	V. Oxycoccos.	V. Oxycoccos.
Pyrola rotundifolia.	P. rotundifolia.	P. rotundifolia.	P. rotundifolia.
Pyrola media.	P. media.	P. media.	P. media.
Pyrola minor.	P. minor.	P. minor.	P. minor.
Pyrola secunda.	P. secunda.	P. secunda.	P. secunda.
Moneses grandiflora.	*Pyrola grandifl.*	*Moneses grandiflora.*	*Pyrola uniflora.*
Monotropa Hypopitys.	M. Hypopitys.	M. Hypopitys.	M. Hypopitys.
Ilex Aquifolium.	I. Aquifolium.	I. Aquifolium.	I. Aquifolium.
Ligustrum vulgare.	L. vulgare.	L. vulgare.	L. vulgare.
Fraxinus excelsior.	F. excelsior.	F. excelsior.	F. excelsior.
Vinca minor.	V. minor.	V. minor.	V. minor.
Vinca major.	V. major.	V. major.	V. major.
Chlora perfoliata.	C. perfoliata.	C. perfoliata.	C. perfoliata.
Erythræa pulchella.	*E. Centaurium.*	*E. pulchella.*	*E. Centaurium.*
Erythræa Centaurium.	E. Centaurium.	E. Centaurium.	E. Centaurium.
Erythræa latifolia.	*E. Centaurium.*	*E. latifolia.*	*E Centaurium.*
Erythræa littoralis.	*E. Centaurium.*	*E. linarifolia.*	*E. Centaurium.*
Cicendia filiformis.	C. filiformis.	C. filiformis.	C. filiformis.
Gentiana Amarella.	G. Amarella.	G. Amarella.	G. Amarella.

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Gentiana campestris.	G. campestris.	G. campestris.	G. campestris.
Gentiana nivalis.	G. nivalis.	G. nivalis.	G. nivalis.
Gentiana verna.	G. verna.	G. verna.	G. verna.
Gentiana Pneumonanthe.	G.Pneumonanthe.	G. Pneumonanthe.	G. Pneumonanthe.
Villarsia nymphæoides.	*V. nymphæoides.*	*V. nymphæoides.*	*Limnanthemum ny.*
Menyanthes trifoliata.	M. trifoliata.	M. trifoliata.	M. trifoliata.
Polemonium cœruleum.	P. cœruleum.	P. cœruleum.	P. cœruleum.
Convolvulus arvensis.	C. arvensis.	C. arvensis.	C. arvensis.
Convolvulus sepium.	*Convolv. sepium.*	*Calystegia sepium.*	*Convolvulus sepium.*
Convolvulus Soldanella.	*Convolv. Soldan.*	*Calystegia Soldan.*	*Convolv. Soldanella.*
Cuscuta europæa.	C. europæa.	C. europæa.	C. europæa.
Cuscuta Epilinum.	C. Epilinum.	C. Epilinum.	C. Epilinum.
Cuscuta Epithymum.	C. Epithymum.	C. Epithymum.	C. Epithymum.
Cuscuta Trifolii.	*C. Trifolii.*	*C. Trifolii.*	*C. sylvaticum.*
Asperugo procumbens.	A. procumbens.	A. procumbens.	A. procumbens.
Cynoglossum officinale.	C. officinale.	C. officinale.	C. officinale.
Cynoglossum montanum.	*C. sylvaticum.*	*C. sylvaticum.*	*C. montanum.*
Borago officinalis.	B. officinalis.	B. officinalis.	B. officinalis.
Anchusa officinalis.	A. officinalis.	A. officinalis.	A. officinalis.
Anchusa sempervirens.	A. sempervirens.	A. sempervirens.	A. sempervirens.
Lycopsis arvensis.	L. arvensis.	L. arvensis.	L. arvensis.
Symphytum officinale.	S. officinale.	S. officinale.	S. officinale.
Symphytum tuberosum.	S. tuberosum.	S. tuberosum.	S. tuberosum.
Echium vulgare.	E. vulgare.	E. vulgare.	E. vulgare.
Pulmonaria officinalis.	P. officinalis.	P. officinalis.	P. officinalis.
Pulmonaria angustifolia.	*P. angustifolia.*	*P. angustifolia.*	*Pulmon. officinalis.*
Mertensia maritima.	M. maritima.	M. maritima.	M. maritima.
Lithospermum officinale.	L. officinale.	L. officinale.	L. officinale.
Lith. purpureo-cœruleum.	L. purpureo-cœ.	L. purpureo-cœrul.	L.purpureo-cœruleum.
Lithospermum arvense.	L. arvense.	L. arvense.	L. arvense.
Myosotis palustris.	M. palustris.	M. palustris.	M. palustris.
Myosotis repens.	*M. repens.*	*M. repens.*	*M. palustris.*
Myosotis cæspitosa.	*M. cæspitosa.*	*M. cæspitosa.*	*M. palustris.*
Myosotis alpestris.	*M. alpestris.*	*M. alpestris.*	*M. sylvatica.*
Myosotis sylvatica.	M. sylvatica.	M. sylvatica.	M. sylvatica.
Myosotis arvensis.	M. arvensis.	M. arvensis.	M. arvensis.
Myosotis collina.	M. collina.	M. collina.	M. collina.
Myosotis versicolor.	M. versicolor.	M. versicolor.	M. versicolor.
Solanum nigrum.	S. nigrum.	S. nigrum.	S. nigrum.
Solanum Dulcamara.	S. Dulcamara.	S. Dulcamara.	S. Dulcamara.
Atropa Belladonna.	A. Belladonna.	A. Belladonna.	A. Belladonna.
Hyoscyamus niger.	H. niger.	H. niger.	H. niger.
Datura Stramonium.	(Excluded.)	D. Stramonium.	D. Stramonium.
Orobanche Rapum.	*O. major.*	*O. major.*	*O. major.*
Orobanche rubra.	O. rubra.	O. rubra.	O. rubra.
Orobanche caryophyllacea.	O. caryophyll.	O. caryophyllacea.	O. caryophyllacea.
Orobanche elatior.	O. elatior.	O. elatior.	O. elatior.

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Orobanche Picridis.	*O. Picridis.*	*O. Picridis.*	*O. minor.*
Orobanche Hederæ.	*O. Hederæ.*	*O. Hederæ.*	*O. minor.*
Orobanche minor.	O. minor.	O. minor.	*O. minor.*
Orobanche amethystea.	*O. amethystea.*	*Orobanche amethystea.*	O. minor.
Orobanche cœrulea.	O. cœrulea.	O. cœrulea.	O. cœrulea.
Lathræa squamaria.	L. squamaria.	L. squamaria.	L. squamaria.
Verbascum Thapsus.	V. Thapsus.	V. Thapsus.	V. Thapsus.
Verbascum Lychnitis.	V. Lychnitis.	V. Lychnitis.	V. Lychnitis.
Verbascum pulverulentum.	*V. floccosum.*	*V. pulverulentum.*	*V. pulverulentum.*
Verbascum nigrum.	V. nigrum.	V. nigrum.	V. nigrum.
Verbascum Blattaria.	V. Blattaria.	V. Blattaria.	V. Blattaria.
Verbascum virgatum.	V. virgatum.	V. virgatum.	V. virgatum.
Digitalis purpurea.	D. purpurea.	D. purpurea.	D. purpurea.
Antirrhinum majus.	A. majus.	A. majus.	A. majus.
Antirrhinum Orontium.	A. Orontium.	A. Orontium.	A. Orontium.
Linaria Cymbalaria.	L. Cymbalaria.	L. Cymbalaria.	L. Cymbalaria.
Linaria Elatine.	L. Elatine.	L. Elatine.	L. Elatine.
Linaria spuria.	L. spuria.	L. spuria.	L. spuria.
Linaria minor.	L. minor.	L. minor.	L. minor.
Linaria supina.	(Excluded.)	L. supina.	L. supina.
Linaria repens.	L. repens.	L. repens.	L. repens.
Linaria vulgaris.	L. vulgaris.	L. vulgaris.	L. vulgaris.
Scrophularia nodosa.	S. nodosa.	S. nodosa.	S. nodosa.
Scrophularia Ehrharti.	*S. Ehrharti.*	*S. Ehrharti.*	*S. aquatica.*
Scrophularia aquatica.	S. aquatica.	S. aquatica.	S. aquatica.
Scrophularia Scorodonia.	S. Scorodonia.	S. Scorodonia.	S. Scorodonia.
Scrophularia vernalis.	S. vernalis.	S. vernalis.	S. vernalis.
Limosella aquatica.	L. aquatica.	L. aquatica.	L. aquatica.
Melampyrum cristatum.	M. cristatum.	M. cristatum.	M. cristatum.
Melampyrum arvense.	M. arvense.	M. arvense.	M. arvense.
Melampyrum pratense.	M. pratense.	M. pratense.	M. pratense.
Melampyrum sylvaticum.	M. sylvaticum.	M. sylvaticum.	M. sylvaticum.
Pedicularis palustris.	P. palustris.	P. palustris.	P. palustris.
Pedicularis palustris.	P. sylvatica.	P. sylvatica.	P. sylvatica.
Rhinanthus Crista-galli.	R. Crista-galli.	R. Crista-Galli.	R. Crista-galli.
Rhinanthus major.	*P. Crista-galli.*	*P. angustifolius.*	*P. Crista-galli.*
Bartsia alpina.	B. alpina.	B. alpina.	B. alpina.
Eufragia viscosa.	*Bartsia viscosa.*	*Bartsia viscosa.*	*Bartsia viscosa.*
Euphrasia officinalis.	E. officinalis.	E. officinalis.	E. officinalis.
Euphrasia Odontites.	*Bart. Odontites.*	*Bartsia Odontites.*	*Bartsia Odontites.*
Sibthorpia europæa.	S. europæa.	S. europæa.	S. europæa.
Veronica scutellata.	V. scutellata.	V. scutellata.	V. scutellata.
Veronica Anagallis.	V. Anagallis.	V. Anagallis.	V. Anagallis.
Veronica Beccabunga.	V. Beccabunga.	V. Beccabunga.	V. Beccabunga.
Veronica Chamædrys.	V. Chamædrys.	V. Chamædrys.	V. Chamædrys.
Veronica montana.	V. montana.	V. montana.	V. montana.
Veronica officinalis.	V. officinalis.	V. officinalis.	V. officinalis.

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Veronica spicata.	V. spicata.	V. spicata.	V. spicata.
Veronica saxatilis.	V. saxatilis.	V. saxatilis.	V. saxatilis.
Veronica alpina.	V. alpina.	V. alpina.	V. alpina.
Veronica serpyllifolia.	V. serpyllifolia.	V. serpyllifolia.	V. serpyllifolia.
Veronica arvensis.	V. arvensis.	V. arvensis.	V. arvensis.
Veronica verna.	V. verna.	V. verna.	V. verna.
Veronica triphyllos.	V. triphyllos.	V. triphyllos.	V. triphyllos.
Veronica agrestis.	V. agrestis.	V. agrestis.	V. agrestis.
Veronica polita.	*V. polita.*	*V. agrestis.*	*V. agrestis.*
Veronica Buxbaumii.	V. Buxbaumii.	V. Buxbaumii.	V. Buxbaumii.
Veronica hederifolia.	V. hederifolia.	V. hederæfolia.	V. hederæfolia.
Mentha rotundifolia.	M. rotundifolia.	M. rotundifolia.	M. rotundifolia.
Mentha sylvestris.	M. sylvestris.	M. sylvestris.	M. sylvestris.
Mentha viridis.	*M. sylvestris.*	*M. viridis.*	*M. viridis.*
Mentha piperita.	M. piperita.	M. piperita.	M. piperita.
Mentha aquatica.	M. aquatica.	M. aquatica.	M. aquatica.
Mentha pratensis.	*M. sativa.*	*M. pratensis.*	*M. arvensis.*
Mentha sativa.	M. sativa.	M. sativa.	M. sativa.
Mentha arvensis.	M. arvensis.	M. arvensis.	M. arvensis.
Mentha Pulegium.	M. Pulegium.	M. Pulegium.	M. Pulegium.
Lycopus europæus.	L. europæus.	L. europæus.	L. europæus.
Salvia Verbenaca.	S. Verbenaca.	S. Verbenaca.	S. Verbenaca.
Salvia clandestina.	*S. Verbenaca.*	*S. clandestina.*	*S. Verbenaca.*
Salvia pratensis.	S. pratensis.	S. pratensis.	S. pratensis.
Origanum vulgare.	O. vulgare.	O. vulgare.	O. vulgare.
Thymus Serpyllum.	T. Serpyllum.	T. Serpyllum.	T. Serpyllum.
Thymus Chamædrys.	*T. Serpyllum.*	*T. Serpyllum.*	*T. Serpyllum.*
Calamintha Nepeta.	*C. Nepeta.*	*C. Nepeta.*	*C. officinalis.*
Calamintha officinalis.	C. officinalis.	C. officinalis.	C. officinalis.
Calamintha sylvatica.	*C. sylvatica.*	*C. sylvatica.*	*C. officinalis.*
Calamintha Acinos.	C. Acinos.	C. Acinos.	C. Acinos.
Calamintha Clinopodium.	C. Clinopodium.	C. Clinopodium.	C. Clinopodium.
Scutellaria galericulata.	S. galericulata.	S. galericulata.	S. galericulata.
Scutellaria minor.	S. minor.	S. minor.	S. minor.
Prunella vulgaris.	P. vulgaris.	P. vulgaris.	P. vulgaris.
Nepeta Cataria.	N. Cataria.	N. Cataria.	N. Cataria.
Nepeta Glechoma.	*Glec. hederacea.*	*Nepeta Glechoma.*	*Nepeta Glechoma.*
Melittis Melissophyllum.	M. Melissophyl.	M. Melissophyllum.	M. Melissophyllum.
Lamium amplexicaule.	L. amplexicaule.	L. amplexicaule.	L. amplexicaule.
Lamium intermedium.	*L. intermedium.*	*L. intermedium.*	*L. amplexicaule.*
Lamium incisum.	*L. purpureum.*	*L. incisum.*	*L. purpureum.*
Lamium purpureum.	L. purpureum.	L. purpureum.	L. purpureum.
Lamium album.	L. album.	L. album.	L. album.
Lamium maculatum.	*L. maculatum.*	*L. album.*	*L. maculatum.*
Lamium Galeobdolon.	*L. Galeobdolon.*	*Galeobdolon luteum.*	*Lamium Galeobdolon.*
Leonurus Cardiaca.	L. Cardiaca.	L. Cardiaca.	L. Cardiaca.
Galeopsis ochroleuca.	G. ochroleuca.	G. ochroleuca.	G. ochroleuca.

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Galeopsis Ladanum.	G. Ladanum.	G. Ladanum.	G. Ladanum.
Galeopsis Tetrahit.	G. Tetrahit.	G. Tetrahit.	G. Tetrahit.
Galeopsis versicolor.	*G. versicolor.*	*G. versicolor.*	*G. Tetrahit.*
Stachys Betonica.	*S. Betonica.*	*Betonica officinalis.*	*Stachys Betonica.*
Stachys germanica.	S. germanica.	S. germanica.	S. germanica.
Stachys sylvatica.	S. sylvatica.	S. sylvatica.	S. sylvatica.
Stachys palustris.	S. palustris.	S. palustris.	S. palustris.
Stachys arvensis.	S. arvensis.	S. arvensis.	S. arvensis.
Stachys annua.	(Excluded.)	S. annua.	(Not established.)
Ballota fœtida.	*B. nigra.*	*B. nigra.*	*B. nigra.*
Ballota ruderalis.	*B. nigra.*	*B. nigra.*	*B. nigra.*
Marrubium vulgare.	M. vulgare.	M. vulgare.	M. vulgare.
Teucrium Scorodonia.	T. Scorodonia.	T. Scorodonia.	T. Scorodonia.
Teucrium Scordium.	T. Scordium.	T. Scordium.	T. Scordium.
Teucrium Chamædrys.	T. Chamædrys.	T. Chamædrys.	T. Chamædrys.
Teucrium Botrys.	T. Botrys.	T. Botrys.	(Excluded.)
Ajuga reptans.	A. reptans.	A. reptans.	A. reptans.
Ajuga pyramidalis.	*A. pyramidalis.*	*A. pyramidalis.*	*A. genevensis.*
Ajuga alpina.	(Excluded.)	*A. reptans.*	*A. reptans.*
Ajuga Chamæpitys.	A. Chamæpitys.	A. Chamæpitys.	A. Chamæpitys.
Verbena officinalis.	V. officinalis.	V. officinalis.	V. officinalis.
Pinguicula vulgaris.	P. vulgaris.	P. vulgaris.	P. vulgaris.
Pinguicula grandiflora.	*P. grandiflora.*	*P. grandiflora.*	*P. vulgaris.*
Pinguicula alpina.	P. alpina.	P. alpina.	P. alpina.
Pinguicula lusitanica.	P. lusitanica.	P. lusitanica.	P. lusitanica.
Utricularia vulgaris.	U. vulgaris.	U. vulgaris.	U. vulgaris.
Utricularia intermedia.	*U. intermedia.*	*U. intermedia.*	*U. minor.*
Utricularia minor.	U. minor.	U. minor.	U. minor.
Primula vulgaris.	*P. vulgaris.*	*P. vulgaris.*	*P. veris.*
Primula veris.	P. veris.	P. veris.	P. veris.
Primula elatior.	*P. elatior.*	*P. elatior.*	*P. veris.*
Primula farinosa.	P. farinosa.	P. farinosa.	P. farinosa.
Primula scotica.	*P. scotica.*	*P. scotica.*	*P. farinosa.*
Hottonia palustris.	H. palustris.	H. palustris.	H. palustris.
Cyclamen hederifolium.	*C. hederifolium.*	*C. hederæfolium.*	*C. europæum.*
Lysimachia thyrsiflora.	L. thyrsiflora.	L. thyrsiflora.	L. thyrsiflora.
Lysimachia vulgaris.	L. vulgaris.	L. vulgaris.	L. vulgaris.
Lysimachia ciliata.	(Excluded.)	L. ciliata.	"American," excluded.
Lysimachia Nummularia.	L. Nummularia.	L. Nummularia.	L. nummularia.
Lysimachia nemorum.	L. nemorum.	L. nemorum.	L. nemorum.
Anagallis arvensis.	A. arvensis.	A. arvensis.	A. arvensis.
Anagallis tenella.	A. tenella.	A. tenella.	A. tenella.
Centunculus minimus.	C. minimus.	C. minimus.	C. minimus.
Trientalis europæa.	T. europæa.	T. europæa.	T. europæa.
Glaux maritima.	G. maritima.	G. maritima.	G. maritima.
Samolus Valerandi.	S. Valerandi.	S. Valerandi.	S. Valerandi.
Statice Limonium.	S. Limonium.	S. Limonium.	S. Limonium.

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Statice Bahusiensis.	*S. Bahusiensis.*	*S. Bahusiensis.*	*S. Limonium.*
Statice Dodartii.	*S. binervosa.*	*S. binervosa.*	*S. auriculæfolia.*
Statice occidentalis.	*S. binervosa.*	*S. binervosa.*	*S. auriculæfolia.*
Statice caspia.	*S. caspia.*	*S. caspia.*	*S. reticulata.*
Armeria maritima.	*A. maritima.*	*A. vulgaris.*	*A. vulgaris.*
Plantago Coronopus.	P. Coronopus.	P. Coronopus.	P. Coronopus.
Plantago maritima.	P. maritima.	P. maritima.	P. maritima.
Plantago lanceolata.	P. lanceolata.	P. lanceolata.	P. lanceolata.
Plantago media.	P. media.	P. media.	P. media.
Plantago major.	P. major.	P. major.	P. major.
Littorella lacustris.	L. lacustris.	L. lacustris.	L. lacustris.
Suæda fruticosa.	*Schoberia frut.*	*Suæda fruticosa.*	*S. fruticosa.*
Suæda maritima.	*Schoberia marit.*	*Suæda maritima.*	S. maritima.
Salsola Kali.	S. Kali.	S. Kali.	S. Kali.
Chenopodium olidum.	*C. olidum.*	*C. olidum.*	*C. Vulvaria.*
Chenopodium polyspermum	C. polyspermum.	C. polyspermum.	C. polyspermum.
Chenopodium urbicum.	C. urbicum.	C. urbicum.	C. urbicum.
Chenopodium album.	C. album.	C. album.	C. album.
Chenopodium ficifolium.	*C. ficifolium.*	*C. ficifolium.*	*C. album.*
Chenopodium murale.	C. murale.	C. murale.	C. murale.
Chenopodium hybridum	C. hybridum.	C. hybridum.	C. hybridum.
Chenopodium rubrum.	C. rubrum.	C. rubrum.	C. rubrum.
Chenopodium botryoides.	*C. botryoides.*	*C. rubrum.*	*C. rubrum.*
Chenopodium glaucum.	C. glaucum.	C. glaucum.	C. glaucum.
Chen. Bonus-Henricus.	C. B.-Henricus.	C. Bonus-Henricus.	C. Bonus-Henricus.
Beta maritima.	B. maritima.	B. maritima.	B. maritima.
Salicornia herbacea.	S. herbacea.	S. herbacea.	S. herbacea.
Salicornia radicans.	*S. radicans.*	*S. radicans.*	*S. herbacea.*
Atriplex littoralis.	A. littoralis.	A. littoralis.	A. littoralis.
Atriplex marina.	*A. littoralis.*	*A. littoralis.*	*A. patula.*
Atriplex angustifolia.	*A. patula.*	*A. angustifolia.*	*A. patula.*
Atriplex erecta.	*A. patula.*	*A. angustifolia.*	*A. patula.*
Atriplex deltoidea.	*A. hastata.*	*A. deltoidea.*	*A. patula.*
Atriplex hastata.	*A. hastata.*	*A. patula.*	*A. patula.*
Atriplex Babingtonii.	*A. Babingtonii.*	*A. Babingtoni.*	*A. patula.*
Atriplex arenaria.	*A. arenaria.*	*A. laciniata.*	*A. rosea.*
Obione pedunculata.	*Atriplex pedun.*	*Atriplex pedunculata.*	*Atriplex pedunc.*
Obione portulacoides.	*Atriplex portul.*	*Atriplex portulac.*	*Atriplex portulac.*
Rumex maritimus.	R. maritimus.	R. maritimus.	R. maritimus.
Rumex palustris.	*R. maritimus.*	*R. palustris.*	*R. maritimus.*
Rumex conglomeratus.	R. conglomerat.	R. conglomeratus.	R. conglomeratus.
Rumex sanguineus.	R. sanguineus.	R. sanguineus.	R. sanguineus.
Rumex pulcher.	R. pulcher.	R. pulcher.	R. pulcher.
Rumex obtusifolius.	R. obtusifolius.	R. obtusifolius.	R. obtusifolius.
Rumex pratensis.	*R. pratensis.*	*R. pratensis.*	*R. crispus.*
Rumex crispus.	R. crispus.	R. crispus.	R. crispus.
Rumex aquaticus.	R. aquaticus.	R. aquaticus.	R. aquaticus.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Rumex Hydrolapathum.	R. Hydrolapa.	R. Hydrolapathum.	R. Hydrolapathum.
Rumex alpinus.	R. albinus.	R. alpinus.	(Not established.)
Rumex Acetosa.	R. Acetosa.	R. Acetosa.	R. Acetosa.
Rumex Acetosella.	R. Acetosella.	R. Acetosella.	R. Acetosella.
Oxyria reniformis.	O. reniformis.	O. reniformis.	O. reniformis.
Polygonum Bistorta.	P. Bistorta.	P. Bistorta.	P. Bistorta.
Polygonum viviparum.	P. viviparum.	P. viviparum.	P. viviparum.
Polygonum amphibium.	P. amphibium.	P. amphibium.	P. amphibium.
Polygonum lapathifolium.	P. lapathifolium.	P. lapathifolium.	P. lapathifolium.
Polygonum laxum.	*P. lapathifolium.*	*P. nodosum.*	*P. lapathifolium.*
Polygonum Persicaria.	P. Persicaria.	P. Persicaria.	P. Persicaria.
Polygonum mite.	*P. mite.*	*P. mite.*	*P. minus.*
Polygonum Hydropiper.	P. Hydropiper.	P. Hydropiper.	P. Hydropiper.
Polygonum minus.	P. minus.	P. minus.	P. minus.
Polygonum aviculare.	P. aviculare.	P. aviculare.	P. aviculare.
Polygonum Raii.	*P. Raii.*	*P. Raii.*	*P. maritimum.*
Polygonum maritimum.	P. maritimum.	P. maritimum.	P. maritimum.
Polygonum Convolvulus.	P. Convolvulus.	P. Convolvulus.	P. Convolvulus.
Polygonum dumetorum.	P. dumetorum.	P. dumetorum.	P. dumetorum.
Fagopyrum esculentum.	(*Excluded.*)	*Polygonum Fagopyrum.*	*F. esculentum.*
Hippophaë rhamnoides.	H. rhamnoides.	H. rhamnoides.	H. rhamnoides.
Daphne Mezereum.	D. Mezereum.	D. Mezereon.	D. Mezereum.
Daphne Laureola.	D. Laureola.	D. Laureola.	D. Laureola.
Thesium humifusum.	*T. humifusum.*	*T. linophyllum.*	*T. linophyllum.*
Aristolochia Clematitis.	A. Clematitis.	A. Clematitis.	(Not established.)
Asarum europæum.	A. europæum.	A. europæum.	A. europæum.
Empetrum nigrum.	E. nigrum.	E. nigrum.	E. nigrum.
Buxus sempervirens.	B. sempervirens.	B. sempervirens.	B. sempervirens.
Euphorbia Peplis.	E. Peplis.	E. Peplis.	E. Peplis.
Euphorbia Helioscopia.	E. Helioscopia.	E. Helioscopia.	E. Helioscopia.
Euphorbia stricta.	*E. stricta.*	*E. platyphylla.*	*E. platyphyllos.*
Euphorbia platyphylla.	E. platyphylla.	E. platyphylla.	E. platyphyllos.
Euphorbia hiberna.	E. hiberna.	E. hiberna.	E. hibernica.
Euphorbia palustris.	*E. pilosa.*	*E. palustris.*	*E. pilosa.*
Euphorbia coralloides.	*E. coralloides.*	*E. coralloides.*	*E. pilosa.*
Euphorbia amygdaloides.	E. amygdaloides.	E. amygdaloides.	E. amygdaloides.
Euphorbia Esula.	E. Esula.	E. Esula.	E. Esula.
Euphorbia Paralias.	E. Paralias.	E. Paralias.	E. Paralias.
Euphorbia portlandica.	*E. portlandica.*	*E. portlandica.*	*E. segetalis.*
Euphorbia Peplus.	E. Peplus.	E. Peplus.	E. Peplus.
Euphorbia exigua.	E. exigua.	E. exigua.	E. exigua.
Euphorbia Lathyris.	E. Lathyris.	E. Lathyris.	E Lathyris.
Mercurialis perennis.	M. perennis.	M. perennis.	M. perennis.
Mercurialis annua.	M. annua.	M. annua.	M. annua.
Ceratophyllum demersum.	C. demersum.	C. demersum.	C. demersum.
Ceratophyllum submersum.	*C. submersum.*	*C. submersum.*	*C. demersum.*
Callitriche verna.	*C. verna.*	*C. verna.*	*C. aquatica.*

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Callitriche platycarpa.	*C. platycarpa.*	*C. verna.*	*C. aquatica.*
Callitriche hamulata.	*C. pedunculata.*	*C. pedunculata.*	*C. aquatica.*
Callitriche autumnalis.	*C. autumnalis.*	*C. autumnalis.*	*C. aquatica.*
Parietaria erecta.	*P. officinalis.*	*P. officinalis.*	*P. officinalis.*
Parietaria diffusa.	*P. officinalis.*	*P. officinalis.*	*P. officinalis.*
Urtica pilulifera.	U. pilulifera.	U. pilulifera.	U. pilulifera.
Urtica urens.	U. urens.	U. urens.	U. urens.
Urtica dioica.	U. dioica.	U. dioica.	U. dioica.
Humulus Lupulus.	H. Lupulus.	H. Lupulus.	H. Lupulus.
Ulmus suberosa.	*U. suberosa.*	*U. suberosa.*	*U. campestris.*
Ulmus montana.	*U. montana.*	*U. campestris.*	*U. montana.*
Salix pentandra.	S. pentandra.	S. pentandra.	S. pentandra.
Salix cuspidata.	S. cuspidata.	S. cuspidata.	(Excluded.)
Salix fragilis.	S. fragilis.	S. fragilis.	S. fragilis.
Salix alba.	S. alba.	S. alba.	S. alba.
Salix alba, c.	*S. alba, c.*	*S. vitellina.*	*S. alba.*
Salix undulata.	*S. undulata.*	*S. undulata.*	*S. amygdalina.*
Salix triandra.	*S. triandra.*	*S. triandra.*	*S. amygdalina.*
Salix acutifolia.	S. acutifolia.	S. acutifolia.	(Excluded.)
Salix purpurea.	S. purpurea.	S. purpurea.	S. purpurea.
Salix purpurea, e.	*S. purpurea, e.*	*S. Helix.*	*S. purpurea.*
Salix rubra.	*S. rubra.*	*S. rubra.*	*S. purpurea.*
Salix rubra, b.	*S. rubra, b.*	*S. Forbyana.*	*S. purpurea.*
Salix viminalis.	S. viminalis.	S. viminalis.	S. viminalis.
Salix stipularis.	*S. stipularis.*	*S. stipularis.*	*S. viminalis.*
Salix Smithiana.	*S. Smithiana.*	*S. Smithiana.*	*S. viminalis.*
Salix Smithiana, b.	(*Excluded.*)	*S. holosericea.*	? *S. viminalis.*
Salix Smithiana, g.	*S. Smithiana, c.*	*S. ferruginea.*	? *S. viminalis.*
Salix acuminata.	*S. acuminata.*	*S. acuminata.*	*S. Caprea.*
Salix cinerea.	*S. cinerea.*	*S. cinerea.*	*S. Caprea.*
Salix aurita.	S. aurita.	S. aurita.	S. aurita.
Salix Caprea.	S. Caprea.	S. Caprea.	S. Caprea.
Salix nigricans.	*S. nigricans.*	*S. nigricans.*	*S. phylicifolia.*

(*To be continued.*)

THE INTERNATIONAL EXHIBITION.

The Editor has much pleasure in acknowledging his obligations to Mr. Kennedy, the eminent pteridologist and zoophytologist of Covent Garden, for files of the 'Brisbane Courier,' containing a *catalogue raisonné* of vegetable articles of commerce, the produce of Queensland, which are to be presented to the notice of the public in the forthcoming International Exhibition. He further desires to notify to his readers that they are mainly

indebted to Mr. Hill, the zealous and energetic Director of the Botanical Gardens at Brisbane, for an excellent account of these articles, both wild and cultivated.

These productions, which are chiefly cultivated in the Botanic Gardens at Brisbane, will form an instructive and interesting feature of the forthcoming Exhibition; and our readers are informed that similar papers, on this economical department of botany, will be published occasionally during the course of this season.

The products of Queensland intended for exhibition in London were exhibited at Brisbane for some weeks in October, 1861, as we learn from a local newspaper, the 'Courier,' of November 14, 1861; and the collection was visited by all the influential settlers, previously to its transmission to England.

"One of the most striking features of the Exhibition is the display of woods indigenous to the colony, which occupies the tables at the northern end of the building, and a portion of the centre table in the same part of the Exhibition. For this fine display of specimens of woods indigenous to Queensland the colony is indebted to the exertions of Mr. W. Hill, Director of the Botanical Gardens. Polished specimens of all these woods, as well as specimens of the timber in its rough state, are exhibited; whilst some of the pieces have been manufactured into stockwhip handles, etc. The portion of the catalogue relating to this exhibition of timber has been prepared by Mr. Hill, and will prove valuable in bringing the capabilities of the colony in this branch of produce into notice, containing as it does remarks descriptive of the nature of the trees and the qualities of their woods, so far as they could be ascertained. In placing the catalogue before the public, Mr. Hill says, 'It does not contain all the woods indigenous to the colony, but only such as could be procured (during a few stolen hours from other duties) at no considerable distance from Brisbane. The immense and grand scrubs bordering upon the banks of the rivers Mary and Burnett, the northern watersheds, the western interior, and southern district, have not been examined at all.'

"This collection consists of 120 varieties, which have been procured within a radius of twenty miles of Brisbane. In it will be found woods of almost every description, suitable both for Her Majesty's navy and Her Majesty's boudoir, being equally available

for the masts and keel of a man-of-war as for the most *recherché* of ladies' cabinets or work-tables; and suitable also for the tan-pits of Bermondsey, or the incense used in the joss-houses of China. Although timber is, commercially considered, the least lucrative production of the colony, and regarded of little or no value, since many of the finest furniture woods are used as fire-wood and paling-stuff every day, yet we have considered this collection of Mr. Hill's to be one of the more attractive portions of the Exhibition, and the best representative of any of the classes, and have therefore commended it to your Excellency's notice as worthy of special attention."

Australian Cereals.—*From the 'Brisbane Courier,' Nov.* 14, 1861.

"Of Cereals there are but three specimens, two of wheat and one of barley; the former grown at Toowoomba, Darling Downs, and Rockhampton; the latter at Rockhampton. To these samples of wheat special attention is requested, since it has often been asserted, even by old colonists, that, with all its great variety of productions, Queensland could not grow wheat. We think that the samples exhibited are a sufficient contradiction of such an assertion, and that Queensland can not only grow wheat but can grow very good wheat, as the flour made from it, some of which is also exhibited, incontestably proves. When it is considered that £94,339 sterling were sent out of this colony last year for the purchase of wheat and flour, it surely becomes us to pause and inquire whether some portion of that large sum might not be saved to the colony, seeing that we have extensive tracts of land suited for its production now lying idle."

Queensland a Sugar-Producing Colony.

From the 'Brisbane Courier,' Nov. 14, 1861.

"The sugar-canes exhibited were grown at Cleveland, on the coast, and the Botanic Gardens in Brisbane, and the Commissioners have been assured, by a gentleman capable of giving a reliable opinion, that they are fully equal to any grown in the Mauritius.

"Although unsuccessful in our first attempt to manufacture sugar from them, we are yet hopeful of being able to exhibit some before the Brisbane Exhibition closes, the canes not being quite ready for the purpose. The sample of rum exhibited is

350° p., and is interesting as being the first spirit made from the sugar-cane in this colony. There can be but little doubt that sugar-growing will form one of our industrial occupations in the course of a very few years."

AUSTRALIAN ARROWROOT.

"The agriculturists in the neighbourhood of Brisbane and Maryborough have furnished the Commissioners with twenty-six samples of arrowroot—eight being of the white variety (*Maranta arundinacea*), and sixteen of the purple variety (*Canna edulis*). Some of the samples are fully equal to the best Bermuda arrowroot. As this plant grows very luxuriantly, the yield of its nutritious farina is consequently great; and there is every reason to believe that it will become an article of considerable export to the neighbouring colonies. The reasonableness of its price and its very superior quality fully justify such a conclusion."

AUSTRALIAN COFFEE.—*From the 'Brisbane Courier,' Nov.* 14, 1861.

"The sample of coffee exhibited is the produce of one tree growing but a few yards from the banks of the Brisbane River. We conceive this sample, although small, to be highly important, since it proves the adaptability of our soil and climate to the growth of the coffee-tree, and furnishes an additional illustration of the capabilities of this colony."

AUSTRALIAN TOBACCO.—*From the 'Brisbane Courier,' Nov.* 14, 1861.

"Amongst other important articles of agricultural produce, we desire to notice the samples of tobacco, both in leaf and manufactured, grown at Rockhampton; and, considering the large sum (£17,727) paid by this colony for foreign tobacco, we think its cultivation here deserving the attention of our agriculturists."

The following are from the cultivated soil of the Botanical Gardens, or from the wild bush in the vicinity of Brisbane, viz. "cotton, tobacco, arrowroot, rice, ginger prepared in various ways, cinnamon, sarsaparilla, sugar-cane, specimens of gum and bark of various kinds, and a variety of fibres. At the tables in the northern half of the building are also placed the samples of maize, wheat, barley, flour, tobacco in leaf (the sample grown

by M. Thozet, of Rockhampton), jams, preserved fruits, and wines.

The Colony of Queensland a Cotton-Producing District.

From the 'Brisbane Courier,' Nov. 14, 1861.

"There is at present a peculiar interest attached to the production of cotton, owing to the disastrous civil war now raging in the United States, and the probable scarcity of this important staple in consequence, which will inevitably entail upon the manufacturing interests of Great Britain much distress and misery. The samples of sea-island cotton exhibited at Brisbane to be sent to the International Exhibition are twenty-four in number, and have been grown in different parts of the colony during the present year—an unusually unseasonable year for the purpose. The majority of the samples are from the coast country of the colony; but there is one sample from the Dawson River, a distance of two hundred miles from the seaboard. This interesting fact will give the manufacturers of England some idea of the vastness of our cotton field, and show them that there is a colony in Australia from whence a supply of this valuable staple, equal to any demand, can be furnished, so soon as capital and labour are introduced into it for the purpose.

"In order to encourage the cultivation of this valuable staple product, we felt warranted in offering to purchase all the cotton that might be grown during this year, at a fair price (but which was in no way intended to interfere with the liberal bonus offered by the Government, namely, £10 per bale); an encouragement which appears to have been attended with some success, judging from the quantity sent in to the Commissioners. In awarding the prizes of this class, the jurors experienced considerable difficulty, owing to the quality of the samples as regarded the fineness, strength, and length of staple; but, as some of the exhibitors had taken more pains than others in the cleaning and preparation of the wool, the jurors were compelled, in some instances where the samples were so equal in quality, to award the prize to the more clean and more carefully-picked samples; an explanation which we hope will prove satisfactory to those interested in such awards. The defective preparation of some of the samples may be accounted for by the imperfect machinery made use of.

"The specimens of upland cotton, although few, are remarkably fine, and were grown on the coast country; they have sea-island gloss, very unlike the coarse, hairy appearance of the same varieties met with from other parts of the world."

TEXTILE FIBROUS MATERIALS FROM BRISBANE, QUEENSLAND.

"The attention of the Commissioners having been directed to the fibre-producing plants of the colony for the manufacture of paper and textile fabrics, we sent to Manilla to ascertain the process generally adopted in the Philippine Islands, in the preparation of that variety of the Banana (*Musa textilis*) from which is obtained the Manilla Hemp of commerce. Our communication was courteously responded to by Messrs. Russell and Sturgis, of Manilla, who very kindly sent us a sketch of the machine in use there for that purpose. From this we had a machine made, and lent it to some Banana-growers in the neighbourhood, but their report of its utility is not a favourable one; this no doubt arises from some defect in the details of the machine, or in the manipulation; we may look for more favourable results hereafter.

"Amongst the samples of fibre exhibited will be found a very good specimen obtained from the *Musa textilis*, for which the prize was awarded to Mr. Warner; and some fibre contributed by Mr. Hill, procured from a Malvaceous plant (*Sida*) a weed that grows with wild luxuriance in many unoccupied grounds in the neighbourhood, which on examination will be found to be very strong, of average length and fineness, and suitable for a variety of useful purposes."

LOCAL BOTANY IN THE EIGHTEENTH CENTURY.

Journal of a Botanical Tour from London to Dover, the Isle of Thanet, Rochester, etc., by Tunbridge and Hastings; copied from the Sloane MSS. 'Adversaria Petiveriana.'

August 15*th*, 1714.—Soon after four o'clock this afternoon Mr. Sherard (James) and I (James Petiver) left London by Bromley Riverhead, Maram's Court, for Sevenoaks, where we halted for the night.

August 16*th*.—About eight o'clock this morning we visited

Dr. Fuller,* where we were courteously received and hospitably entertained. In the Doctor's garden we saw many choice and curious plants, and from his summer-house, which is an octagonal structure erected on an artificial eminence, we had fair prospects of the grand family-seat of the Earls of Dorset, Knowle, with its park, woods, and trees, and extensive views of the surrounding country. The Doctor regaled us with cold venison, pastry, and extraordinary good strong beer. We were shown his study, which is well furnished with valuable, scarce, and curious books.

About noon we came to Tunbridge Wells, and immediately set out to search the heaths and bogs thereabouts. On the Heath, about half a mile from the Wells, a little way on the left-hand of the road that goes to Frant, we found *Lycopodium clavatum, Hieracium fruticosum angustifolium* (*H. umbellatum*); and about half a mile further near to Frant are bogs spread with Gale, Lancashire Asphodel, *Ascyron villosum, Gramen leucanthemum* (*Rhynchospora alba*), *Ros solis fol. rotund.*, and many other rare plants. Pneumonanthe is said to grow there, but we could not find it.

From thence we kept to the right-hand over the hills, till we came to the stupendous high rocks about a mile and a half from the bog, and about as far from the Wells. Here we gathered *Adianthum fol. bifidis, Muscus capil. coccineis,* and a great variety of other mosses.

On the 17*th* we reached Brede, a small town about eight miles from Hastings, through horrid dismal roads, by Ticehurst and Wadhurst, by which surely no coach or chaise had ever passed. By the way we saw a great quantity of *Tanacetum,* and gathered *Mentastrum spicatum folio longiore, Mentha viridis,* in a narrow, steep passage through a wood, about a mile before we came to Brede. Here we were kindly entertained by Mr. Tindall's brother.

August 18*th.*—Having made a plentiful breakfast on oysters

* Dr. Thomas Fuller, who lived at Sevenoaks, and where he practised as a physician, is well known as a celebrated author. The following works are from his pen:

'*Gnomologia;* Adages and Proverbs, Wise Sentences and Witty Sayings.' London, 1732. 12mo.

'*Introductio ad Prudentiam;* or, Directions, Counsels, and Cautions, tending to Prudence and Management of Affairs in Common Life.' London, 1726, 1727. 8vo. Reprinted, 1743, 2 vols.

The cold breakfast on venison and beer is a sample of the substantial hospitality of earlier times.

and other good things, we set out for Hastings, accompanied by Mr. Tindall and his brother. In a bog which lies in Westfield Down we found *Ros solis fol. oblongo,* very large, in seed, and in great plenty. It discovered itself to be different from that *fol. rotundo,* not only by the largeness of the tuft, but also by the erect manner in which the leaves and whole plant grow.

We gathered also, in a shady lane near Mr. Tindall's house, *Helleborus latifolius* (*H. fœtidus*). By the windmill on Fairlight Hill we had a full view of the sea from Bourn Cliffs, which are at the beginning of the South Downs, to the cliffs of Folkestone; and, had the day been fine, we might have seen the coast of France. Between two and three we got to Hastings, and immediately set about our affairs. Here we found on the castle walls *Chamæfelix Adianthum nigrum* (*Asplenium Adiantum-nigrum*), *Hipposelinum* (*Smyrnium Olusatrum*), *Erica maritima* (*Frankenia maritima*), *Sedum minimum non acri flore albo* (*Sedum anglicum*), *Bupleurum* (*B. tenuissimum?*), near the rivulet, according to Mr. Ray's directions. On the beach we gathered *Tithymalus Paralias* (*Euphorbia*), *Pisum marinum, Soldanella* in seed, *Brassica marina monospermos* (*Crambe mar.*), *Papaver luteum corniculatum* (*Glaucium*), *Beta mar.* (*Thlaspi*). On the seashore was collected a great variety of seaweeds, skulls, and other curiosities thrown up by the sea.

August 19*th.*—We left Hastings, and travelled for about four miles near the seaside to a little village called Pott, where Mr. Tindall had a sister, married to a very worthy gentleman, Mr. Martyn, with whom we dined. Before dinner we walked a mile to the sea, where we found *Bupleurum* again, and returning home, in a field on the left hand of the lane that leads from the sea to the town we found a good quantity of *Linum angustifolium.* In a bog near the road which goes to Winchelsea, we met with *Pentaphylloides flore rubro* (*Comarum palustre*), *Trifol. paludosum* (*Menyanthes trifoliata*), and several other rare plants; but the bog was so moist that we could not search it thoroughly. In the evening we came to the Mayor of Winchelsea's house, whither Mr. Martyn was also so kind as to accompany us. Here we met with two other brothers of Mr. Tindall, and some more friends. Being this night to part with Mr. Tindall and his relations, from whom we had received great civilities, we were desirous of entertaining them in the best manner the place could afford.

We could get no wine, but Mr. Mayor made so excellent punch that every bowl was better than its predecessor. After a light supper and a hearty draught of this liquor, they took leave of us, and set out most cheerful for their respective habitations. At our first coming we took a turn or two about the town, and by the ruins and the remains we could plainly discover that this has been a fine, regular place. We found on its walls *Umbilicus Veneris, Solanum lethale* (*Atropa Belladonna*), in the marsh *Althæa, Kali minus* (*Salicornia?*) *Tripolium Atriplex, Deltoides marina* (*Armeria maritima*).

August 20th.—This morning early we left Winchelsea, accompanied by two of our friends, who were to conduct us to the sea-side, in order to our passing that arm of the sea that runs up to Rye Bay; too early for the tide, we stopped at Winchelsea Castle, about two miles from the town. Here we were pretty near and had a full prospect of Rye. Upon that side of the castle wall that looks to Rye, we found great plenty of *Chamædrys* (*Teucrium*), and on the ruins, *Hipposelinum* (Alexanders).

The tide being near down, we drove about a mile before we came to the channel of the river that runs from Rye. After a stay of about half an hour, which we employed in shell-picking, etc., our friends found a place where we might ford the river safely with our chaise. We took their directions and parted.

We then drove on the sands, between the beach and the sea, for two miles, and then entered Romney Marsh. In six or seven miles we came to Lyd, a pretty market-town; the roads were extraordinary good, and the fields all thereabout overspread with *Caryophyl. marinus* (*Statice Armeria*).

About three miles further we baited at New Romney, one of the Cinque Ports. Near the sea was found *Mercurialis*, but we forgot to look for the Roman Nettle, said to grow in the street. From hence we had eleven miles, some part very sandy, and other parts very stony, upon the banks of the sea to Hythe, where we dined and went to the beach, but could find little worth our notice except in the marshes between the town and beach, where we met with *Anthoxanthum*, and in the street near the church *Mercurialis* again. We were afterwards informed by the parson of Knowlton, who lived many years in this town, and has pretty good taste of botany, that there is very good simpling on the cliffs and hills above the town, that *Urtica*

romana grows plentifully in the streets, particularly under the walls of Mr. Wood's house and gardens. Here we first observed *Cannabis sativa,* but afterwards very frequently in E. Kent.

After dinner we travelled two miles to Sandowne Castle. *Zyris* (*Iris fœtidissima?*) grows plentifully all thereabout, and mounting the hills we met with *Rubia Cynanchica* (*Asperula Cynanchica*).

In two miles we came to Folkestone, a base rugged town, inhabited chiefly by fishermen; thence we had seven miles by the downs and cliffs to Dover. From these cliffs we could easily see the coast of France, though late in the evening. We lay at the King's Head at Dover Pier.

August 21*st.*—We visited the cliffs, and found *Limonium minus* (the Dover form of *Statice Limonium,* or *reticulata,* or *bahusiensis,* or *spatulata,* or *binervosa*), *Brassica arborea, Crithmum, Gentianella, Orchis, Soldanella;* on the cliff from the east, *Lychnis Dubrensis* (the Dover form of *Silene nutans*), *Verbascum flo. amplo,* and in the cornfields, going up to the castle, *Mercurialis* among the corn. *Rubia Cynanchica* on this side of the castle hill.

On the beach and seashore we gathered *Brassica monospermos.* At noon we returned to our lodgings, where a friend was to dine with us. In the evening we went to Knowlton Place, one of the seats of Thomas D'Eath, Esq., about eight to nine miles from Dover. By the way, through mistake of our friends, we were carried to Waldisham, a fine seat of Sir Robert Furness; but our guide having to return, we had not time to see the house, which seemed very noble and stately, and the gardens very large and neatly kept. We got in good time to Mr. D'Eath's.

August 22*nd.*—We spent this day at Knowlton, where we met not only with a very kind and hearty reception, but most gentle and generous entertainment. The house is noble and large, and when the alterations now making are completed, it may vie with most seats in this part of Kent. It stands on a knoll in an open fine country, environed with pleasant woods and groves, which are not very large, but very delightful.

In the evening we took a turn into the woods, where on the right-hand of the walk, by the parson's house, we found *Helleboraster* (*H. viridis*). *Herba Paris* we were informed grows here, but we could find no remains of it. Here it must certainly be

very good simpling in the spring and summer seasons, not only in the woods and groves, but also on the banks of chalk pits and hollow ways, where we found the remains of a great many scarce plants. The corn fields produce a sort of *Ladanum*, so large that it seems a sort different to that about London. We observed *Jacea flo. albo* (*Centaurea nigra*) in several places, and *Adianthum album* (*A. Ruta-muraria*) grew upon the churchyard walls.

August 23rd.—This morning Mr. D'Eath was so kind as to give us his company to Deal, about six miles from Knowlton. By the way we found *Vinca pervinca major*. From Deal we sent our servant before, and kept near the sea, in order to walk four or five miles to Sandwich. On the sandy downs near Sandowne Castle we met with *Oleaster* (*Hippophaë rhamnoides*) and the *Salix* (*S. arenaria ?*) mentioned by Mr. Ray, *Anonis mar. Kali spinosa* (*Salsola*), *Eryngo mar.*, *Tithym.* (*Euphorbia*) *Paralias*, *Juncus mar.*, *Junc. capitulis*, *Sorghi* (*J. acutus*), *Ononis spinosa*. The whole downs are covered with *Spartium*, a great quantity of which we saw laid to dry on the beach, in order to make Bas belts. After a tiresome walk we came to Sandwich, where on the walls of the town we observed *Matricaria flore albo*.

After dinner we crossed into the Isle of Thanet. Near the ferry we found in great plenty *Halimus capsulis cordatis* (*H. pedunculatus*), *Bupleurum*, etc. On our return, we found a servant of Mr. D'Eath's attending at our inn to conduct us to his house that night again.

August 24th.—Left Mr. D'Eath, and in eight or nine miles reached Canterbury, and stayed an hour or two to see the town and cathedral. On the top of the church walls we saw very large *Trichomanes*. Nine miles further reached Faversham, where we dined. We observed *Ebulus* plentifully near a town about three miles before we came to Faversham, and *Trachelium majus* by the roadside for twenty miles.

At Faversham we went to the marshes, intending to visit the seashores, and would have gone to Sheppey, but by mistake we took the wrong side of the river and had to return again *re infecta*, by reason of impassable ditches. We found *Peucedanum officinale*, *Statice Limonium*, *Aster Tripolium*, etc.

In the evening, six or seven miles further to Sittingbourne, where we lay that night. By the way on Beacon Hill we found *Triorchis* (*Ophrys spiralis*) in plenty and *Linum angustifolium*.

August 25th.—On the road to Rochester we gathered *Saponaria, Mentha spicata glabra.* We saw also frequently *Hieracium majus,* and on the hill before we came to Chatham *Gentianella, Rubia Cynanchica* in great plenty, and on Rochester Castle *Caryophyllus simplex flore minore* (*D. Caryophyllus*).

At Northfleet we dined, and about the chalk hills met good store of *Gentianella* very large and also *Conyza flor. ferrugineo, Fœniculum* and *Sinapi siliquis* (*S. nigra*), and hoped to find *Orchis flore glomerato,* but were too late for this and other scarce and curious plants. This night we finished our journey.

On the banks of the deep way, near the gravel-pits on Blackheath, we observed *Hyacinthus autumnalis* in seed, and the flowers all gone.

BOTANICAL NOTES FOR MALVERN.

I have been frequently asked, what is there peculiar in the Botany of the Malvern Hills?—what are the rarest plants growing there, and is any species confined to this igneous axial range? To these questions I can only answer, that the vegetation now appearing on the chain seems to be all *derivable* from elsewhere; there is nothing limited to the syenite, and rare plants, as understood by botanists, are very sparsely scattered. The constant exposure of the bare Malvern heights to the sun, and their narrowness, precludes the establishment of even those subalpine plants that in Wales grow at a less elevation; though *Sedum album,* which no doubt can destroy, finds an appropriate home among the arid cliffs of the North Hill. Here it is undoubtedly truly indigenous, though in very dwarf state, not at all spreading on to the walls about the base of the hills, but entirely confined to the rocks of the middle region, at about seven hundred feet of altitude. The only other Sedums that the hills nourish are *acre* and *Telephium.* If we add to these *Cotyledon umbilicus, Potentilla verna, P. argentea, Myosotis collina, M. versicolor, Mœnchia erecta, Gnaphalium sylvaticum,* and *Hypericum montanum* (the latter very uncommon), few other plants deserve to be enumerated as really attached to the igneous rocks. The only species preferring subalpine localities that can be found on the Malvern range, and these but in a few spots, are the Bilberry (*Vaccinium Myrtillus*)

and the broad-leaved Cotton-Grass (*Eriophorum latifolium*). The little Rock Brakes or Mountain Parsley-Fern (*Allosorus crispus*), straggling from Cambrian ridges, where it flourishes so abundant and beautiful, clings to one rock only of the Herefordshire Beacon, near Little Malvern, and never spreads from that locality. In the detailed 'Botany of the Malvern Hills,' by E. Lees, F.L.S., published in 1852, and which necessarily took a compass of some miles on either side of the axial chain, the total Phanerogamic Vegetation it is said comprises eight hundred and two plants; but the far greater proportion of these were gathered on the Silurian strata at the western bases of the hills, and in the country between Malvern and the Severn. Extending botanical investigation to the lower country, various local and uncommon plants may be gathered, especially where the Silurian limestone breaks forth, and in marshy places. I may mention, *Œnanthe pimpinelloides*, at Maddresfield; *Bupleurum tenuissimum*, below Barnard's Green; *Cynoglossum sylvaticum*, at Longdon; *Rumex maritimus*, *Lathyrus palustris* (Blue Marsh Vetchling) and *Cnicus pratensis*, in the wet meadows of Longdon Marsh; *Chrysosplenium alternifolium* and *Gagea lutea*, Purlieu-lane; *Rosa sepium*, at Little Malvern; *Erodium maritimum* (Sea Stork's-bill), near Barnard's Green; *Vicia sylvatica*, in Mathon and Cradley Woods; *Lactuca Scariola* (Prickly Lettuce), near Welland; *Orchis pyramidalis*, at the Croft lime-quarries; *Epipactis purpurata*, at Broadwas, etc. But I must now confine myself to the hills and their outcropping rocks in particular.

A remarkable absence of some families may be noted, which could scarcely have been expected. But along the whole Malvern range no species of *Erica* (Heath) occurs; the common Ling (*Calluna vulgaris*) shows itself but scantily; and not a single *Lycopodium* has been anywhere detected.

RAMBLES BY THE RIBBLE.

Buckley Hall, Buckley Delf, Ribchester Bridge, Ribbleton Moor, Higher and Lower Brockholes.

About a mile or so from Longbridge, we come to Buckley Hall, a whitewashed house of solid masonry, strong enough almost for a fortress. Its mullioned windows and general style evidence

something of past dignity. Baines says it was built by the Sherburnes in 1666; it having formed a portion of the Stonyhurst estate. There is, however, no record of it having been the residence of any one above the rank of a farmer. Passing the hall we come upon Buckley Delf, a once-noted stone quarry, but which some years since ceased to be worked, when the Corporation of Preston diverted the bulk of the water of Cowley Brook, which had previously furnished the motive power for the quarrying. It has begun to assume the picturesque costume which follows the abandonment of such workings. It is a nice place for a botanist. When I was last there, in company with my botanical friend, we did not meet with any botanical rarities, but the steep banks and hollows formed by the old workings of the delf were covered with vegetation, comprising a great variety of plants, and including many of our most popular favourites. Of Roses there were several varieties, if not species, perhaps the most conspicuous of them being the white Field Rose (*Rosa arvensis*), which here flourished in random luxuriance, and which was also frequent in the neighbouring hedges. The Bramble or Blackberry family (*Rubus*) had also several representatives. The Wood Strawberry (*Fragariavesca*) was abundant. It is a plant whose fruit is generally more popular even with botanists (contrary to the general rule) than its blossoms, and one which adds materially to the attractions of the old quarry, when the former is ripe, as indeed we experienced on the occasion of one of our visits to the spot. The great white Ox-eye, called in many places the Dog-daisy (*Chrysanthemum Leucanthemum*), figured very conspicuously, the pure white rays of its blossoms contrasting beautifully with the rich green foliage and gay colours surrounding it. That difficult tribe, the Hawkweed family, was represented by the shrubby broad-leaved Hawkweed (*Hieracium sabaudum*) and several other species. The Purging Flax (*Linum catharticum*) and the Wood Betony (*Betonica officinalis*), two plants which hold important places in the rural pharmacopœia, were plentiful, the former about the delf, and the latter on the banks in the neighbourhood. We met with several fine specimens of the Zigzag Trefoil (*Trifolium medium*), two or three different species of the Groundsel or Ragwort family (*Senecio*), and great quantities of the great Horsetail (*Equisetum Telmateja*). There were many other descriptions of plants, too numerous for especial mention, and, in fact, too common to re-

quire it; but the above will be sufficient to give an idea of the luxuriant vegetation of the scene. Before I conclude this branch of the subject, however, I should mention that the Dyer's Greenweed (*Genista tinctoria*), a plant not commonly met with in the neighbourhood of Preston, though frequent in many places, grows plentifully in the fields between the new reservoir and the delf. It is a member of that family which furnished a badge and a name to the renowned race of Plantagenet:

"Memorial flower of a princely race."

The readers of the 'Chronicle' will remember the story how Geoffrey, Count of Anjou, father of Henry the Second, King of England, wore a sprig of Broom in his hat by way of a badge, and from it obtained the name of Plantagenet (the Latin name of the plant being *Planta genista*, the French *Plante genêt*), a name which several generations of his descendants bore. A recent work of great authority (the 'Encyclopædia Britannica') has given another version of the story. It says: "Fulk, the first Earl of Anjou, stung with remorse for some wicked action, went, as a work of atonement, in pilgrimage to Jerusalem, where, being soundly scourged with Broom twigs, which grew plentifully on the spot, he afterwards took the surname of Plantagenet, which was retained by his posterity." I am not disposed to accept the latter version; I adhere to the old story as told in the History of England, which I read in my schoolboy days; and I find the author of Tom Ingoldsby's Legends adopts the same version when he starts his story of the Brothers of Birchington with the lines—

"You are all aware that
On our throne there once sat
A very great king, who'd an Angevin hat,
With a great sprig of Broom, which he wore as a badge in it,
Named from this circumstance Henry Plantagenet."

I must not, however, dwell so long over a bit of Broom, or I shall be like my botanical friend, whom sometimes I compare with the hero of another legend of Ingoldsby's—

"Sir Thomas the Good,
Who, be it well understood,
Was a man of very contemplative mood,—
He would pore by the hour
O'er a weed or a flower,
Or the slugs that come crawling out after a shower;

Black-beetles and bumble-bees—bluebottle flies,
And moths were of no small account in his eyes;
An 'industrious flea' he'd by no means despise;
While 'old daddy long-legs,' whose 'long legs' and thighs
Passed the common in shape, or in colour, or size,
He was wont to consider an absolute prize."

At Ribchester Bridge we found the Spotted Dead-nettle (*Lamium maculatum*) growing plentifully on a bank on the north side of the river, near the bridge. On the south side, both above and below the bridge, the Soapwort (*Saponaria officinalis*) is very abundant, as indeed it is in many places between Ribchester Bridge and Preston. The Whorled Mint (*Mentha sativa*) grows on the south bank of the river below the bridge; and by the path to Sale Weel we observed on one of our visits one or two fine Bird-cherry trees (*Prunus Padus*).

BOTANICAL NOTES, NOTICES, AND QUERIES.

PALE PRIMROSES.—'Phytologist,' vol. vi. p. 64.

If I may trust to analogy, H. B.'s quotation from Todd solves the difficulty, but, like many other good thoughts, it was thought or discovered *before*. Shakspere himself tells the reason why "they (Primroses) die unmarried ere they can behold bright Phœbus in his strength." I will not quote the residue, because H. B. knows it as well as I do.

Warton, in his notes and annotations on 'Lycidas,' where he quotes Drayton, Browne, Drummond, Watson, etc., uses the same words quoted in the 'Phytologist' as Mr. Todd's.

The original, whence all these allusions are derived, is in Ovid's "Metamorphoses," where this most ingenious poet describes the love of Apollo, or Phœbus, or the Sun, for the first and fairest of all his *flames*, Daphne, the beauteous daughter of old Peneus, one of the aquatic deities. This unsuccessful suit was invented by the crafty son of Venus, in requital of some slights received from Phœbus. The former shot the latter with one of his sharp poisoned arrows, which inflamed the great author of heat, and the unwilling nymph with another, which made her freezing cold, like the Snowdrop or the pale Primrose. Daphne vowed to die a maid, *i.e.* unmarried, and, being pursued by her ardent lover, she prayed that the earth might gape and devour her. The earth clung to her feet, which were soon rooted in the soil:

"Scarce had she finished, when her feet she found
Benumbed with cold and fastened to the ground;
A filmy rind about her body grows,
Her hair to leaves, her arms extend to boughs;
The nymph is all into a *laurel* gone,
The smoothness of her skin remains alone."

Ovid again, in the first fable of the tenth book, enumerates the trees which formed a grove about the celebrated musician Orpheus, when he went to the world below to recover Eurydice:

"*Non Chaonis abfuit arbos,*
Non nemus Heliadum, non frondibus esculis altis,
Nec tiliæ molles, nec fagus, et INNUBA LAURUS."

"Nor trees of Chaony (Chaonian Oaks),
Nor Helian grove, nor foodful Esculus,
Nor Linden soft, nor smooth-rinded Beech,
Unmarried Bays, the brittle Hazel,
Ash, whose spears we praise,
Were absent."

Apollo loved Daphne, but she did not reciprocate his affection, and hence she is represented by the poets as being unmarried, or dying unwedded. This poetic fiction is perhaps the origin of the epithet "unmarried," applied to plants which love the shade, which the Primrose does and which the *Cowslip* does not, or the latter loves less to blush unseen than the former does.

The physical or actual history of the economy of the Primrose points to the same fact; its shade-loving propensity is the origin of the term "unmarried," so far as it is applicable to this early flower.

The whole Primrose tribe, though not shy flowerers, are not very productive of fruit. This is the case with most plants which increase readily by the roots. The Primrose and Oxlip readily increase their radical crowns; and when nature is prodigal in one extremity she is occasionally economical in the opposite direction of the plant.

The early-flowering Primroses rarely produce seed; they flower abundantly, but are like many plants which can live in the open air in England but never flower for want of sufficient light and heat, so early-flowering plants of this genus rarely produce seeds. Late-flowering Primroses mature the contents of their capsules.

The Primrose loves a cool shaded situation under a hedge, on the verge of a ditch, or in sheltered parts of woods. Here, like *Daphne*, they escape the fervent attentions of Apollo, and the consequence is they die unmarried, as Shakspere says, or they go to their graves unblest by any pledges of the warm attachment which generally exists between Phœbus and his numerous *paramours*.

The fiction, or fable, or common *saw* is poetical, but, like many other productions of the imagination, it may originally have derived its being from the natural circumstances and accidents of these plants.

The International Exhibition.

African Vegetable Products.—The first packages which were delivered were from Liberia, the colony of liberated blacks; and some interest is attached to these unpretending-looking packages of Palm-oil and other articles of native produce, on account of their being the first arrivals. In this respect the liberated negroes contrast most favourably with the free and enlightened Republic which at one time held them in bondage. The Northern States of America have declined to send anything

to the Exhibition; they have, no doubt, enough already on their hands in endeavouring to coerce the slaveholding section into the Union; but the spirit in which they have met the offer of the Commissioners to grant them space for exhibition in the "World's Fair" is by no means creditable to them. "At the last Exhibition," said one of the principal speakers, "we sent reaping machines; the sword is now our reaper, and the rebels are our harvest." Such a sword as is wielded by the North would certainly not be remarkable on account of its effectiveness, and, as to the rebels, they have first to catch them before they can send them for exhibition. It is a curious fact that the Southern States, denounced as rebels, have applied for space, and would send some contributions to London, but their claim has been refused, on the technical ground that they have not applied for space through commissioners appointed by any recognized Government—certainly a somewhat harsh proceeding, and not quite in keeping with that principle of impartial neutrality which has been decided upon by the Government. We have granted to the South belligerent rights; the Commissioners might surely have accorded exhibiting rights to the Confederacy, even though they are fighting for independence and State rights. As the North will not come to our Exhibition, and as the South must not be admitted, we shall probably examine with all the more interest the humble contributions of those whom both united to keep in bondage.

Vegetable Products from St. Helena, Newfoundland, etc.—Closely following on the goods of Liberia has been a consignment from St. Helena, Prince Edward's Island, and Newfoundland. From Prince Edward's Island there will be a giant spar, the height of which will overtop the Monument of the Fire of London—a single tree—the largest perhaps that has ever been cut in the magnificent forests of that province. Unless it is placed under one of the domes, there is no part of the building where this lordly representative of the Pine-forests can be exhibited, and it will, in all probability, be used as a flag-staff outside the Exhibition, or perhaps in the grounds of the Horticultural Society.

Woods from Tasmania.—There will also be, in another part of the building, a trophy from Tasmania, consisting of a column nearly one hundred feet high, made of native woods, capped with the flag of the colony, and surrounded at the base with ornaments of woods, worked up into models of whale-boats and whaling-apparatus. The column will have a winding staircase within it, and will, no doubt, attract considerable attention.

Atropa Belladonna. (*Deadly Nightshade.*)

There is growing in my garden a magnificent plant of this species, in height seven feet, and in circumference ten feet; the branches are fifteen in number, and about the size of a stout walking-stick. It blossomed in August, and was covered with berries until this month. It is now on the decline; but I observe that most of the leaves have been eaten by some particular kind of caterpillar,* and the berries I have noticed the *thrush* eating. These facts may be worth recording in the 'Phytologist,' and to show that, although this plant is so deadly poisonous to man, it affords food to birds and insects. S. Beisly.

Sydenham, October, 1861.

* The name of the caterpillar I should like to know.

Claytonia alsinoides.

Extract from Correspondence.—I have to tell you of another station for the *Claytonia alsinoides*, which grows in the woods of Murrayshall, about three miles east from Perth city; it is also about three miles in a direct line (south-east) from the Station, in the wood of Scone, where the plant abounds. We have now in Scotland, and near Perth, two well-authenticated localities for this succulent plant, and one in England. What can be said against its being a true native of "British soil"?

Perth. John Sim.

[Can any reader of the above answer our correspondent's question?]

The Isle of Man.

Clematis Vitalba and *Convolvulus sepium* are both wanting in our Manks Flora. The Primrose in spring, the Foxglove in summer, the Heath in autumn, and the Furze or Gorse "with golden baskets hung" all the year round, are pretty well the only flowers sufficiently massed to make much of a show. Here, upon our wild storm-beaten cliffs, *Hypericum pulchrum* and *Hypericum humifusum* exist in tolerable abundance, while both *Hypericum perfoliatum* and *hirsutum* are entirely wanting. S.

Rare Plants of Bedfordshire.

(*From Gough's 'Camden.'*)

Anemone apennina, Mountain Wood Anemony: in a wood near Luton Hoe (see Abbot's Fl. Bed. 119). *Astragalus arenarius*, Purple Mountain Milkwort: on both sides of Barton Hills, four miles from Luton. *Bupleurum tenuifolium*, Least Hare's-ear: in meadows and pastures near Eltelsley, in the road from Cambridge to St. Neots. *Convallaria majalis*, Lily Convally, or May Lily: in woods near Woburn, from whence the London markets are in general supplied with this plant.* *Dianthus deltoides*, Maiden Pink: on Sandy Hills, not far from the Roman camp. *Gentiana Amarella*, Autumnal Gentian, or Fellwort: on Barton Hills, not far from Luton, and upon a waste chalky ground as you go out of Dunstable towards Gorhambury Hills. *Hippocrepis comosa*, Tufted Horse-shoe Vetch: on chalky hills everywhere. *Melampyrum cristatum*, Crested Cow-wheat: in woods, particularly near Blunham, in Wixamtree Hundred. *Monotropa Hypopithys*, Bird's Nest, smelling like Primrose roots: in woods. *Pimpinella major*, Great Burnet Saxifrage: in woods and hedges of a limestone soil. *Ribes nigrum*, Black Currants, or Squinancy berries: in wet woods and banks of rivers; at Blunham and elsewhere. *Serapias longifolia grandiflora*, White-flowered Bastard Hellebore: in woods frequent. *Trifolium ochroleucum*, Yellow-flowered Trefoil: in chalky meadows and pastures; Potton, Everton, Clapham (Abbott, 162).

Vicia Orobus.

This plant, which grows so plentifully in many parts of Merionethshire, especially round about Bala and between Dolgelly and Traws-fynydd, "was observed by Dr. Burgess in great plenty on a bank facing the Tweed, on

* Aspley Wood, rare, (Abbott, 76). Can any reader inform us if the rarer Br. species, *Convallaria bifolia*, grows in either of these woods?—Ed.

the north side, about a quarter of a mile below the public-house at the Beild:" *Lightfoot.* "Near Longformacus, Berwickshire:" *Rev. A. Baird.* —Johnston's 'Flora of Berwick,' p. 160.

The elevation in some parts of Wales exceeds the altitude assigned in the 'Cybele,' about which the author is, as usual, uncertain. He is "not quite prepared to say with certainty whether most of the stations are below or above from fifty to two hundred yards."

In Wales, this fine specimen is pascual, and possibly sylvan. It is rupestral also when the rock just crops out, or is thinly covered with a grassy turf. It will grow where the soil is not more than a few inches deep; for both its roots and stems are rather horizontal than perpendicular. ALPHA.

YORKSHIRE MOSSES.

By the way I gathered *Fissidens Taxifolii* here on Saturday; is it considered a rarity?—I am not well versed in geography of Mosses. Also *Bartramia fontana* on the moors last summer, in fine fruit.

CHARLES P. HOBKIRK.

EPIPACTIS PURPURATA AND E. MEDIA.—Phytol. vol. vi. p. 62.

Mr. Wollaston asks, "Is *E. media* a parasite, or only a synonym of *E. purpurata?*" I presume that *E. media*, Fr., and *E. ovalis*, Bab., are equivalents, or synonyms of the same plant. In the communication above quoted there appears to be a slight error. In line 3 from the end of the page it is printed, "Are *these* not sufficient characters," etc. As there were no antecedent characters, I suggest that the word *these* should be *there;* and I have no doubt but that it was thus written, though misprinted *these*. The subject is not exhausted. TAU.

JACOB RAYER.

A contribution to the articles on defunct London Botanists, viz. a brief memoir of Mr. Jacob Rayer, the discoverer of *Althæa hirsuta*, etc., is postponed to another month.

EXCHANGE OF PLANTS.

Mr. B. M. Watkins, of Glewstone, near Ross, Herefordshire, wishes to obtain a few correctly-named British Mosses, in exchange for an equal number of specimens of flowering plants, which may be selected from Mr. W.'s Lists in 'Phytologist' for June, 1861, p. 188, and for February, 1862, p. 61.

Communications have been received from

W. Pamplin; Walter W. Reeves; James Lothian; John Sim; S. Beisly; W. Ashley; J. G. Baker; J. S. M.; B. M. Watkins; W. P.

RECEIVED FOR REVIEW.

Notes on Books.

ERRATA.—Vol. V. p. 274, for "*Epilobium latifolium*" read *Epilobium angustifolium*, and add *E. hirsutum*. The tree referred to as a remarkable instance of the union of two branches, at p. 333, is a Common Plane or "Sycamore." Specimens of the Ranunculus referred to at p. 332 shall be sent in the flowering season.

KENTISH BOTANY.

Romney Marsh, its general Aspect, Formation, and Vegetation.

Our readers will, it is presumed, have a better idea of Romney Marsh when they are reminded that it is a miniature Delta, of which there are several in the world besides the famous ancient Egyptian Delta.

It has not the shape of the Greek letter *delta*, neither is it so large as the *deltas* of the Amazon, the Ganges, the Indus, or of the Nile, but it has been formed on principles, and by natural operations, exactly similar to those which have produced the alluvial deposits at the efflux of the above-named celebrated rivers.

It may be conceded that the Rother, the chief or sole river in Romney Marsh, is not so large as the Nile, neither are the two towns situated at its eastern and western extremities, quite as large, and of as eminent historical fame, as Alexandria and Damietta. But both Rye and Hythe are ancient towns, and probably as old as their Egyptian rivals, although not so celebrated.

The Nile is reputed to have seven mouths, by which it discharges its waters into the Mediterranean; the Rother has probably as many, but individually and collectively they contain and convey less water to the ocean, because Kent is much smaller than Egypt and Abyssinia.

The analogy nevertheless is perfect; *parvis componere magna*, a dwarf may fitly be compared to a giant, only he is not so big. Romney Marsh, its river with its numerous outlets, its towns and its aspect, may be called a miniature representative of the great deltas formed by rivers which flow thousands of miles. It may be truly assumed that all reading people have read more about Egypt than they have about their own native land, and *à fortiori* that they know infinitely better what is the nature and aspect of the delta of the Nile, than they do about the formation and general appearance of the delta of the Rother, *i.e.* Romney Marsh. The principal branch of this river now enters the English Channel two miles south of Rye, and there are other streams or drains, or guts, as they are called here, which convey the water from the interior of the marsh, and discharge it into the sea at or near Lydd, Dymchurch, etc. The principal stream once flowed into the sea at New Romney, but in King Edward I.'s time it was diverted or turned out of its ancient course by a

storm which visited these parts. This change of channel was the primary cause of the decay of New Romney.

The entire surface of Romney Marsh is flat; its greatest elevations are not above twenty feet above the usual flood-tide; and these elevated parts are, first, the water-barriers, which protect the marshes from inundations; second, the beach, which is mostly composed of water-worn pebbles; and third, the hummock of sand at Lydd.

The whole extent of this flat is intersected by innumerable ditches, usually quite full, and on their margins and under and on the surface of the water there is abundance of most luxuriant vegetation. The common productions of these wide, open drains are reeds, rushes, pond-weeds, the usual aquatic and marsh-loving plants of England. The rarer species, which are not very numerous, will be more distinctly noticed in the sequel.

The most prominent of the common plants is *Scirpus maritimus;* the rarer species, with ample notices of their precise location, statistics, etc., will appear in the account of our peregrinations through this district.

The plants of Romney Marsh are connected by the common character of palustral or aquatic or maritime vegetation; they consequently form but one class, which will be sufficiently illustrated in the following brief notice of our walks in this marshy, uniform, and rather uninteresting tract.

We left Margate for Romney Marsh on Monday morning, the 13th August, one of the very warmest days of the warmest month of the warm summer of 1861. Our train reached Ashford between ten and eleven o'clock in the forenoon, where there was a delay of half an hour, till the train to Rye, Winchelsea, and Hastings reached our station. This latter train conveyed us to Appledore, through Ham Street, in less than half an hour.—*Note.* Romney Marsh may be said to commence on this the north side of Ham Street; for here the *Althæa officinalis,* the most ornamental and the most abundant plant of these parts, made its first appearance. Here it was very conspicuous, as it was everywhere else, and at this late period of the year was in perfection.

At Appledore station, which we reached about twelve o'clock, we alighted, and walked to the town or village, which is a mile and a half from the railway; the way is by the Rye road, and it may be varied by turning to the left, and taking the path

through the meadows, a tract more conducive to botanical purposes.

Appledore is said to be a corruption of *Apple-tree*, and it is not a very remote or unreasonable etymology, though Apple-trees are now as rare in Romney Marsh as Dr. Johnson fancied trees were in Scotland.* Like many other places in Kent, it was better known and more celebrated when it was washed on two sides by the sea, which is now several miles distant from the village. In 793 it was plundered by the Danes, the scourge of this part of England in the Anglo-Saxon period. In the reigns of Edward III. and Richard II., the sea reached Appledore, as we learn from Dudgale's great work on the drainage of the Fens, etc., of England. (See Dugdale, p. 43, and *infra*.) Its condition in the sixteenth century is described by our great antiquary Leland in the following terms:—"Appledor of sum is countid a membre of Rumeney, is a market town and hath a goodly chirche in Kent and our Ladye of Ebery in Oxeneye toward a X myle by cumpace and cumpaced about with salt water, except where it is divided by fresh water from the Continent, part in Kent and part in Sussex."—Leland, vii. 142.

We looked about Appledore during an hour or more, but could see no traces of the sea. It is now surrounded by rich meadow-lands, from which the natives were carrying the produce, which, for so fertile a locality, was not very abundant last season. There are however some trees at Appledore,—not fruit-trees, only Willows, Poplars, and other water-loving species.†

On our way to and from Appledore we observed abundance of Marsh-mallow, *Althæa officinalis*. This plant at this season, August 13th, was in great luxuriance and beauty, and it was seen in all our future peregrinations; we never lost sight of it for ten minutes, except when we were botanizing on the beach near the sea, and these amounted to some forty or fifty miles; but there was scarcely so much as a hundred yards of our journey where

* While the Doctor was travelling in Scotland, he lost a huge stick of his in the treeless island of Mull. Boswell told him he would recover it; but the Doctor shook his head. "No! no!" said he, "let anybody in Mull get possession of it, and it will never be restored. Consider, Sir, the value of such a piece of timber here."

† Trees were once plentiful in the Marsh, and near Appledore, as any one may see, for many huge logs dug up during the formation of the railway are lying on the meadows along the line. These black shapeless masses of half-decayed timber appear to be oak.

this plant did not line the roadsides or crown the margins of the ditches, with its tall stems, clothed with its soft, velvety, pale-green, or hoary leaves, and crowned by its large showy pinkish or rosy flowers.

The town or village of Appledore was not sufficiently central for a station from which we could perambulate the Marsh in all directions, and indeed its inns were not first-rate. Superior accommodation, like that obtainable in Thanet, is not to be expected in Romney Marsh. The hostelry capabilities of Appledore are of a humble kind, as we learned by experience; therefore we returned again to the Appledore station to ask the way to New Romney, which is said to be ten miles from the town of Appledore.

We were told to go straight ahead towards the east, neither turning to the right nor to the left hand; and we were further told that the distance was eight miles from the station. A public conveyance on a road through a country where there are only a few detached houses here and there, and these occupied by farmers, who keep their own conveyances, was not to be expected. The town population of Lydd make use of the Appledore station, and the people of New Romney go to Ham Street when they want to meet the railway trains.

About two o'clock we left the station, and walked very gently, for the heat was intense, and the road not remarkably smooth, nor agreeable for pedestrians. It was not quite so disagreeable as walking on the pebbly beach about Dungeness, which tired our toes and tried our patience. Our road passed by Snargate, Brenzet, and Brookland, churches rather than villages; the former are not very scarce compared with the small population.

The only notable plant observed during this our long walk to New Romney, was *Nymphæa alba*, var. *minor*, which grew in a very deep, broad ditch before coming to Brookland, probably about a mile from Appledore station. In the same place were *Butomus umbellatus*, *Nuphar lutea*, *Potamogeton natans*, and other common aquatic plants, especially *Hydrocharis Morsus-ranæ*, which flowered profusely the last summer, 1861.

After walking a couple of hours or so on this pebbly, dusty road, under a scorching afternoon sun, we reached Old Romney, which is now reduced to a few scattered farmhouses, and a small, solitary church, which is a furlong or more from the road. Be-

fore reaching this ancient town, about two hundred yards from the road which branches off to Lydd, by the roadside we observed a few plants of *Crepis biennis*. The bank on the left-hand side was for a quarter of a mile dotted here and there with these plants. This was the only locality in Romney Marsh where this species was observed.

The following account of this very ancient seaport is from Lambarde's 'Perambulation of Kent' (page 197):—"There be in Kent therefore two townes of this name, the *Olde* and the *New Rumney;* as touching the latter whereof I minde not to speake, having not hitherto founde either in recorde or hystorie anything pertaining thereunto; but that little which I have to say must be of *Olde Rumney*, which was long since a principal port, and giveth cause of name to the new towne, even as itselfe first tooke it of the large level and territorie of marishe ground that is adjoining."

"In the time of Godwine, Earl of Kent, this haven was invaded by him and his sons, who 'led away all such ships as they found in the harborow there.'"—Lambarde, 198.

In Hasted's time, 1785, the village of Old Romney consisted of "about fifteen mean, straggling houses, with the church in the midst of them, where it is much sheltered by trees, which gives it a more pleasing appearance than any part of the adjoining country, which, as well as the rest of this parish, is an open, unsheltered flat of marshes."—Hasted, 518, vol. ii.

The houses around the church have disappeared. The trees are still there, or some of them, and they give to this remnant of a very ancient town a more pleasing appearance than any part of the adjoining country.

Old Romney, said to be on a hill, which is so small that we did not see it, is probably not more than two or three yards higher than the level of the sea at spring-tides, and was at an early period one of the Cinque Ports, though it is now from three to four miles distant from the sea.

New Romney is two miles beyond its more inland, and—if we can trust the name—its more ancient namesake.

In the time of Hasted, the historian of Kent, New Romney was exactly what it is now, a decayed and decaying town like Sandwich, only more desolate in appearance. It was a flourishing town in the reign of Edward the Confessor, and continued

in this condition till Edward I.'s reign, when the river Limen or Rother was forced from its old channel by a tempest, which destroyed great part of the town, and several adjoining villages. "After this calamity the town never regained its former consequence, but continued to decay from time to time afterwards."

In its early days it had four churches besides the present one, and contained eighty-five burgesses. It has now, 1784, one hundred houses and five hundred inhabitants.*

The list of the scarce plants found growing in or near this place in Ray's time, the seventeenth century, is not a long one, but some of them are found there no more, viz. *Urtica romana*, Roman Nettle, *Bifolium palustre*, Marsh Ophris, or Twayblade, *Mercurialis annua glabra vulgaris*, French Mercury; near Brookland, in this marsh, *Buglossum parvum longifolium, minimo flore*, the little long-leaved Bugloss, with a very small flower. (Merrett's 'Pinax,' p. 17.) *Asperugo procumbens? Halimus sive Portulaca marina*, common Sea Purslane; in Romney Marsh, *Atriplex portulacoides*. (Ray, 153.)

In Leland's 'Itinerary,' quoted in Gough's 'Camden,' there is the following notice of this ancient member of the Cinque Ports, alas! a port no longer:—"Rumeney is one of the V. ports, and hath bene a metely good haven, yn so much that withyn remembrance of men, shyppes have cum hard up to the towne and cast ancres in one of the churchyards. The se is now a ii. myles from the towne, so sore thereby now decayed that where there wer iii.

* "New Romney (either the Old or the New) seems to be the port of the Romans, so termed, and that either from the Greek *Limeen*, a port according to Leland, or *Limeen-palus*, a moor or fennish place, as the soil hereabout for many miles is none other, which Ethelwerd's 'Linneus Portus,' and the old writings of the parish and deanries name of Limne or Limpne, seem to favour. Romney, I say, as I conceive, was that Roman port Lemanis, which, although at present and for some hundreds of years lying dry and unbestead of any channel of fresh water to serve it, yet had of old a fair and commodious river running along it, and unlading or emptying itself into the sea, in those days nothing so remotely from the town as (by the sands and beach in process of time cast up and unbeaten by the sea, and for the want of the fresh to repel and keep it back, stopping up the harbour) since and now it is. This river, the Rother, flowed by Appledore, and from thence to Romney."—*Somner on the Roman Ports and Forts in Kent.*

Note to Somner's assertion that Romney is Portus Novus of the Romans.—Both Lambarde and Camden give this honour to Hythe, and their view is favoured by etymology, viz., Greek, *Limeen Kainos;* Latin, *Portus Novus;* Anglo-Saxon, *Hythe*. The modern Lym or Lympne, West Hythe, and Hythe, are still in existence, to testify to the accuracy of our great antiquary, Camden.

great paroches and chirches sumtyme is now scant one well maynteined."—Leland's 'Itinerary,' vii. 142.

We walked down the main street of New Romney and back again, like the King of Spain, who led his army up the hill and led them down again, as the nursery legends relate. The appearance of the town did not induce us to lodge here, and we walked on to Lydd, which was only three miles further, and here we baited and rested for the night. There is a nearer way than the one we took, viz. the road which branches off to the right at Old Romney. This would have saved two or three miles.

There is a very pleasant walk from New Romney to Lydd, across the meadows and over the sandhill, at the extremity of which is the little town of Lydd, which was a pretty and considerable market town when visited by Petiver and Sherard in 1714. (See 'Phytologist,' vol. vi. p. 117.)

The following description of this ancient town, from Leland's 'Itinerary,' shows what mutations it has undergone since the sixteenth century:—"Lydde is counted as a parte of Rumeney, and is a iii. myles beyond Rumeney Town and a Market. The town is of a prety quantite, and the towneseh (townsmen) men use botes (boats) to the se, the which at this time is a myle of. The hole town is conteyned in one paroche, but that is very large. In the mydde way (or their about) betwixt Rumeney town and Lydde the marsch land beginneth . . . and contynneth a prety way beyond Lydde, and running into a poynt y^{t} standeth as an armed foreland or a nesse. Their is a place beyound Lydde where as a great numbre of Holme trees groweth upon a banke of baches (shingle?) throwen up by the sea, and their they bat (catch) fowle and kill many birdes."

Next morning, the 13th of August, we started about half past five o'clock to go to the Woolpack Inn, near Brookland, to meet a friend from London. This walk, which was about six miles, yielded nothing which we had not previously seen, except Dwarf Elder (*Sambucus Ebulus*), which grew by the roadside, a mile or further from the Woolpack, on the road from Lydd to Rye.

After breakfasting at the Woolpack we went into the Marsh to see the natives duck-driving, not a very exciting exercise. The custom in the Marsh is to breed large broods of ducklings under hens, and when the young birds are old enough to forage for themselves, they are turned out into the ditches. On certain days

the *Marshlanders* assemble to drive their ducks when full grown; those fit for the market they carry off, and turn the rest back into the fen.

While we were watching the sport of driving the ducks, we had time to observe the vegetation of the depressed parts of the Marsh, which in winter are filled with water, forming shallow pools, and frequented by myriads of wild ducks, teal, widgeon, and other aquatic birds.

In August these shallows are comparatively dry, and the vegetation is very much the same as that which grows on muddy seashores. The maritime plants of the Chenopod order abound in these shallow depressions, viz. *Atriplex* and *Salicornia*. The latter, however, was not nearly so luxuriant nor so succulent as it is when in proximity to the salt water. The natives however assured me that it made an excellent pickle. This reminds us of the old saying, viz. "Boil a stone in butter, and the broth or *bree* will be good." Any vegetable substance, if fleshy, and not deleterious, will make a palatable pickle if the pickling condiments be savoury.

When our friend arrived we all set out for the seashore between Dungeness and Rye.

From Lydd to the seashore is a space of two or three miles; and the greater part of this space is covered by an extraordinary mass of shingle, pure shingle, nearly two miles wide, and extending round Romney Marsh from near Dymchurch, to beyond Dungeness towards Rye. The breadth of this singular bed, or mound, or ridge of pebbles, is not everywhere so great as it is about Dungeness Lighthouse, which is near the extremity of this projecting corner, and it is everywhere backed by rich meadows or cornfields.*

When cultivated, the shingle produces excellent, luxuriant crops of clover; wherever there is a bare covering of soil of but a few inches deep, the corn and even bean crops were the heaviest that we had seen. This was between the *Ness*, or point, and the town of Lydd.

The Flora of Dungeness did not appear to us to be a rich one.

* The point of Dungeness gains so rapidly from the sea that it is said to have extended above one mile seaward in living memory. This extension is produced by the accumulation of shingle, which is in constant motion in this part of the Channel, from east to west.

A few *Leguminiferæ*, the Sea Pink (*Armeria maritima*), seen by Sherard and Petiver covering all the meadows on their road from Rye to Lydd (see 'Phytologist,' vol. vi. p. 117), and *Silene maritima*, were the prominent plants of this bleak and dreary region.

We did not see *Pisum maritimum*, which grew here in the reign of Queen Elizabeth three hundred years ago. The original authority for the location of this rare plant here is Camden (Dr. Dillenius uniformly (?) writes the name of our great antiquary, Cambden), who in his 'Britannia' tells us that "it grows among the stones on the west side of Dengeness, near Lyd, in Kent, in great plenty" (p. 319).

We looked into the deep drain or cutting through the great shingle bed, a sort of canal, here called by the cacophonous name of Gut. In this there were abundance of Potamogetons, and similar common aquatic plants, but none worth enumerating. The only rarity observed was *Lepidium Smithii*, and this was so near a cultivated field, that it was only after some considerable discussion admitted to be something different from *L. campestre*, which did not appear in this tract.

After being foot-sore with walking for hours on the bare rounded pebbles, and also wearied with our day's walk, which had continued, with little interruption, for twelve hours, we adjourned to the Dolphin Inn at Lydd, for rest and refreshment. This was our second night at this ancient member of the Cinque Ports.

Next morning, viz. the 14th of August, rose bright and bracing, putting on all the appearances of a fine and warm day. Our plan for this day's walk was to coast along shore as far as Dymchurch, and to return to Lydd by the interior. Therefore at an early hour our beds were quitted, and we soon left both inn and village far behind us. Our way was along the sandhill already described in our walk from New Romney to Lydd, on the 12th instant.

Before leaving Lydd, *Marrubium vulgare* was observed; and on the common, to the east, between Lydd and New Romney, several maritime plants grow, seldom seen so far inland. This extensive inland bank is of small elevation, probably not more than twenty feet, and there are both meadows and cornfields lying between it and the sea. The sand, which is pure sea-sand, is blown in heaps, but hindered from blowing further by the usual

fibrous-rooted plants which grow naturally on sandhills by the shore, viz. *Psamma arenaria, Phleum arenarium, Carex arenaria,* Crow Garlic, Sheep's Scabious, and similar species.

This tract of sand is above two miles from the sea, and, as above said, cultivation has considerably diminished its extent, and it is probably destined, in these times of physical material progress, shortly to disappear. On the west the land is depressed into the marsh.

The path to New Romney leads through this sandbank, and then through the meadows; and a charming path it is, having the sail-covered sea on the right, and the extended treeless flat of Romney Marsh on the left, well backed by the heights near Tenterden, Eastbourne, etc. In the distance to the east are seen the cliffs about Folkestone, the camp at Shorne, and nearer to the spectator the towns of Hythe and New Romney.

At New Romney we halted for breakfast, and also for surveying the present state of this once celebrated town. Here we met with *Borago officinalis* and *Marrubium vulgare,* neither of them very abundant; *Carduus tenuiflorus* is plentiful everywhere in these bounds; *Chenopodium olidum* and *C. rubrum* are frequent.

In our way to Dymchurch we passed through the warren which is situated between New Romney and the shore. Here we were surrounded with horse-artillery, and had an opportunity of studying the mechanism and the exquisite finish of the Armstrong guns, the great peace-makers of our times. During our search for simples a field-battery was drawn up on the beach, and the practice began, but it did not interrupt our peaceful pursuits.

The warren plants observed were *Trifolium scabrum* and *T. suffocatum, Medicago minima,* and other more common Leguminifers; also *Silene conica,* now past its prime, like some of us who were looking for it, and perchance like some who are skimming this article. *Phleum arenarium* is nearly as plentiful as the pebbles.

From the warren we walked onwards on the Dymchurch road till we reached the beach, where *Eryngium maritimum* and *Glaucium luteum* were both very plentiful and beautiful on the bare shingle, while on the muddy hollow between this natural barrier of pebbles and the sea-wall, we saw abundance of *Frankenia lævis*

growing on flat and wet gravelly parts, spreading over the surface like *Polygonum aviculare*, and at the base of the sea-wall it was hanging down, festoon-like, in masses upwards of a foot long. It was decided that this plant was never seen before in the South of England either more plentiful or more luxuriant than it is about a mile from Dymchurch. Near the same place grew also *Bupleurum tenuissimum*, not in great plenty, but the few examples were very fine.

The other common plants of these salt marshes were *Aster Tripolium*, *Lepturus filiformis*, Sea Orach, *Arenaria marina*, and other common maritime species.

As Dymchurch offers little attraction except its dyke, or sea wall, we were not induced to tarry here, and returned again to Lydd, not along the coast by which we came, but by St. Mary's to New Romney, and by old Romney to Lydd.

On our way back the chief plants that we saw worth recording were *Medicago maculata*, not so plentiful here as we saw it the previous season about Sandwich, Pegwell Bay, and Deal. In Romney Marsh it is comparatively a rare plant. Another capture was *Chenopodium murale*, which will pass muster only when rarer plants are invisible. This was our third and most successful day's botanizing in the Marsh.

On the 15th, a dull and somewhat drizzly morning, we walked from Lydd, where we passed our third night, to Appledore station to breakfast; and, on our way, took our final leave of the Water Lilies before mentioned, which grow near Snargate, or about a mile from the station. These plants, which mostly covered the stream,—it is barely a stream, for we could not tell which way it flowed, whether to the Rother at Appledore, or to the sea at Dymchurch,—or rather their leaves, varied from the size of the leaf of *Villarsia nymphæoides* to that of the largest we had ever seen in the Thames at Walton or Caversham bridges. There was a complete series of sizes; the increase was traceable through numerous steps of enlargement from the smallest to the greatest dimensions. The flowers do not vary so much as the leaves do. Few of them were in flower; but on passing along four days before, one of the medium size had a flower expanded, but on the dull, drizzly morning when we returned, there was not one with an opened blossom.

If *Nymphæa alba minor* be a good, *i. e.* a distinct variety, and

if its characteristic distinction is founded on its small size, a score at least of distinct varieties may be established on the same characters, viz. the diversity of the magnitude of the leaves, etc., from the specimens which are to be seen in this part of Romney Marsh.

From Snargate to Appledore station is only a short mile. At the latter we refreshed ourselves by washing, dressing, and a substantial breakfast. While waiting for the train to Ashford we looked into the ditches close to the railway and saw abundance of *Potamogeton pectinatus;* the water was full of this weed, and the surface, as usual, everywhere in the Marsh, was covered with *Hydrocharis*, and the banks were lined and crowned with the pale rose-coloured large blossoms of Marsh Mallow, relieved with the still taller and not less handsome but commoner *Lythrum Salicaria*, Purple Loosestrife, now in full flower.

It may not be thought out of place to tell our readers who may visit the Marsh, that we did not see the yellow beauty, *Lysimachia vulgaris*,—no common plant, though it has a vulgar name.

Sium latifolium was found near Appledore station subsequently, after our party was broken up. We hope to have more to say about the plants between Appledore and Winchelsea on another occasion. Here our botanizing in Romney Marsh ended.

THE 'LONDON FLORA.'

The Editor has the pleasure of announcing that a new edition of the 'London Flora' is in contemplation, and contributions are earnestly requested. It may not be superfluous to state that this work has no connection with the 'Flora Londinensis,' the celebrated work of Curtis and Sir W. J. Hooker, but is a revival of a much humbler production, which appeared upwards of twenty years ago, and has now been for some considerable time out of print.

The following lines will contain a statement of the objects and limits of this new work with an old title, another candidate for the suffrages of botanists; and also tell something about the sources whence most of its materials will be derived.

The title 'Metropolitan Flora' would have been preferred, if

the author had possessed a prior claim to the name of another book on the same subject, which was published a year or two before that which forms the subject of this notice.

As the name 'London Flora' is indefinite, and might legitimately denote that it embraced a greater or less extent than a single county, or part of a county, or all the contiguous counties, or part of them only, it will be necessary to define with some exactness the area or boundaries by which this work is to be limited. The proposed work will comprehend the natural phænogamous vegetation of the four metropolitan counties, Middlesex, Surrey, Kent, and Essex, and in addition to these such parts of the other home counties as are dovetailed with those above-named, viz. parts of Sussex, Hants, Berks, Bucks, Oxon, and Herts. The plants growing within forty miles of the metropolis will be included in this work.

It may be necessary, for scientific purposes, to regard rather the physical than the time-honoured political divisions of the country. In Kent and Essex the radius of the circle from London as a centre will much exceed forty miles; but seventy, or even eighty miles are practically nearer to town than thirty miles were some few years ago. Complete lists of the plants of the metropolitan counties will be given, and of the rest of the country comprehended under the name *environs* of London, as full accounts as can be furnished.

These are the extreme limits of the country to be included in the above-named work: within these bounds is the area of the 'London Flora.'

Secondly. The sources *now* available for the proposed compilation are, *first*, the somewhat ancient lists of Dr. Jacob, Richard Warner, and J. Blackstone: the last should have been first entered, for he was first in the field, and he has left two works for the benefit of posterity. For Kent there are, besides Jacob's 'Plantæ Faversham ienses,' published in 1777, Mr. Cowell's 'Floral Guide to East Kent,' an excellent work, and the Rev. G. E. Smith's 'Botany of South Kent' (a catalogue of rare and phænogamous plants of South Kent); also a couple of 'Floras' of Tunbridge Wells, a district partly in Kent and partly in Sussex, the earlier by T. F. Forster, 'A Catalogue of Plants growing wild near Tunbridge Wells;' and a more recent work on the same subject by Mr. Jenner, published in 1846. In addition to

these there are lists of Thanet plants; also a list of plants growing about Wye, near Ashford, in a recent work, and a 'Flora of Dover.' For Surrey there are the two 'Floras' of Reigate, Luxford's and Brewer's; also a manuscript list by the late Mr. Salmon and other Surrey botanists, etc. etc.

On the botany of Middlesex, we have one of the very earliest local Floras extant, viz. Blackstone's 'Catalogus Plantarum circa Harefield nascentium;' also the 'Flora of Harrow,' by a reverend contributor to the 'Phytologist;' and in the Editor's possession there is a manuscript list of plants which grow spontaneously near Hampstead. The Flora of Richard Warner, viz. 'Plantæ Woodfordienses,' with T. F. Forster's additions, is as yet our only printed authority for Essex plants, saving and excepting always the 'Botanist's Guide' by Turner and Dillwyn, and its more recent namesake by H. C. Watson, Esq.

In addition to all the above-named works, either in print or in manuscript, there are the Opuscula of Johnson, the celebrated editor of 'Gerarde's Herbal' and the *facilè princeps* (the prince) of the local botanists of his time. The 'Phytologist,' both the Old and the New Series, is a treasury of local botany all over the kingdom, and especially in the metropolitan counties. The 'Flora of Herts,' the lists of Sussex plants to be found in several publications, will be laid under contribution where the information they contain can be made available. These are the sources from which this new 'London Flora' is to be compiled.

Thirdly. The principle proposed for the arrangement or disposal of all these materials will be, as far as circumstances will admit, as follows:—

In the first place, all the plants usually called common, such as the Annual Poa, the Shepherd's Purse, the Common Groundsel, the Red Henbit, and other examples of species which occur everywhere, will appear in the catalogue without any special locality being entered, but with the habitats (situations where they usually grow). The rarer species (and a liberal construction will be given to this term, rare or rather rare,) will have their particular locations precisely described. It is believed that the publication will be more useful, especially to such as are commencing the study of botany, if the characters of the species, genera, and orders be briefly but plainly exhibited; and therefore the plan adopted in the original 'London Flora' will be carried out in the proposed work, as far as space will permit.

These definitions will contain only such technicalities as are indispensable; and they will be as short as is consistent with perspicuity; neither elaborate nor obscure, being rather distinctive than exhaustive.

Fourthly. The co-operation of all who take an interest in local botany is hereby requested; and a few hints are here suggested to show the benevolent the kind of information which will be useful. First, special notices of all additions of rare plants, in those districts which have been the subjects of local Floras, *e. g.* Harefield, Woodford, Faversham, Reigate, etc., viz. the plants which might have been overlooked hitherto, or have been introduced since the publication of these catalogues; and also lists of those species which have disappeared in the course of agricultural progress by improvements of the land, by enclosures, buildings, and all the physical mutations consequent thereon.

A series of queries on these subjects, viz. on the loss of certain plants and the gain of others, will appear from time to time in the 'Phytologist.' Answers to these queries, or any other original information about the location of rare plants, whether *old* or *new*, will be very useful; and the donors will have the pleasure of contributing to the diffusion of useful knowledge,—a service which will be duly appreciated, by all and especially by metropolitan botanists.

Fifthly. It may be worth while to state that all the phænogamous species spontaneous in the British Isles, will be appended to the metropolitan plants, and briefly described and located. The work consequently will be a *catalogue raisonné* of the 'London Flora' and also of the native phænogamous productions of Great Britain.

Lastly. The aim or object of the proposed work is the following. In the first place it is intended to supply a very urgent want, viz., that of a guide to the botany of the environs of London. Many of the great cities and towns of England, Scotland, and Ireland have works exclusively restricted to their spontaneous products. For example, Manchester has two Floral guides; Liverpool three —or she will soon have three; Bristol, Nottingham, Bath, Cheltenham, have their Floras. Reigate, a little town, has a brace of books on its botany. The parishes of Harefield, of Woodford, Askern, etc., are celebrated in the botanical literature of England. Is it not a reproach to the botanists of London, that they

have not hitherto supplied what is confessedly a *desideratum*, a thing to be desired, a work on the botany of the environs of London?

Besides this, the intended publication assumes more of a utilitarian than of a sentimental character, when it is considered that there are thousands of young Æsculapians, or Nosologists, or Therapeuticians, studying at the many metropolitan hospitals of this great metropolis, and that all of them need a guide or a text-book as well to the localities as to the classification and sanative qualities of the various herbs which form the vegetable part of their Pharmacopœias and enter into their Galenical preparations, mixtures, embrocations, etc.

There are, besides the juvenile members of the healing arts, several amateur botanists resident in the metropolis, to whom a 'London Flora' will be a useful *vade mecum*. The botany of the metropolitan counties, though now well known, has to be gleaned from many sources, as has been above shown; and the intended new work will be a condensed epitome of all that is known about the spontaneous growth of the district at the date of its publication.

The provincial members of the fraternity who come up to spend a few days in London, will also herein get such information as they are likely to want, and such as they have not time to cater for themselves.

Finally, this work will be useful to neophytes who are only beginning to study the science. Here they will find it easier to puzzle out the names of the London species, than if they had to hunt them out in the entire collected plants of the British Flora.

Note. The compiler and editor of the proposed new work on Metropolitan British Botany, has been a resident in London, and occasionally in all the counties with which it is politically and physically connected, for nearly forty years; and his botanizing has been continuous and mostly confined to those counties. He has also associated and corresponded with the most eminent local botanists of the district during the afore-mentioned period, several of whom, alas, have departed to their rest, though their memory is still as green as a forest in leafy June; and he confidently expects that the assistance which he has often had the pleasure of acknowledging, will be forthcoming for his use in accomplishing his purposed undertaking.

His ambition is to produce a useful, substantial, and comprehensive work; one which will include the essence of several publications. His desire is to make it serviceable to the greatest number of students by brevity, simplicity, and perspicuity. It will be a genuine "Book of Knowledge" on the subject of London Botany; and, in imitation of the title of a book celebrated many years ago in nurseries and dames' schools, it may be called 'Botany made Easy,' or as the booksellers of those days abridged the name, 'Botany Easy' (Reading Easy).

There is a common but senseless sneer about the danger of a little knowledge, but it is not the "littleness" of the "learning" that is the "dangerous thing," but its incompleteness and inexactitude. The information supplied on the subject of metropolitan phytology will be neither inexact nor incomplete.

It may not furnish the student with the qualifications necessary for a public teacher, nor to occupy a professorial botanical chair; but it will qualify him or her for enjoying and admiring one of the fairest portions of the visible creation, and it will invest a walk, at all seasons and in all places, with an interest and a charm which is unknown to those who are unqualified to estimate the beauty of vegetation.

JOHN BLACKSTONE.

Some Account of John Blackstone, and a Notice of 'Fasciculus Plantarum circa Harefield sponte nascentium.' (A Catalogue of Harefield Plants.)

This celebrated London botanist, an apothecary in Fleet Street, and the author of the first complete local Flora which we possess, was probably born about the end of the seventeenth or near the beginning of the eighteenth century. He died in 1753. (See Pulteney, vol. ii. p. 273.)

The sole memorials of Blackstone generally known, are his Flora of Harefield—if our readers will excuse the anachronism, for the term *Flora* was not used then in its modern sense—and the *Specimen botanicum* quoted below. There is a copy of Ray's 'Synopsis,' the second edition of 1696, which has his autograph, and also that of Thomas Birch, Maii 16, 1753; hence it appears

that this copy came into the possession of the latter owner the very year of Mr. Blackstone's death. The following note is in his holograph, "*Plantæ quæ in hoc libro hæc nota præfixa est* (×) *in nostro sicco horto asservantur.* J. Blackstone, 1736."

Our author appears to have had in his herbarium most of the plants of Ray's 'Synopsis.' In the margin opposite to the names of the *rariores* there are notes of fresh localities where Mr. Blackstone had seen them. These are chiefly in the home or metropolitan counties and in the adjoining shires of Bucks, Oxford, Wilts, Berks, etc.

This work on the botany of a single parish, is curious and valuable; for it is the *first* example of a complete enumeration of the productions of a small district, a tract containing probably not more than from sixteen to twenty square miles, and it has been the pattern which subsequent botanical topographers have successfully imitated. They could not have had a better model; for the *loci natales* (the localities)—as he calls their places of growth—are ample, precise, and satisfactory. Some of them, no doubt, have long ceased to produce the species which grew there in his time, because the land is now used for more important crops than *simples*. Though this is not to be regretted, still it is interesting to hunt out the remains of the ancient vegetation and ascertain the few species that still linger about the ancient *loci natales*, the former habitats.

We are indebted to this eminent London Simpler for another work, one still more important to the historian of the anciently known localities of British plants, viz. Specimen Botanicum, *quo Plantarum plurium rariorum Angliæ indigenarum* Loci natales *illustrantur*. This was published in 1746, and contains 106 pages, and describes the *loci natales* of 366 species of the more uncommon, or unfrequent, or rare English plants. The arrangement is alphabetical, as in the Harefield List, and the work may be described as the first "Botanical Guide" to the British botanist.

In the catalogue (alphabetical) of the Harefield plants, Mr. Blackstone only quotes one contemporary botanist. Did he labour alone? Almost. He quotes the works of Parkinson, Gerarde, Merret, Petiver, Plukenet, Morison or Bobart, Ray and Lobel, all eminent English botanists; and among foreigners, Caspar Bauhin, Chabræus, Dillenius, Tournefort, and Scheuchzer.

The references to these celebrated Continental authorities prove that he was learned in the literature of the science.

The number of the Harefield plants is above 500, and they are contained in 112 pages: and there is an appendix to the book, of six pages, consisting of short notes relating to Harefield and its history. The preface, explanations, title, dedication, etc., fill up eight pages. The typography is good, and the appearance of the book very creditable.

The chief localities (*loci natales*), which, as before said, are well defined, are the lanes about Harefield, Harefield Common, and above all the chalk-pit near the paper-mill at Harefield.

The nomenclature is chiefly that of C. Bauhin's '*Pinax*,' with the synonyms of Ray, Gerarde, and Parkinson; other authors are sparingly quoted. There is no difficulty in identifying his ancient names with the modern terminology; for his synonymy, like his habitats, is clear and copious, and his references are exact.

So far as can be gathered from his work, he laboured alone; both in the collecting of his materials and in the compilation of his book. Mr. Ashby's name is the only one that appears as an authority; and this gentleman is quoted but *once*, viz. under *Fritillaria Meleagris*, as having known this plant as spontaneous in the neighbourhood, for upwards of forty years.

Our author acknowledges no other friendly aid; and hence it is inferred that he had no associates in this scientific labour.

The parish of Harefield is no longer in the same condition as it was when visited and botanized by the apothecary of Fleet Street. Its Common has shared the fate of many other commons, which we once knew as real commons; it has ceased to be common property for at least a century. Harefield itself is a good specimen of an English village, and has probably been unaltered and unenlarged in these days of physical or material progress, but remaining exactly as it stood in the days of Blackstone. The church, the rectory or vicarage, the manor-house, the park, the woods, the lanes, and especially the river, the meadows, the cornfields, with paths across, are still as in the days of old. There is the churchyard, the rookery, the inn, the mill, and probably the old chalk-pit. In spite of all the improvements, good botanizing about Harefield is still possible; for example, in the old park, early in the summer or late in the spring; and in the end of

leafy June and in warm July, the Colne, with its ditches and meadows, and Bacher Heath, and the wild ground about Moor Park, are moderately productive.

Harefield at present is not very accessible from the Metropolis. There are two ways of reaching it; first by the London and Great Western Railway, leaving at Uxbridge; or by the London and North-Western, as far as Pinner station. From either of these two stations the distance to Harefield is five miles, and must be got over or along either by fly or the marrow-bone stage, the proper botanical locomotive power.

The following list of the rarer or more interesting plants of Harefield is presented to our readers with a double view; first, to induce them to visit a place so celebrated in the earlier annals of the science, where they may enjoy the country to their heart's content,—for surely no more secluded scene nor more rustic scenery exists within eighteen miles of the Metropolis. Secondly, with the view of learning what proportion of Blackstone's plants still grow in their ancient stations; and it would oblige the writer of this notice very much if those who are persuaded to tread in Blackstone's tracks, would tell him what species are still found at Harefield. We know some of those recorded in this list have disappeared for many years; it would be desirable to learn how many have survived, and how many have been introduced during the past hundred and thirty years.

The soil of this extensive parish is various. On the south and east it is strong clay, and produces both elm and oak; on the north and west it is chalky, marly, dry, and gravelly; along the Colne it is of course alluvial.

There are still many woods, and there is more open ground where the botanist may freely wander, than is to be found in most parishes near London, if we except Hampstead Heath, Barnes and Wimbledon Commons, and Dartford and Keston Heaths.

In the course of some months the railway will be extended up the valley of the Colne, from Uxbridge to Rickmansworth, on which there will be a station at Harefield, and whereby the London botanist may easily reach this charming locality in an hour.

The following queries are respectfully submitted to the kind consideration of our readers:—

1. Are there any local memorials extant, or any traditionary knowledge, which might throw light on Mr. Blackstone's connection with Harefield? Did he ever reside here? Or was he born here? Or had he any intimate friend or relation in this parish, whom he visited, and where he enjoyed a relaxation from the labours and cares of business?

2. How many of the following plants are still found at Harefield, or in its vicinity?

3. What new plants are now observed here?

Adoxa moschatellina. Old Park Wood, and many other places, abundantly.

Agrostis Spica-venti. Cornfields.

Alisma minima. By the sides of the Warren Pond, near Breakspears, plentifully.

Alisma minima ranunculoides. On the banks of the Upper Pond, near Mr. Ashby's brick-kiln, plentifully.

Aquilegia vulgaris. In woods and bushy places about Harefield, but not common.

Atropa Belladonna. In a shady gravel-pit near the Old Park, and in the gardens at Moore Park, plentifully.

Bupleurum perfoliatum. I observed it this year (1735) in a field of corn near Harefield Mill, but not plentifully.

Butomus umbellatus. In brooks and ditches, frequent.

Calamintha Nepeta. Roadside, from Harefield to Chalfont St. Peter's.

Calamintha vulgaris. Harefield Street, going to the river, but not very plentifully.

Campanula glomerata. Chalk-pit. Duke of Portland's, Gerard's Cross.

Campanula Trachelium. Old Park Wood.

Carex pulicaris. Harefield Moor.

Chenopodium olidum. Waste places, not frequent.

Clematis Vitalba. Hedges, everywhere.

Dianthus Armeria. Roadside, between Harefield and Chalfont St. Peter's.

Dipsacus pilosus. About Moore Hall; also in a little wood near Sir George Cooke's House, at Harefield, plentifully.

Epilobium angustifolium. By the side of a wood, midway between Beaconsfield and Uxbridge.

Equisetum sylvaticum. In woods, not rare.

Euphorbia platyphyllos. Cornfields, between Harefield Common and Battleswell.

Fritillaria Meleagris. In Maudfields, near Ruislip Common, observed above forty years by Mr. Ashby, at Breakspears.*

* The country people call them "Snake's-heads." This is the first recorded British locality for the above interesting and uncommon plant.

Genista anglica.
Genista tinctoria. } Do these still grow at Harefield?

Gentiana Amarella. In the old chalk-pit near Harefield mill.

Geranium lucidum. Lane leading to Harefield mill.

Gymnadenia Conopsea. Lane leading to Harefield mill.

Habenaria chlorantha, or *H. bifolia.* In woods and bushy places, not uncommon.

Herba Paris (*Paris quadrifolia*). Old Park hanging wood.

Herminium monorchis. Chalk-pit near the Duke of Portland's, Gerard's Cross, plentifully.

Hieracium boreale. Old Park Wood.

Hieracium murorum. On a wall against Hillingden Church, and on old walls of the Duke of Bedford's Garden at Chenies, Buckinghamshire.

Hippuris vulgaris. Harefield River; also in a bog on Uxbridge Moor.

Hottonia palustris. Ditches and ponds.

Hydrocharis Morsus-ranæ. Abundant in ditches and sluggish streams.

Hyoscyamus niger. Waste places, everywhere.

Hypericum Androsæmum. In a thicket near Harefield Church, and also near Bacher Heath.

Inula Helenium. In a close adjoining to Harefield Common; also in a meadow near Breakspears, called Gantlets.

Jasione montana. Lane between Denham and Iver Heath.

Lathræa squamaria. In a shady lane near Harefield town, plentifully.

Lathyrus Nissolia. In a meadow near Harefield Church, plentifully.

Littorella lacustris. Harefield Common.

Medicago maculata. Uxbridge Common, plentifully.

Melica cærulea. Heaths.

Mentha Pulegium. On Harefield Common.

Mentha rotundifolia. Harefield Churchyard.

Menyanthes trifoliata. Harefield Moor.

Mœnchia erecta. Harefield and Uxbridge Commons, abundantly.

Narcissus bifolius. In several places near Harefield.

Narcissus pseudo-narcissus. Orchard at Breakspears, plentifully.

Nuphar lutea. With the White Lily on Uxbridge Moor, and in Harefield River, near the mill, abundantly.

Nymphæa alba. On Uxbridge Moor, plentifully.

Ophioglossum vulgatum. In all the meadows near Harefield, plentifully.

Ophrys apifera. Harefield chalk-pit, sparingly; and in the chalk-pit at Gerard's Cross, plentifully.

Ophrys muscifera. Harefield chalk-pit.

Orchis militaris. Chalk-pit, near the paper-mill.

Orchis pyramidalis. Chalk-pit, near the paper-mill.

Orchis ustulata. Chalk-pit, near the paper-mill.

Orobanche major. Among the Broom at the entrance of Iver Heath, plentifully.

Papaver Argemone and *Papaver hybridum.* Both frequent among corn.

Paris quadrifolia. Old Park hanging wood, and other places near Harefield, plentifully.

Parnassia palustris. In moist meadows near Harefield Mill, particularly in a bog in the meadow next Mr. Ashby's fishing-house.

Pedicularis palustris. Meadows near Harefield Moor, plentifully.

Petasites vulgaris. Riverside, near Harefield Mill, abundantly.

Potentilla argentea. In a field near Harefield Common, sparingly.

Poterium Sanguisorba. Harefield chalk-pit, and in the Beech woods on the road to Chalfont St. Peter's.

Prunus Cerasus. In woods, rarely; is now plentiful in hedges, etc.

Pyrethrum Parthenium. In waste places, frequent.

Pyrus Aria. Uxbridge Common, and in Harefield Chalk-pit.

Ranunculus Lingua. Bogs on Iver Heath.

Ranunculus parviflorus. In several places.

Rubus idæus. Lane near Mr. Austin's farm, on Harefield Moor.

Ruscus aculeatus. Little grove near Breakspears, and in some woods near Bacher Heath.

Sambucus Ebulus. Meadow near Breakspears, and on Uxbridge Moor.

Saponaria officinalis. Hedge near Uxbridge.

Saxifraga granulata. Meadow near Moor Hall.

Scirpus setaceus. Harefield Moor, abundantly.

Sedum Telephium. In shady places, and sometimes among crops.

Sisymbrium Sophia. Manure heaps, etc., not unfrequent.

Smyrnium Olusatrum. In a lane and in some fields about Cowley, near Uxbridge, and about Windsor Castle, plentifully.

Specularia hybrida. I found it this year (1735) in a cornfield adjoining Harefield chalk-pit, plentifully, but not elsewhere.

Tanacetum vulgare. Meadow near Harefield church.

Teesdalia nudicaulis. Tuddington.

Thalictrum flavum. In marshy meadows, frequent.

Trifolium striatum. Oliver's Mount, Uxbridge Moor, plentifully.

Trifolium subterraneum. Uxbridge Common, plentifully.

Valeriana dioica. In moist meadows.

Verbascum nigrum. About fields, uncommon.

Veronica montana. Grove Wood, Breakspears.

Vinca major. Meadow near Harefield Church.

Vinca minor. In Little Grove Wood near Breakspears, also in a lane leading from Uxbridge Moor to Iver Heath.

Viola odorata. Both white and purple varieties about hedges, frequent.

Viscum album. Grows on many trees, and very rarely on the oak.

RAMBLES BY THE RIBBLE.

Buckley Hall, Buckley Delf, Ribchester Bridge, Ribbleton Moor, Higher and Lower Brockholes.

One of the scarcest and most beautiful plants of this locality, Ribbleton Moor, is the Marsh Gentian (*Gentiana Pneumonanthe*), which is abundant here, and its very ornamental dark blue blossoms may be plucked by handfuls during the latter part of July and the whole of August. This plant, like many other beauties of the vegetable realm, will ere long become a victim to utilitarianism. Another plant of equal rarity, at any rate in this county, though not of equal beauty, the Marsh St. John's-wort (*Hypericum elodes*) abounds in the margins of the shallower pools, and is frequently accompanied by the Marsh Cinquefoil (*Comarum palustre*), and the Marsh Penny (*Hydrocotyle vulgaris*), while dense masses of the beautiful Bogbean (*Menyanthes trifoliata*) occupy the inner and central portions of the same pools. The last-named plant is, like the Gentian, extremely bitter in taste, and they are both esteemed valuable tonics. An infusion of the Bogbean especially has long been a popular medicine in England. It has been used for rheumatism, gout, scurvy, ague, catarrh, and dropsy. In a pit on the eastern side of the moor the least Water Parsnip (*Sium inundatum*) is to be met with, and in several pits on the opposite side, the scarce Frogbit (*Hydrocharis Morsus-ranæ*) grows in some quantities, but the latter plant is believed to have been here introduced. The narrow-leaved Marsh Speedwell (*Veronica scutellata*), and the Marsh Violet (*Viola palustris*), not unfrequently are near neighbours in several places, and the round-leaved Sundew (*Drosera rotundifolia*) is to be met with in considerable quantities about the mossy margins of several of the pools. The heathy portions of the moor abound with the common Ling (*Calluna vulgaris*), which is occasionally accompanied by the beautiful rose-coloured blossoms of the Cross-leaved Heath (*Erica Tetralix*). The common Cotton Grass (*Eriophorum angustifolium*) is also to be met with, as well as the uncommon lesser Water Plantain (*Alisma ranunculoides*), the latter, however, seldom blossoming in this locality. A rather uncommon member of the Broom family, the Needle Greenweed (*Genista anglica*), grows in some quantity in a small portion of the moor nearest to Preston, and on the left

hand side of the road from that place. This is the only known locality of the plant within many miles of our town. Its bright yellow flowers make their appearance in June, and are very ornamental. The Water Purslane (*Peplis Portula*) has been found in a ditch on the south side of the moor, and the Black Currant (*Ribes nigrum*) grows in the corner of a field in the same neighbourhood. While noticing the plants which will soon in all probability be driven from the place where they have long flourished, we may notice some other specimens of the floral world, and so perhaps please some of our non-botanical readers by "getting done" with that part of our subject. In a field in Fulwood, just over the railway from Sion Hill, grow large quantities of the Butterfly Orchis (*Orchis bifolia*) and the Wood Sage (*Teucrium Scorodonia*), and on a bank by the footpath leading from Sion Hill to the Barracks, the Trailing St. John's-wort (*Hypericum humifusum*) is plentiful. The scarce Alternate-leaved Golden Saxifrage (*Chrysosplenium alternifolium*) is to be found occasionally by the side of the brook in the same neighbourhood. Several kinds of Sedge (*Carex*) and Willow (*Salix*) grow on and about the moor. The Hairy Cardamine (*Cardamine hirsuta*) is very abundant on banks by the side of Pope Lane. This plant is much cultivated and used as a salad (under the name of Stonecress) in many parts of England, but appears to be neglected in Lancashire. A short distance down Pope Lane, in a pit in a field on the left, grows the Long-leaved Floating Pondweed (*Potamogeton rufescens*), and in pits near the cemetery the Sweet Flag (*Acorus Calamus*) is to be found. Some botanical works speak of the blossoms of this plant as being very unfrequently met with; but in a pit by the footpath from Preston to the cemetery, the plant is abundant and blossoms freely. Many other plants might be mentioned as growing in and about the moor, but those I have named are most of the scarcer kinds that are to be there met with.*

We walked through the fields to Lower Brockholes, past Boilton, a farm house snugly seated at the base of the hill midway in the amphitheatre between Higher Brockholes and Lower Brock-

* I must here make my acknowledgments to Mr. C. J. Ashfield, the author of the Flora of Preston,' for his assistance in the botanical portions of these sketches. I am, however, not only indebted to him for this information, but also for his pleasant companionship in the greater portion of the "Rambles by the Ribble."

holes. I must here notice the mossy character of some of the fields, telling of ancient forests and of subsequent ravages of water; when doubtless the river, lake-like, occupied the whole of this part of the valley. In the wood by the wayside there grows, very plentifully and very luxuriantly, the handsomest of the Fern tribe indigenous to the British Islands—the Royal Fern (*Osmunda regalis*). In the same wood, the Climbing Corydalis (*Corydalis claviculata*) is very abundant, and is scarcely to be met with elsewhere in the district, at any rate not nearer than the neighbourhood of Chorley, where it is occasionally found. The scarce Cyperus-like Carex (*Carex Pseudo-cyperus*) grows in a ditch by the side of a wood near here, and the Moneywort (*Lysimachia nummularia*) is very abundant upon a bank below a wood at Lower Brockholes. The Hemp Agrimony (*Eupatorium cannabinum*) is not unfrequent in wet places about the sides of woods both at Higher and Lower Brockholes. The whole valley about here is good ground for the botanist. About Red Scar, as well as at Brockholes, at Elston, at Samlesbury, and up to Balderston, the botanist enjoys many a ramble. The rare Broad-leaved Ragwort (*Senecio saracenicus*) grows by the Ribble side beyond Red Scar, and is reported also in some places higher up the stream. Upon one occasion, in a quiet ramble by Brockholes, I met with a person searching a cop-side for plants. I got into conversation with him, and soon found that he was a herbalist. He was not very lucky in his search; he was after Ground-ivy, which he explained was very useful for swellings and stomach complaints. Some persons have great faith in botanical remedies. I knew that Tunbrook, at Red Scar, was often visited for the berry of a plant, which is sought for from other motives than a mere love of science. I allude to the common Black Bryony (*Tamus communis*), which is said to be efficacious in the cure of black eyes, even more than the old-fashioned remedy for that not uncommon complaint,—I mean Solomon's Seal, which, in Gerarde's day, was regarded as a specific for the removal of the effects of heavy "manual exercise." The quaint old botanist says, "The root of Solomon's Seale, stamped while it is fresh and greene, and applied, taketh away in one night, or two at the most, any bruise, blacke or blew spots, gotten by falls, or womens wilfulnesse in stumbling upon their hasty husband's fists, or such like!"

Reviews.

James Lothian's *Garden, Flower, and Agricultural Seeds.*
James Lothian's *List of Trees, Shrubs, Plants, etc.*
James Lothian's *Agricultural Implements, etc.*

Mr. Lothian very considerately advises his customers that quantities of seeds are annually lost for want of attention to the place where they are sown, to the season for committing them to the earth, from slovenly ways of sowing, (sometimes too deep, sometimes not deep enough,) and by neglecting to protect them from birds, etc.

We once had a few seeds of a radish,—a sort extensively grown about Brussels,—given us in early summer, which we were instructed to commit to the soil immediately. This was done, and we soon had a large plant, with a stem full a yard high, but neither bulb nor seeds. It was a large black, dense, rather warm kind, not much smaller than a hen's egg. If Mr. Lothian would let us have a few seeds of his Black Spanish, which he directs to be sown in September or October, we would try the experiment of radish-growing again. But it is to be feared that the winters of London are not so congenial to brumal crops as the season and climate of Mull of Cantyre.

In sowing "hardy annuals," Mr. Lothian says very justly that the depth of covering should be in proportion to the size of the seeds. He tells us that all the seeds in this list may be sown from March to June, and again in September, for an early crop! Our experience is not favourable to late sowing.

Perennial seeds may be sown from May till July, and planted from September to March. In London we never succeeded with transplanted Wallflowers. They rise very freely from seed, flower next year, and then perish. If sown in spring and transplanted in autumn, barely ten in a hundred will survive the winter: with many other semi-perennials they will survive the winter and die in spring.

Anemone is unwilling to grow with us; it likes a purer atmosphere. However, we should like to give Mr. Lothian's *A. Pulsatilla* a fair chance, if he will send us a few seeds: also *Arabis alpina*, which grows vigorously with us. *Astrantia minor* we have never tried, nor *Iberis sempervirens;* we should like to give them a turn. *Stachys coccinea* we have never seen.

Mr. Lothian has a good assortment of herbaceous plants. We should like to see a specimen of his *Epilobium latifolium*.

We will gladly exchange seeds with Mr. Lothian, and have at present by us plenty of seed of *Sonchus palustris*, which is trustworthy, for we have tried it. Also there is still some of *Verbascum thapsiforme*, which have also vegetated.

While writing on this subject, it may be worth the trouble of recommending to the trade several of the alpine species, collected in the Pyrenees, and recently published in the 'Phytologist.' *Ramonda pyrenaica* is one of the rarest and handsomest of European alpines. There are, besides this fine plant, many other ornamental species which grow on the Pyrenees, and several of them would probably thrive in the British Isles.

We procured for a correspondent the addresses of two botanists who supply specimens from that district, and who would probably furnish seeds or roots as a matter of business. Their names and addresses will be sent to any of our correspondents, on application to the Editor.

The Canadian Naturalist and Geologist, Feb. 20, 1862. Montreal: Dawson and Son. London, Paris, and New York: Baillière Brothers.

In this number, page 20, there is a good article 'On the Shore Zones and Limits of Marine Plants on the North-Eastern Coast of the United States,' by the Rev. Alex. F. Kemp. The author thus explains the object of his Essay:—"I was aware that all the Handbooks on the Algæ had noted the special localities of each species, whether it grew at high or low-water mark, at half-tide or in deep water; but I was not aware that in any of the books shore-lines and limits of plant-growth had been made the subject of special treatment." The reverend author classifies the Algæ under the following zones, viz.:—

1. Those in the Drift zone, containing some of all kinds.

2. The plants in the Ulva zone. Examples: *Ulva latissima*, *Enteromorpha intestinalis*, *E. compressa*, *E. clathrata*, and *E. Hopkirkii*. Is the last-named a British species? *Cladophora rupestris*, etc.

3. The plants in the third zone are *Fucus nodosus*, *F. vesiculosus*, *F. furcatus*. Is the latter an English plant, etc.?

4. The plants in the Laminaria zone are *Laminaria digitata, L. Fascia, L. saccharina,* etc. Has *L. Fascia* been seen in the British seas, or on their shores?

5. The examples of the fifth zone are *Chondrus crispus* and *Laminariæ.*

6. Those of the deep-sea zone are *Laminaria longicruris* (? British), *Delesseria sinuosa,* etc. Has *D. denticulata* been detected on our shores?

We wish Mr. Lothian, who is conveniently located for the study of the species, habits, and distribution of Marine Algals, would send us the results of his experience on the subject.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Kew Gardens.

There were no fewer than 480,070 visitors to Kew Gardens in 1861, by far the largest number in any year. The past year saw the erection of the magnificent spar of Douglas Pine, 159 feet long, a superb pole, unrivalled in Europe for height, symmetry, and excellence of material. It was presented by Mr. E. Stamp. Standing among fine trees, which however are not much more than half its height, it serves to show the public the enormous size of the timber-trees of our new colony of British Columbia. The Cinchonas (trees yielding quinine) sent to the Neilgherry Hills, Sir W. J. Hooker says, are flourishing, and there are now upwards of 8000 plants in most vigorous growth, while there are 2170 more at Kew, which will be ready for transmission to India at the proper season. The experiment has been successful, too, in Ceylon, and in Jamaica as far as it has gone, but of the seeds sent to Trinidad not one has germinated.

It is now some centuries since the miraculous virtues of the "Jesuits' Bark" were made known, and apprehensions have been felt for the continuance of the supply; yet there is hardly a medicine in use which is so indispensable. Bark is one of the few real specifics with which we are acquainted. Wherever anything of a periodical character can be detected in a disease, bark acts as a remedy. Very wisely, therefore, have our botanical authorities been engaged in ensuring a supply of this invaluable medicine, and the different steps in the proceeding are curious enough. First, organized parties were dispatched into the Andes to procure young plants and seeds of the best quality. Then the plants thus obtained were received at Kew, and carefully nursed in a forcing-house erected for the purpose. Here, as every condition was skilfully adapted to the wants of the seedlings, they grew and flourished, but it would be unsafe to rely upon such artificial cultivation, or to trust to hot-houses for the replenishment of our druggists' stores. Was there no place in the British Empire where the Cinchonas—the trees yielding quinine—would grow naturally? Of course there was. India will grow anything—Tea, Cotton, Bark, or whatever England wants. So the seedlings reared at Kew were sent to India.

Herbaria Sales.

On Friday, the 7th March, 1862, a portion of the extensive and valuable Herbarium, formed by the late Comte Alfred De Limminghe, of Brussels, was sold by auction, by Mr. J. C. Stevens, at his great room, 38, King Street, Covent Garden:—

Lot 2. A fine set of Lichens, consisting of several thousands of specimens with many duplicates, £2. 4*s.*

7. Extensive collection of Gramineæ and Cyperaceæ, nearly two thousand examples, most of them named, £2. 2*s.*

15. Syria and Palestine plants, a fine set, the specimens good and in excellent preservation, all named and localized, at least 250 species, one thick parcel, £2. 12*s.*

17. Plants of the Rhine, a fine series of flowering plants, well preserved and all labelled, eleven parcels, about 1000 species, £1. 10*s.*

19. A general Herbarium of Flowering Plants, in thirty-one portfolios. The specimens are in the best possible preservation, named and arranged in generic covers, a reference being given with each genus and species to the volume, page, and number of De Candolle's 'Prodromus,' where described; there are about 6000 species, rich in Endogens, and apparently quite exclusive of Cryptogamiæ, £2. 10*s.*

22. Flora Belgica, a mounted collection of from 1000 to 2000 species, all flowering plants, eleven parcels. This was a fine lot; £2. 10*s.*

23. A thick parcel of European Labiatæ, all named, 14*s.*

24.* A collection of British Mosses and Hepaticæ, neatly mounted, named, and localized, 265 species, in five portfolios, 19*s.*

25. A most extensive set of Mosses, named and localized. This most valuable collection, which contains many thousand specimens, is most liberally represented, having numerous duplicates from different habitats, many of the specimens being mounted, with which is incorporated numerous uncoloured plates, the whole contained in four boxes, £5. 10*s.*

26. A similar set of Lichens, several thousands, in three boxes, £5. 5*s.*

27. An immense and valuable collection of Fungi, comprehending a large portion of the described European plants of this difficult and important Order; and so numerous are the duplicates from various habitats that there must be above a million specimens in all. They are almost all named, and habitats are by no means unfrequent; and incorporated in the collection are sets from the highest authorities. There are also a few plates distributed amongst the specimens which are not mounted, but the whole are contained in twenty cases, demy size, and about ten inches deep. It may be considered by far the finest and most extensive collection ever offered to the public; £20.

28. An extensive and fine set of Charæ, mostly named, in one case, apparently several hundred specimens, £2.

30. A fine and most extensive set of Algæ, named, probably several thousand, in three boxes, £3. 15*s.*

31. Miscellaneous Cryptogamiæ and a quantity of waste paper, in box, £1. 12*s.*

34. Tropical plants, including a set of Juglandaceæ, from Ceylon, Cochin China and Martinico, including a set of Juglandaceæ, collected by Wallich and J. Fraser, about 200 species, mostly named, three cases, 11*s.*

35. A long series of European Alpine plants, mostly flowering, named and localized, propably little short of 2000 species, in five cases, £2. 4*s.*

86. A collection of dried plants, from various parts of the world and from noted Botanical Gardens, nearly all named, many with notes in the handwriting of the late David Don, and Mr. A. B. Lambert (in whose herbarium they formerly were), in all about 150, fastened down on herbarium paper, in three bundles, 10*s.*

87. Australia, 1780–1791. Many interesting notes upon the papers in which these plants are preserved; they (the plants) have been gathered by some early collector and very probably by Robert Brown himself, 3*s.* 6*d.*

88. A small but very interesting collection of Charas, Potamogetons, Myriophyllums, etc., endorsed "From St. John's Wood Farm, 1801," 3*s.*

97. Three hundred Exotic Ferns, from various countries and different collectors, £2.

98. Twelve Autograph Letters or memoranda of distinguished botanists, viz., Field-

ing, Gardner (Geo.), Heysham, Hawkins, Graham, Friedrichsthal, Forder, Fischer, Acharius, Coulter, De Lessert (Benj.), and De Candolle (A. P.), 4*s*.

99. Twelve ditto, viz., Rayer (J.), Gardiner (W.), Cameron, Bromfield, Drége, Doubleday, De la Beche, Fenzl, Bowman, Endlicher, Fischer, De Candolle, 3*s*. 6*d*.

100. Twelve ditto, viz., Curtis (S.), De Lessert, Guthnick, De Candolle, 3*s*. 6*d*.

101. Twelve ditto, viz., Bevan, Campbell, Fenzl, Drége, and eight others, 3*s*. 6*d*.

Phallus impudicus.

In Yorkshire this Fungus is called the "Devil's Stinkpot;" and though we cannot understand what the first word quoted can have to do with the name of a plant, we may learn from it how great was the detestation in which it was held by our forefathers, who were fond of applying the term even to physical objects which excited their abhorrence;* and we must confess we know of no other British plant whose stench is so intolerable as this. We forbear to say what its smell is like, lest we should offend, or even incur the risk of getting the specific name of the plant, at least in its secondary sense, attached to our own signature. Suffice it to say, that the smell of a heap of turnips in a state of putrefaction, is, in our estimation, *fragrance*, compared with that of *Phallus impudicus*.

One Saturday, as we were exploring a damp wood in search of Ferns, our olfactory nerves were assailed by this awful stench; and though the plants were at least ten yards from us, we had no difficulty in making our way straight to the place where they grew, from the disgusting odour they emitted. On arriving at the spot, we found a group of about a dozen, scattered over a space a little more than three yards square. The thought immediately struck us that it would be an amusing experiment to carry home two or three plants in our vasculum, and set it on the table, to see how quickly all the inmates of the house would make their exit. We were wending our way homewards, in high glee, when two or three groups of market people met us; and, looking over our shoulder as they passed, we found they were making wry faces. On looking back, we saw them standing and eyeing us from head to foot, to see what sort of predicament we were in, apparently wondering to see all right. We were determined, however, not to be beaten, and resolutely passed on; when, meeting some more market folks who behaved in the same way, we were brought to a dead stand. Suppose we should reach the town, we saw in imagination a hundred little urchins, and as many dogs, following in our wake, the former wondering what had befallen us; therefore, coming to a bridge, we threw the plants into the Don. This, however, did not mend the matter, for we were obliged to pull up turfs of grass, with the dirt attached to their roots, and scour out the vasculum before we dared to encounter our fellow-creatures; and, even after this had been done, we were called upon to give an explanation as to where we had been, for our better half turned up her nose at us.

The economy of the *Phallus* is worth studying, for it is curious. One

* There is another well-known plant, called "Devil's Bit." About the name Gerarde wrote the following, 726, ed. 1636:—"It (this plant) is commonly called *Morsus diaboli*, or Diuels Bit, of the root (as it seems) that is bitten off. For the superstitious people hold opinion that the diuel, for envy that he beareth to mankind, bit it off because it would be otherwise good for many uses. It is called of *Fuchsius Succisa*; in high Dutch (German) *Teuffels abiss*; in low Dutch *Duyuelles beet*; in French *Mors du diable*; in English Diuels Bit and Farebit." *Cuscuta* has a similar name; in some old herbals it is called "Devil's G-ts."

summer, several years ago, there was a pathway through a park, and near the path there was a shady spot where the ground was covered with the husks of beech-nuts, and other half-decayed litter. Here we detected about a dozen of these fetid funguses in an incipient state. Before producing the *thallus* and *hymenium*, the entire plant is like an egg without a shell, which hens occasionally lay when they are not supplied with calcareous matter to furnish the shell. Then the fungus had no smell; it was a gelatinous substance, shaped like an egg, and covered with a tough skin, the *volva* or veil. One or two were carefully taken up and planted in a pot, and placed in a brewhouse, and after some weeks one expanded, and became a fair, but not fragrant object, in the course of a single night. Rapidity of growth is not confined to the *Phallus*. We have known *Bovista gigantea*, one of the largest of Fungi, sometimes about a foot in diameter, grow to an immense size in a single night.—RURICOLA.

THE LONDON MARKET GARDENER.

The growth of London has pushed the market gardener gradually into the country; and now, instead of sending up his produce by his own waggons, he trusts it to the railway, and is often thrown into a market fever by a late delivery. To compensate him, however, for the altered state of the times, he often sells his crops like a merchant upon 'Change, without the trouble of bringing more than a few hand-samples in his pockets. He is nearly seventy years of age, but looks scarcely fifty, and can remember the time when there were ten thousand acres of ground within four miles of Charing Cross under cultivation for vegetables, besides about three thousand acres planted with fruit to supply the London consumption. He has lived to see the Deptford and Bermondsey gardens curtailed; the Hoxton and Hackney gardens covered with houses; the Essex plantations pushed further off; and the Brompton and Kensington nurseries—the home of vegetables for centuries—dug up and sown with International Exhibition temples, and Italian gardens that will never grow a pea or send a single cauliflower to market. He has lived to see Guernsey and Jersey, Cornwall, the Scilly Islands, Holland, Belgium, and Portugal, with many other more distant places, competing with the remote outskirts of London, and has been staggered by seeing the market supplied with choice early peas from such an unexpected quarter as French Algeria.—*Cornhill Magazine.*

Communications have been received from

T. Simpson; T. S.; M. T. Masters; F. Webb; the Earl of Ilchester; James Lothian; John Sim; A. G. More; E. Marcus Attwood; W. Pamplin; C. J. Ashfield; W. P.; W. Ashley; Sidney Beisly; J. G. Baker; G. W. Marshall.

RECEIVED FOR REVIEW.

Canadian Naturalist and Geologist.

Stenson's Catalogue of old and modern Engravings, containing portraits of some botanists and drawings of plants.

Vegetable Morphology, its history, and present condition.

James Lothian's Lists of Trees, Shrubs, Agricultural and Garden seeds, etc.

The Glasgow Weekly Mail, etc., March 29th.

NOTES ON A FEW NORTH LANCASHIRE PLANTS.

By C. J. Ashfield.

Anemone Pulsatilla.—I never heard of this beautiful plant having been found in the county of Lancaster previously to reading the article published in the January number of the 'Phytologist' for the present year, entitled "Catalogue of Plants Cultivated by Collinson." I have recently written letters making certain inquiries about the plant, which have been published in the 'Lancaster Guardian' and 'Preston Chronicle' newspapers, but have received no replies thereto. I cannot even ascertain the whereabouts of the "Little Purton" referred to. I have consulted maps of the county of various dates, from the latter part of the last century to the time of, and including the Ordnance map, and find no such place named in any of them. I have not botanized much in the neighbourhood of Lancaster, but if circumstances permit, I shall take a trip thither during the present season, in search of *A. Pulsatilla*.

Cineraria palustris.—Ray describes this plant as growing plentifully in watery ditches about Pilling Moss, in Lancashire; to use his own words:—"Copiosissime autem in fossis aquosis circa paludem Pillinmosse dictam in Lancastriâ." I have many times botanized over Pilling Moss, or rather the remains of it, but have never been fortunate enough to find the *Cineraria*. The Moss is quite changed in its character since the time of Ray, great part of it being now in cultivation, and the *Drosera*, *Andromeda*, *Sphagnum*, and many other families of marsh plants having been succeeded by plentiful crops of Wheat, Oats, etc. I have heard that the late Mr. Kenyon, a schoolmaster and botanist, formerly residing in Preston, found the plant in question on the Moss about twenty years since, but I cannot learn with any degree of certainty that he did so. I have not given up all idea of finding it, and hope to have another search for it during the ensuing summer.

Lathræa squamaria.—Gerarde says of this plant, "It groweth likewise neere Harwood, in Lancashire, a mile from Whanley, in a wood called Talbot Banke." Mr. George Ward, an aged botanist residing near Blackburn, told me last summer that he had found the plant about thirty-five years since, on the bank of the river Calder, about a mile from Whalley. I have much plea-

sure in being able to confirm the statements of the above-named botanists of the seventeenth and nineteenth centuries, I having during the present month found the plant growing abundantly in the township of Billington (adjoining that of Harwood), about a mile from Whalley, nearly opposite Morcton Hall, and within four or five yards of the river Calder. No doubt this is the spot indicated by Gerarde, it agreeing with his statement in every respect, except as to the names "Whanley" and "Talbot Banke." The first is evidently a misprint for Whalley, or, as the same author has it in his notice of *Tragopogon porrifolius*, "Whawley." As to the second name, I have made many inquiries as to whether there was a wood in the neighbourhood called Talbot Bank, but no one knew of such a wood, and said "Whalley Banks" must be the place referred to, and that is the name of the wood in which the plant is now growing.

Maianthemum bifolium.—I was aware of Gerarde's notice of this plant growing "in Dingley Wood six miles from Preston and Aundernesse, and in Harwood nere to Blackburne likewise," previously to reading the remarks thereon in the 'Phytologist' of October last (vol. v. p. 318). There is a place called "Dinckley," near Ribchester, about ten or twelve miles from Preston, and I believe there is a wood there called "Dinckley Wood." This must be the wood referred to by Gerarde; at least I know of no place near Preston called "Dingley," or anything like that name, except the above-named Dinckley. The Dinckley referred to is near Harwood, also mentioned by Gerarde. I have never searched Dinckley Wood, but hope to do so next summer.

Primula farinosa.—Gerarde says that "these plants (*i.e.* Red Bird-eyne and White Bird-eyne) grow very plentifully in moist and squally grounds in the North parts of England, as in Harwood neere to Blackburne in Lancashire, and ten miles from Preston in Aundernesse." I cannot exactly confirm the old botanist's statement as to the above habitat of this beautiful plant, but I found it growing plentifully last year near the foot of Pendle Hill, not far from Pendleton Hall, and only a few miles from Harwood. The Mr. Ward before mentioned tells me he has found it very near to, if not actually in the township of Harwood.

Preston, April, 1862.

THE REV. THOMAS MARTYN AND THE SURREY LIST OF PLANTS.

The Rev. Thomas Martyn, to whom we are indebted for the List of Surrey Plants published in Manning and Bray's 'History of Surrey,' was the Regius (Royal) Professor of Botany in the University of Cambridge, and also Vicar or Perpetual Curate of Edgeware, in Middlesex. He was the eldest son of the celebrated Dr. John Martyn, who was also Professor of Botany in the same University, and of whom more anon.

Professor Thomas Martyn was born in 1735, in Chelsea, and succeeded his father, Dr. John Martyn, in the Professorship, which the latter resigned in 1761, when he retired from the more active employments of life.

The Rev. Thomas Martyn was, like his father, devoted both to literature and to science. In 1763, he published 'PLANTÆ CANTABRIGIENSES,—a Catalogue of the Wild Plants of the County of Cambridge;' and in 1771 a *Catalogue* of the Contents of the Botanical Garden of Cambridge; also his 'FLORA RUSTICA,'—a work containing descriptions and illustrations of such plants as are either useful or injurious in husbandry,—a useful treatise. Another practical work by the Professor, is a Translation of the celebrated J. J. Rousseau's 'Letters on Botany.' More than one edition of this work have appeared. The second is dated 1787.

The Professor was also editor of 'Miller's Gardener's Dictionary,' perhaps the most useful and popular horticultural work which has ever appeared. It is the source from which Dr. Johnson, our great lexicographer, derived the botanical information scattered here and there in his excellent Dictionary of the English language.

This celebrated botanist and amiable man, to whom science owes much, was a native of Chelsea, where his estimable father was in practice as a physician. Dr. Martyn the elder was an amateur botanist, and an excellent scholar; his translations of Virgil's Eclogues and Georgics are lasting monuments of his classical erudition and botanical attainments. His versions of this author, the greatest of the Latin poets, are the only English translations of the classics in which the botany of the ancient poets has been satisfactorily expounded.

The Rev. Thomas Martyn was the author of many works of

higher pretensions than his catalogues of wild and cultivated plants; he was celebrated as a connoisseur or a critic in the fine arts. His tours in France, Switzerland, and Italy, abound in artistic critiques, and it is not improbable that his work on Italy was the model on which the eminent Sir J. E. Smith composed his celebrated 'Tour on the Continent.'

The prince of British botanists highly commends the work of his predecessor, "as containing an ample catalogue of works of art, with characteristic remarks, both concise and discriminative." He concludes his brief notice of this work with these words:—"The amiable author, content with being useful, has left unattempted what is esteemed more brilliant, viz., fame, though undoubtedly at his command. A habit of penetration and discrimination, with a facility of clear communication, acquired by the systematic study of nature, are remarkably displayed in this performance."

Our author also published 'Elements of Natural History,' and a work called 'The English Connoisseur,' or an account of the artistic curiosities "in the palaces and seats of the nobility and gentry of England."

Besides the curacy of Edgware, he held the livings of Luggershall, and Little Marlow, in Bucks, and ultimately that of Pertenhall, in Bedfordshire, where he died in 1825, at the advanced age of eighty-nine.

Surrey Plants.*

A Catalogue of the more rare Plants found wild in the county of Surrey. By Professor Martyn, of Cambridge (from Manning and Bray's 'History of Surrey.')

	NAME.	LOCALITY.
1.	*Hippuris vulgaris.*	Thames side.
2.	*Salvia verbenaca.*	Guildford, Morden, Effingham, and Great Bookham.

* "For the following list of the indigenous Plants of *Surrey* the present Editor is indebted to the liberal and spontaneous communication of Mr. Professor Martyn, of *Cambridge*, whose skill in the Science of Botany has been long known to the world. It was accompanied with a most obliging letter; in which he says, that, at the close of the Preface to the Second Volume of the History of *Surrey*, the Editor observed, 'that he had not then learned where to apply for assistance on the subject of the Botany of the County;' the Professor therefore sends a list of the indigenous Plants of the County. He says that between 1752 and 1768 he was in

3. *Valeriana rubra.*	Merton Abbey walls; between Dulwich and Clapham.
4. *Crocus vernus.*	Battersea Mill.
5. *Schœnus albus.*	In a low bog between Croydon and Wickham; Bagshot Heath.
6. *Schœnus compressus.*	Shirley Common.
7. *Scirpus fluitans.*	Putney Heath, and Heath between Farnham and Godalming; in pits of water.
8. *Scirpus triqueter.*	Banks of the Thames.
9. *Eriophorum vaginatum.*	Croydon; the Heaths near Woking.
10. *Panicum verticillatum.*	Battersea Fields, and between Roehampton and Putney.
11. *Panicum viride.*	Battersea Fields; Guildford.
12. *Panicum Crus-galli.*	Battersea; Putney; Guildford; St. Martha's Chapel.
13. *Panicum sanguinale.*	Battersea; Wandsworth; and St. Martha's Chapel.
14. *Agrostis Spica-Venti.*	Kingston-on-Thames; Croydon.
15. *Poa bulbosa.*	Clapham.
16. *Festuca elatior.*	Battersea.
17. *Bromus diandrus.*	Battersea.
18. *Avena pubescens.*	Banstead Downs.
19. *Montia fontana.*	Streatham Common.
20. *Dipsacus pilosa.*	Guildford and Godalming.
21. *Sherardia arvensis.*	Battersea Fields.
22. *Centunculus minimus.*	Barnes Common; Croydon.
23. *Asperula cynanchica.*	Box-hill; Croydon; Sutton.
24. *Galium anglicum.*	Croydon; Duppa's Hill.
25. *Plantago uniflora* (*Littorella*).	Wimbledon Common.
26. *Anchusa sempervirens.*	Vauxhall.
27. *Cynogloss. sylvaticum.*	Said by Merrett to be found at Norbury, near Leatherhead. It is still plentiful there.

the habit of making annual visits to his Father, who then occupied the Hill House on *Streatham Common*, and that he made minutes of such plants as occurred to him in that neighbourhood; that he published lists of these, among others, as an Appendix to his Account of the Plants of *Cambridgeshire* in 1763; that in an interleaved copy he added such plants as he found afterwards; that from this he made out what he sends, with the addition of such plants as he had gleaned from some other local works on the plants of *England;* that the plants are in the order of *Linnæus's* System, and the names, both *Latin* and *English*, correspond with *Dr. Smith's Flora Britannica.* For a revision of this, with additions, I am indebted (amongst many other communications) to Arthur Tyton, Esq., whose attention to this Science is well known by his systematically arranged garden at Wimbledon."

28. *Pulmonaria officinalis.* In a wood between Croydon and Godstone.
29. *Menyanthes nymphæoides.* Near Kingston and Walton bridges.
30. *Hottonia palustris.* Battersea.
31. *Anagallis arvensis.* Between Stockwell and Camberwell; Peckham; Streatham; and between that and Mitcham; Croydon.
32. *Campanula patula.* Cobham.
33. *Campanula Rapunculus.* Croydon; Esher.
34. *Phyteuma orbicularis.* Near Leatherhead; Epsom Downs; Sutton; Dorking.
35. *Verbascum Lychnitis.* Croydon; Duppa's Hill.
36. *Atropa Belladonna.* Dorking; West Clandon.
37. *Rhamnus catharticus.* Dulwich; Streatham.
38. *Rhamnus Frangula.* Dulwich; Norwood.
39. *Vinca minor.* Croydon; Cobham; Wandsworth; Wimbledon.
40. *Vinca major.* Dulwich; between Wandsworth and Wimbledon.
41. *Chenopodium hybridum.* Norwood; Battersea-fields.
42. *Bupleurum rotundifolium.* Sutton; Epsom; Leatherhead.
43. *Bupleurum tenuissimum.* Godalming.
44. *Caucalis daucoides.* Banstead Downs.
45. *Bunium flexuosum.* Norwood; Streatham.
46. *Phellandrium aquaticum.* Wimbledon brick-pits.
47. *Circuta virosa.* Battersea.
48. *Pimpinella magna.* Guildford; Godalming.
49. *Drosera longifolia.* Bagshot Heath; Esher.
50. *Drosera rotundifolia.* Esher; Wimbledon Common.
51. *Myosurus minimus.* Wimbledon; Streatham.
52. *Fritillaria Meleagris.* Between Mortlake and Kew.
53. *Tulipa sylvestris.* Wimbledon Park.
54. *Ornithogalum luteum.* Godalming meadows.
55. *Ornithogalum umbellatum.* Streatham.
56. *Scilla autumnalis.* Moulsey Hurst; Kew Green.
57. *Narthecium ossifragum.* Putney Heath.
58. *Convallaria majalis.* Norwood.
59. *Convallaria multiflora.* Stockwell hedges.
60. *Acorus Calamus.* Hedley.
61. *Alisma Damasonium.* Wimbledon Common.
62. *Epilobium roseum.* Lambeth Marsh.
63. *Chlora perfoliata.* Croydon fields.
64. *Vaccinium Myrtillus.* Leith hill; heaths in Shere; Ewhurst, Cranley and Albury.
65. *Polygonum minus.* Putney Heath.

66. *Polygonum Bistorta.* Battersea meadow.
67. *Butomus umbellatus.* Croydon.
68. *Saponaria officinalis.* Streatham Common; and Lordship Lane, near the Green Man; probably escaped from gardens.
69. *Dianthus Armeria.* Croydon; between Dorking and Mickleham; between Dulwich and the Green Man; top of Oak on Honour Hill; Streatham.
70. *Silena Anglica.* Coombe; Weybridge.
71. *Arenaria tenuifolia.* Battersea.
72. *Sedum Telephium.* Dulwich; Norwood.
73. *Sedum dasyphyllum.* Kew.
74. *Cerastium semidecandrum β.* Croydon, dry banks.
75. *Cerastium arvense.* Croydon.
76. *Spergula subulata.* Mitcham Common.
77. *Rosa spinosissima.* Wimbledon Common.
78. *Potentilla argentea.* Wimbledon Field, near Octagon House.
79. *Comarum palustre.* Wimbledon.
80. *Cistus surrejanus.* Croydon.
81. *Aquilegia vulgaris.* Norwood.
82. *Stratiotes aloides.* Thames side.
83. *Anemone apennina.* Wimbledon Park; woods about Shere and Guildford.
84. *Ranunculus parviflorus.* Banstead Downs.
85. *Ajuga Chamæpitys.* Banstead Downs, in cornfields.
86. *Mentha piperita.* Croydon and Mitcham; by the riverside.
87. *Mentha rubra.* Peckham Fields.
88. *Mentha Pulegium.* Streatham Common.
89. *Leonurus cardiaca.* Coombe Wood Lane.
90. *Origanum vulgare.* Croydon.
91. *Scutellaria minor.* Streatham Common.
92. *Antirrhinum Peloria.* Clapham; sandy pastures.
93. *Scrophularia vernalis.* Mitcham Common; Field in lane to Merton.*
94. *Digitalis purpurea.* Norwood; Shere.
95. *Limosella aquatica.* Croydon.
96. *Orobanche major.* Epsom; Leatherhead; Norwood.
97. *Isatis tinctoria.* Guildford.
98. *Alyssum* (*Camelina*) *sativum.* Wimbledon.
99. *Iberis* (*Teesdalia*) *nudicaulis.* Barnes Common; Putney Heath.

* Mr. Alexander Smith, Surgeon and Apothecary of Croydon, found it there in April, 1759. It had not been observed to be wild in England before. See 'Phytologist' for December.

100. *Cardamine amara.* River-side; between Kew and Mortlake.
101. *Erysimum cheiranthoides.* Weybridge.
102. *Turritis* (*Arabis*) *hirsuta.* Smitham Bottom, near Croydon.
103? *Turritis glabra.* Wimbledon, on walls.
104. *Erodium moschatum.* Streatham Common.
105. *Malva moschata.* Balham, five-mile-stone, Epsom road.
106. *Fumaria parviflora.* Epsom.
107. *Fumaria claviculata.* Wimbledon Camp.
108. *Ulex nanus.* Wimbledon Common; Shere; Albury.
109. *Lathyrus Nissolia.* Stockwell; Streatham; Mitcham.
110. *Lathyrus pratensis.* Merstham.
111. *Lathyrus sylvestris.* Wimbledon Park.
112. *Lathyrus palustris.* Peckham Fields.
113. *Hedysarum Onobrychys.* Banstead Downs.
114. *Trifolium scabrum.* Croydon.
115. *Trifolium glomeratum.* Kew Green.
116. *Hypericum Androsæmum.* Norwood; Wimbledon Wood.
117. *Hypericum humifusum.* Mitcham Common; Dulwich.
118. *Hypericum montanum.* Croydon; Shere.
119. *Hypericum Elodes.* Shirley Common.
120. *Prenanthes muralis.* Merton Abbey walls; road from Croydon to Sandershead.
121. *Lactuca virosa.* Streatham.
122. *Leontodon palustris.* Mitcham Common.
123. *Hieracium murorum.* Norwood.
124. *Hieracium sabaudum* (*boreale*). Norwood and Dulwich.
125. *Hyoseris minima.* Petersham.
126. *Crepis fœtida.* Banstead Downs.
127. *Carduus pratensis.* Croydon Common.
128. *Gnaphalium dioicum.* Banstead Downs.
129. *Erigeron acre* (*acris*). Streatham.
130. *Anthemis nobilis.* Dulwich; Streatham; Woking, etc.
131. *Achillea Ptarmica.* Streatham.
132. *Orchis bifolia* (*Habenaria chlorantha*). Norwood; Penge Common.
133. *Satyrium viride* (*Habenaria viridis*). Banstead Downs.
134. *Ophrys paludosus.* Reigate road.
135. *Ophrys spiralis* (*Spiranthes autumnalis*). Banstead Downs.
136. *Ophrys anthropophora.* Near Croydon; Langley Fields; between Croomhurst and Selsden; and in a lane leading from Smitham Bottom to Sandershead.
137. *Serapias* (*Cephalanthera*) *grandiflora.* Godstone.
138. *Carex axillaris.* Putney.

139. *Carex depauperata.* Dry Wood; Godalming.
140. *Buxus sempervirens.* Box-hill; near Dorking.
141. *Xanthium Strumarium.* Dulwich.
142. *Amaranthus Blitum.* Battersea fields.
143. *Hydrocharis Morsus-ranæ.* Battersea fields.
144. *Sagittaria sagittæfolia.* Battersea fields.
145. *Quercus sessiliflora.* Norwood.
146. *Ruscus aculeatus.* Norwood.
147. *Atriplex erecta.* Battersea-fields, near Nine Elms.
148. *Ophioglossum vulgatum.* Battersea meadows.
149. *Osmunda regalis.* Weybridge.
150. *Osmunda Lunaria.* Shirley Common.
151. *Lycopodium inundatum.* Bagshot Heath.
152. *Lycopodium ampullaceum (clavatum).* Shirley Common.
153. *Lycopodium Selago.* Shirley Common.
154. *Scolopendr. vulgare.* Merton Abbey walls.
155. *Blechnum boreale.* Norwood.
156. *Asplenium Trichomanes.* East Sheen.
157. *Asplenium Ceterach.* East Sheen.
158. *Polypodium vulgare.* Norwood.
159. *Pilularia globulifera.* Streatham Common.

Notes on the above List.

A. The following plants are probably still existing in the anciently described locations, viz.: —

Salvia verbenaca.
Valeriana rubra.
Scirpus fluitans.
Agrostis Spica-Venti.
Festuca elatior.
Avena pubescens.
Montia fontana.
Dipsacus pilosus.
Menyanthes nymphæoides.
Asperula cynanchica.
Cynoglossum sylvaticum.
Campanula patula.
? Campanula Rapunculus.
Phyteuma orbicularis.
Verbascum Lychnitis.
Atropa Belladonna.
Rhamnus catharticus.
Rhamnus Frangula.
Vinca minor.
Vinca major.
Chenopodium hybridum.
Bupleurum rotundifolium.
Caucalis daucoides.
Drosera rotundifolia and D. longifolia.
Scilla autumnalis.
Narthecium ossifragum.
Convallaria majalis.
Acorus Calamus.
Alisma Damasonium.
Chlora perfoliata.
Vaccinium Myrtillus.
Polygonum minus.
Butomus umbellatus.
Saponaria officinalis.
Dianthus Armeria.
Silene anglica.
Sedum Telephium.
Cerastium semidecandrum.
Rosa spinosissima.
Potentilla argentea.
Cistus surrejanus.
Aquilegia vulgaris.
Anemone apennina.
Ranunculus parviflorus.
Ajuga Chamæpitys.
Mentha piperita.
Scutellaria minor.
Antirrhinum Peloria.
Digitalis purpurea.
Orobanche major.
Isatis tinctoria.
Iberis nudicaulis (Teesdalia)
Cardamine amara.
Erysimum cheiranthoides.
Turritis hirsuta (Arabis).
Fumaria claviculata.
Ulex nanus.
Lathyrus Nissolia (except Stockwell).
L. pratensis.
Hedysarum Onobrychis.
Hypericum Androsæmum.

H. elodes.	Ophr. anthropophora.	Scolopendrium vulgare.
Prenanthes muralis.	Carex depauperata.	Blechnum boreale.
Hieracium murorum.	Buxus sempervirens.	Asplenium Trichomanes.
H. sabaudum.	Quercus sessiliflora.	Polypodium vulgare.
Anthemis nobilis.	Ruscus aculeatus.	
Ophrys spiralis.	Lycopodium inundatum.	

Note. Convallaria majalis grows in Marystood Wood, near Worplesdon, three miles from Guildford. It grows in a depression near the top of Croomhurst, a prolongation of the Addington Hills, also in Dulwich Wood at Norwood. *Silene anglica* was, in 1837, very plentiful in cornfields near the HUT, a little roadside inn between Ripley and Cobham. *Rosa spinosissima* is still plentiful on Barnes Common. *Arabis hirsuta* grows between Guildford and Albury. *Turritis glabra* grew about Shere in 1837. *Hypericum Androsæmum* grows in several places near Guildford and Shere.

B. The following list contains the doubtful plants, and such as have shifted their quarters since Professor Martyn's time:—

Schœnus albus. Is this now found between Croydon and Wickham?

S. compressus. Shirley Common?

Eriophorum vaginatum. Was found near Croydon less than thirty years ago. Is it there now?

Poa bulbosa. When was this last seen on Clapham Common?

Centunculus minimus. When collected on Barnes Common?

Galium anglicum. Is this still a Croydon plant?

Plantago uniflora (*Littorella lacustris*)? A Wimbledon plant?

Pulmonaria officinalis. Where is the wood between Croydon and Godstone where this fine species grows?

Bupleurum tenuissimum. Godalming?

Pimpinella magna. Guildford, Godalming? Can any reader verify these locations. *Note.* It grows between Godstone and Longfield on the roadside.

Myosurus minimus. Wimbledon? The station is very likely to produce this plant.

Tulipa sylvestris. Wimbledon Park? Where? Specimens from the park were collected not very long ago.

Polygonum Bistorta may still be in what was called Battersea fields; but its ancient station was destroyed when the park was formed.

Dianthus Armeria. Croydon; copiously? This is a very capricious plant. It often changes its locality. It has been seen near St. Martha's, and near Albury.

Sedum dasyphyllum. Is this known as a Kew plant?

Spergula subulata. Mitcham Common? On Witley Common.

Spiræa Filipendula. Clapham.

S. nodosa. Nine Elms?

Comarum palustre. Wimbledon? near Hampton Lodge.

Stratiotes aloides. Thames side; where?

Leonurus Cardiaca. On whose authority was this originally entered as a Combe Lane plant?

Scrophularia vernalis. Has this rare plant disappeared in its Mitcham station?

Turritis glabra. Wimbledon; on walls.

Erodium moschatum. Streatham Common; where?

Fumaria parviflora. Epsom? The species or form now so called was not admitted into lists of British plants for many years after the date of this 'Catalogue of Surrey Plants.'

Lathyrus Nissolia. Exclude Stockwell. A bank on the verge of Gatton Park, near Red Hill, produces it in abundance; also it is in several parts of Surrey.

Lathyrus sylvestris. Wimbledon Park is not an unlikely locality; but who will vouch for it?

Trifolium scabrum. Croydon.

Lactuca virosa. Does this still grow at Streatham? If so, Surrey still has this plant. Is there a second station known?

Hyoseris minima. Does this plant still grow at Petersham?

Crepis fœtida. Banstead Downs?

Gnaphalium dioicum. Banstead Downs?

Erigeron acris. Streatham?

Ophrys paludosus (sic)? Epipactis palustris. Reigate.

Carex axillaris. Putney?

Xanthium Strumarium. This may grow at Dulwich or anywhere else in England, rare though it be. Within the last few years several specimens have been seen about Battersea, Wandsworth, and Kew, and a much rarer *Xanthium* was seen on the Middlesex side of the river.

Osmunda regalis. Weybridge? a very likely habitat.

Lycopodium ampullaceum and *L. Selago.* Shirley Common?

Pilularia globulifera. Streatham Common? It grew plentifully in a pond on the roadside between the Tangier and Hedley.

Plants no longer to be found where they grew in Martyn's time:—

Crocus vernus.

Scirpus triqueter, grew on the river-shore between Battersea and Nine Elms, about seven years ago. It is no longer to be found there.

Panicum verticillatum. Has not recently been found in Battersea fields.

Panicum sanguinale. Has not been seen for many years in the county of Surrey.

Bromus diandrus. Has recently been seen near the steam-boat pier, but not at Battersea. *Note.* It is a very uncertain plant.

Anchusa sempervirens could scarcely grow now about Vauxhall. Like Peckham, Clapham, and Stockwell, the ground is covered with rows of houses.

Hottonia palustris. This rare plant has been suffocated in the foul air of the sewage from the houses of East Hill and Wandsworth-road.

Cicuta virosa. Has not been seen in Battersea for many years. It might once have grown here.

Smyrnium Olusatrum. Vauxhall.

Œnanthe silaifolia. Battersea.

Fritillaria Meleagris. Was seen in the Mortlake locality not very long ago. It has not appeared for some years.

Convallaria multiflora. Cannot now grow at Stockwell.

Arenaria tenuifolia. Not in Battersea fields. Is there a well-authenticated Surrey station for this species?

Papaver dubium, Anagallis flore cæruleo, etc. Must long have disappeared about Stockwell.

Mentha rubra. Mentha viridis. There are no fields now at Peckham.

Geranium pratense. Battersea.

Lathyrus Nissolia. Cannot grow at Stockwell for the above reason. (See List B.)

Lathyrus palustris. Has not been seen near London for more than a century.

Trifolium hybridum. Peckham.

Salix purpurea. Vauxhall.

Sagittaria sagittæfolia. Not in Battersea fields.

Hydrocharis Morsus-ranæ. Not in Battersea where ditches are scarce. It grows at Barnes Common.

Atriplex erecta. This *bête noire* of botanists is one of our botanical mysteries.

Ophioglossum vulgatum. Battersea cannot now be credited nor debited with this plant.

Note. Carduus arvensis var. *setosus* invenitur varietas foliis lævioribus vix spinosis non sinuatis nec tam profunde divisis. Amongst the corn in Battersea fields, over against Chelsea, "cui examussim (exactly) respondet figura *Cardui arvensis* Tabernæmontani Ic. p. 700 quem Carduum in avena provenientem vocat C. Bauhinus, quemque priori plerique Botanici eundem faciunt; sed si non, quod probabile videtur, species diversa sit, insignem saltem varietatem esse, nemo qui plantam viderit, negaverit." "This thistle which agrees *quite* with the figure in Tabernæmontanus,

p. 700, and which Bauhin calls a thistle which grows in cornfields and is believed by many botanists to be the same as *C. arvensis*, but if it is not a different species, which is probable, it is at least a very remarkable variety."—*Ray, 3rd ed.*, 194, *No.* 6.

The above variety was seen in a spot which once was part of Battersea fields, but where now there is a large crop of small brick houses, but neither corn nor cabbage. That the variety collected there, and now *horto in meo*, is a genuine descendant of the thistle or thistles observed by Dillenius, and described in his edition of Ray, I will not assert; it grew near, if not in the same anciently known locality so late as 1857.

N.B. Any information about the species contained in the above lists, and any corrections, will be gratefully received by the Publisher, 45, Frith Street, Soho, London, or by the Editor, at 28, Upper Manor Street, Chelsea.

KENTISH BOTANY.

Before noon on the 15th of August (see 'Phytologist,' p. 140) we started by train from Appledore, and went again to Ashford, paying a short visit to Willesborough Leas, Brabourne Leas, etc. What was achieved in these renowned localities, will be partly seen in the following epitome of our proceedings; and the residue will be forthcoming at a more convenient season.

In presenting the benevolent readers with an abstract of our discoveries, and in laying before them our reflections on the past and present condition of this district, once memorable in history, our intention is not to vilify our own labours, nor to grumble about the apparent insignificance of the results.

The rarer plants seen and localized, it may be granted, are not many; but we will not admit, that the old saying of "much cry and little wool" is justly applicable to our case. We saw all the plants in Mr. E. Cowell's Kentish Flora with one or two exceptions; though we did not see all the plants anciently seen about Romney by Ray and other botanists in the seventeenth century.

In our four days' botanizing we got a very fair idea of the vegetation of Romney Marsh; and in addition to the species already noted, found *Scirpus maritimus* and *Arundo Phragmites* almost everywhere, and the former more abundant than the latter. *Apium*

graveolens and *Œnanthe Lachenalii* were also all but ubiquitous on the margins of ditches. *Butomus*, on the other hand, though it occurred in many places, was not so abundant as in the marshes of Reculver, St. Nicholas, Sarre, etc., in or near Thanet.

Two points, before mooted in the 'Phytologist,' but undetermined, are now settled; we hope, to the satisfaction of the readers of this article; *Nymphæa alba* var. *minor* is *one*, and *Pimpinella magna* var. *dissecta* is the *other*. The former has already been entered at p. 139, to which the reader is referred, and it will further corroborate the opinion there stated to intimate here that a friend and correspondent of ours has seen this so-called variety, both in the New Forest, near Brockenhurst, and also in Ham-ponds, near Sandwich, and observed that the varieties were of various magnitudes, and that the gradations were inappreciable. The plants increased in size not by a manifest but by an imperceptible enlargement of dimensions.

The second plant, *Pimpinella magna* var. *dissecta*, was observed not far from Willesborough Leas, which, it may be observed in passing, are no longer *Leas*, but covered with houses, plantations, well-drained meadows, and corn-fields. This species was very plentiful, and it varied much in the tenuity of the leaflets and segments of its decompound leaves; these were so multiform, that it was a puzzle to decide whether some intermediate examples belonged to the normal or to the dissected-leaved forms.

In Morison and Robarts's History, it is recorded that this variety, viz. *Pimpinella Saxifraga major foliis dissectis*, was found everywhere in hedges or on banks by hedges near Maidstone, in Kent. Observed by Mr. J. Sherard, in company with Mr. Rand. See Hist. Oxon. iii. 284. Can any learned reader tell the Editor of this Journal where the travels of these two botanists are recorded?

In reference to *Crepis biennis* the same remark should be made. On the other side of the valley of the Stour, towards Brabourne, this plant grows in myriads, and the root- and stem-leaves present all the possible varieties, from the entire to the doubly pinnatifid form. These may be distinguished from *Crepis taraxacifolia*, certainly by the fruit, pretty accurately by the radical leaves, and possibly also by the locality. We never observed these two species growing together. Have any of our readers ever seen them in juxtaposition (in close proximity)?

The grand discovery of this very agreeable excursion was *Verbascum thapsiforme*, a fact already announced in these pages. See Vol. V. p. 362, N.S.

A few reflections on the past and present condition of Romney Marsh will conclude this rather long article.

Mr. John Russell Smith, in his 'Bibliotheca Cantiana,' in which he enumerates and briefly describes all works on the topography and antiquities of Kent, from the earliest records to the year 1837, informs his readers that the best work on this part of the county is Sir William Dugdale's 'History of Embanking and Drayning,' a work which embraces all the drainage operations in England up to his time, the middle of the seventeenth century. It may be inferred that the history of the Kentish Fens is not very extensive, and that of Romney Marsh still less.

In the 'Saxon Chronicle,' the earliest historical document of England, perhaps of modern Europe, and in the subsequent chronicles posterior to the Anglo-Saxon, Danish, and Norman periods, there are several statements which show that in these remote times this district was of far greater importance than it is in modern times.

In those early days this locality, all but unknown except by graziers and sportsmen, was regarded by our kings as the bulwark of the realm. The Cinque Ports then furnished the entire English navy; and as a recompence for their services in war were entitled to certain immunities and privileges which are now obsolete and forgotten. The name alone survives.

The five ports (Cinque Ports) were Hastings, Romney, Hythe, Dover, and Sandwich, and with each of these several other contiguous ports were associated; with Romney, for example, Promhill, Lede (Lydd), East Weston, Dengemareys (Dungeness), Old Rumney. West Hythe was united with Hythe. With the exception of Dover and Sandwich, the most important members of the Cinque Ports were either in Romney Marsh or at its two extremities on the East and on the West.

In King Edward I.'s reign Rumney contributed four ships of war, Lydde seven, Hythe five. There is no ship now in Rumney Marsh, and it does not possess a single harbour. In fair weather a ship might unload or load at Dymchurch, a place unknown in the olden times.

Hythe and Lymne Castle are both memorials of a period and

of a people anterior to the arrival of the Angles and Saxons in Britain. The way by land to the ancient Reculver was from Hythe by the Roman road to Canterbury through Elham, and hence to Regulbium (Reculver).

Appledore was a place of some importance in the ninth century, when it was attacked and plundered by the Danes. Some modern historians are puzzled to account for an attack on such an insignificant place by those ruthless invaders, being so far from the sea, where their great power then resided. The moderns have forgotten, if they ever had known the fact, that for hundreds of years after this event Appledore, now a rural and obscure inland village, above half-a-dozen miles from the sea, was a maritime and a principal town of the Anglo-Saxons.

The following extract shows that it was on the sea so late as the year 1377, the first of Richard II.:—

"Richard de Horne, etc., were put in commission for to supervise the banks in this marsh from the town of Hethe (Hythe) all along the sea-coast unto Apuldre; as also all other marshes within this county, viz. from the haven of Romney to Promhill Church, and thence by the sea-coast to Apuldre before mentioned."

These commissioners were appointed in the first year of Richard II.'s reign. See Sir William Dugdale's 'History of Embanking and Drayning of divers Fens and Marshes,' p. 33. 2nd edition. London, 1772, folio.

Again. It also appears from ancient documents that there was water communication between this village (Appledore) and Romney; we presume Old Romney, for Dugdale writes:—

"In 11th Ed. III., A.D. 1323, there was an arm of the sea leading from an arm of the sea called Apuldore, towards the town of Romeney, . . . which was then newly obstructed by the sea-sands, that ships could not pass thereby to the said town of Romeney as they had used," etc.—*Dugdale*, p. 43.

That the sea once flowed up the depression at and beyond Dymchurch is an indisputable fact, for it would soon recover part of its ancient bed, or channel, or creek, if it were not kept within certain bounds by the sea-wall, which is about three miles long, above twenty feet in height, and as many feet wide at the top, on which is the road; its base is said to be three hundred feet wide, and in 1780 it was maintained at a cost of £4000,

annually raised by scot and lot. The outer side is defended by a raddle-work of faggots, fastened to rows of strong piles.

Were the sea to break through this barrier, the ancient channel by Lymne might be restored, and the name Shipway be something more than a memorial of the past.

This sea-wall, which Sir William Dugdale, no ordinary authority, believes was built by the Romans, is between Hythe and New Romney, and is the only barrier on this, the east side of the Marsh. The coast from the end of the wall by New Romney, Lydd, and Dungeness, is of sufficient elevation to defend the interior from marine encroachments. The beach forms not a ridge, but a sort of table-land, all around from near Dymchurch by Dungeness to near the mouth of the Rother, or for several miles beyond the Dungeness towards Rye.

The entire surface of this alluvial track is intersected by ditches or drives and roads; hedges and trees are as rare in the marsh as they are in the Isle of Thanet.

There is no elevation except that at Lydd, which, as above said, is situated on a mound of sand rising above the general level of the Marsh, perhaps twenty or thirty feet. Old Romney, said to be on a hill, is probably not more than two or three yards higher than the level of the sea at spring-tides.

The dip of the land is not towards the sea, but to the interior, and the water of the Marsh is provided with a deep channel through the beach, where it flows into the sea at low water or ebb-tides, and the sea is prevented from flowing into the Marsh by flood-gates.

When Dugdale's map of this Marsh was made, New Romney was close upon the sea-shore, though its harbour had been destroyed by a terrific storm, which filled it up in the time of Edward III. At that period Lydd was about as remote from the sea as it is still. The sea has now retired about two miles from New Romney and ten from Appledore in this direction.

About Brookland, near the Woolpack Inn, there is a remarkable depression mostly flooded, except in dry seasons; and on the margins of this depression, as before observed, there are proofs of its former marine condition still existing in the marine plants which it continues to produce. Its vegetation is entirely of this character.

The soil of Romney Marsh is, like its surface, not much diver-

sified. Its fertility is almost proverbial. Cultivation is not the rule here, but the exception; but where the land was under tillage the crops were luxuriant. Grazing is the occupation of the inhabitants; and sheep, colts or fillies, breeding mares, and a few bullocks, constituted the stock of the graziers. The sheep are numerous and of the Southdown breed.

From this brief notice of the physical condition of Romney Marsh, it appears that the sea, which has washed away miles from the north-eastern shore of the county, as for example, in the Isle of Thanet,—for the Reculver is believed to have been three miles from the sea in very remote times, and half a mile distant in almost living memory—has added much to the dimensions of this part of Kent. Its area is probably doubled since the Romans built the first wall, near Dymchurch, to dyke out the ocean.

The physical contrast between this obscure nook and the Isle of Thanet is remarkable; this forces itself on the notice of even superficial observers.

In Thanet the land, or the surface, or the soil, has diminished almost one-half since the beginning of the historic period, or since the seventh century. During the same period its population, wealth, and material progress, have been constantly on the increase. Here it may truly be said, as the poet said of England during the golden age:—

> "There was a time, ere England's griefs began,
> When every rood of land maintained a man."

This cannot be said of Romney Marsh. The number of foals, breeding-mares, bullocks and cows, sheep and lambs, which it rears and fattens, is immense, and is to be reckoned by thousands and tens of thousands. But here there is barely one man for every twenty acres, where, at the poet's reckoning, there should be eighty. And of these, how many are supported by the land? Barely the half of them. The land requires no labour, for it is all pasturage; it is naturally so fertile, that it produces abundantly in all seasons, good or bad, without any manure, except what is dropped by the sheep, and beeves, and horses, by which it is grazed. Its fences need no repair, for the dykes or ditches are all but indestructible. The sole trade of Romney Marsh is that of live stock; and this trade is in few hands, and can be successfully carried on with a large capital and a small amount of labour.

Of resident gentry there are none here but the clergy, for who would reside here but those who must? Churches are few, and consequently far between, in Romney Marsh: but few though they be, they are far in excess of the wants of the population, which is not increasing.

At Old Romney there is a church about a furlong or two from the road, where the few houses in the parish stand; only a very few—a couple of farms without any cottages. Cottages are about as scarce here as white crows. There is no way, not even a bridle-road, to the church from the highway, but through a field, and this is so seldom trodden that the path is not discernible. Those who worship here on the Lord's Day are so few, that their feet make no permanent impression on the grass over which they walk one day in seven. Even the track in the churchyard between the stile and the church-porch is invisible: the worshippers are so few, or they tread so lightly, that the grass in the other parts of the sacred enclosure is no greener than by the very portal of the sanctuary. By appearances, it might be said that nobody goes to church. But this would be a very uncharitable and untrue assertion; for the few parishoners, say a dozen, or at the utmost a score, might pass from the road across the field and through the churchyard once or even twice every Lord's day, and all traces of their steps might be obliterated on the luxuriant herbage before the next Sunday.

We visited all the four towns or places where the majority of the population resides, viz., Appledore, Dymchurch, New Romney, and Lydd; and they all, especially the two last-mentioned, have a more desolate aspect than Sandwich, once the excellency and now the opprobrium of the Cinque Ports. This latter town, with its little harbour, its inns and railway-station, and its situation on the leading thoroughfare between the populous towns and villages of the Isle of Thanet, and Deal, and Dover, has now and always must have had some traffic; and although some of its streets afford a good bite for cattle and sheep, one of them at least is a principal road or thoroughfare between populous and fashionable places. New Romney and Lydd do not participate in any one of these advantages. They have no harbour within from four to seven miles; they are not on the nearest road even from Hythe to Rye. Strangers are rarities in their streets. Some of the people of New Romney never

were so far as Lydd in that direction, and indeed it is not easy to imagine what anybody should go to Lydd for, or to New Romney either. Lydd is the *ultima Thule*, the John O'Groat's of England; and when the traveller must needs come back again, he very naturally asks the sensible question why he should go there at all, for he cannot go much further in this direction.

But the writer must in compassion to his readers desist, or he may give them cause to wish that he had never gone there or that he had never come back, which would have had much the same effect on this long article; for in the latter case it would have existed only in intention. He has not the most remote hope that what he has written will induce anybody, however fond he may be of locomotion, to pay a visit to this singular place. Yet it is perfectly unique; it has no parallel in England. We have traversed the Eastern Lowlands—that is, the Fens of Huntingdon, Cambridge, Northampton, Norfolk, and Lincoln—over and over, by coach and by the marrow-bone stage; but they are not like Romney Marsh. They are "flat and dull" like it, but not unprofitable even to the passenger or sight-seer, for they lead to Peterborough, Ely, and Lincoln, all famed for their cathedrals, and to other places of less note. Romney Marsh leads to nothing but to the lighthouse at Dungeness. But there is a beauty in Romney Marsh or in its environs: there is the sea on one side, and there is on the other something like a girdle of chalk; an elevation called the Downs—not the Mariners' Downs—crowned with woods and groves, and feathered with trees to the depression of the weald and marsh. All these beauties are absent from the Eastern Lowlands. The sea itself is one of the most interesting sights to a genuine Briton; he loves it with an intensity of admiration, equalled only by the love of a true Celt for his native mountains and his beautiful glens.

The Downs, which bound the Marsh on the east and on the west and on the north, are beautiful at a distance, but in close proximity they afford charming bits of scenery. Here also is the vale of Ashford, a part of the site of the ancient British forest of Andredsweld, which extended more than a hundred miles to the north and to the west, and which is celebrated in the masculine strains of Drayton, England's great chorographical poet.

There is no room for sketches of the scanty population; this may be forthcoming when we set out again on our travels to

visit the less remote country between Canterbury and Folkestone, and the still better known parts of Kent which lie in the vicinity of Rye and Winchelsea. When we have done this bit of coast, which physically belongs to Kent though politically to Sussex, we shall have perambulated the shores of this county from Greenwich round to Beachy Head, a coast-line of not less than a hundred and fifty miles.

JACOB RAYER.

For the brief notice of this worthy member of the botanical brotherhood the writer is indebted to the 'Gentleman's Magazine' for 1797.

The above estimable local botanist was born in March, 1735, and at an early age had to provide for his own daily wants; for his parents were not affluent, and their son was not born "with a silver spoon in his mouth." He was, at the outset of his active life, employed in the East India Company's Warehouse, but in what capacity his biographer does not state.

He had another employment, possibly as an amateur, in the Galenical laboratory of the Apothecaries' Hall; and here, it is probable that he first contracted a love for plants, and was initiated into the mysteries of botanical science.

It is related that he was the box-bearer of the youthful Esculapians on their herborizing excursions; and as *such* he has the honour of being represented in the vignette prefixed to Curtis's 'Flora Londinensis.' It is related that he was patronized by the demonstrators of the company, and especially by Mr. Stanesby Alchorne, who held this office only two years, and by Mr. Wm. Hudson, who lectured to the students four years; and the latter is said to have presented him with a copy of his 'Flora Anglica.' This donation is somewhat like the gift of ruffles to a shirtless man; unless Mr. Rayer took the trouble of learning the language for the sake of the contents of the book. The writer of this notice, only a few weeks ago, was told by a lady who had spent some time botanizing on the Pyrenees, that a shepherd learned Latin with the aid of the Curé, to enable him to investigate the botany of this productive chain.

Mr. Rayer's favourite botanical works were 'Gerard,' by Johnson, and John Parkinson's 'Theatre of Plants.' I once heard of a

man in a humble station who became a distinguished proficient in the application and etymology of the English language by studying 'Bailey's Dictionary,' his only work on the subject. Parkinson and Gerarde are both useful, but they are better adapted for aiding the researches of historical botanists than for helping students to identify their collections or discoveries with previously known species. Our hero was fortunately able to apply to living authorities, and with authentic specimens at his command he probably had little difficulty while threading his way through the intricacies of modern nomenclature.

During the last twenty years of Mr. Rayer's life he was employed as *day man* in the office of the Secretary of the Hon. South Sea Company; but still retaining his appointment—honorary or stipendiary?—in the Medical Society.

His holidays were all spent in botanical excursions; and his favourite resorts were Greenhithe, Northfleet, Gravesend, Cobham, Cuxton, Rochester, and the Isle of Sheppey in Kent, and Hampstead Heath and Finchley Common in Middlesex.

The only known letter in Mr. Rayer's holograph is one to the demonstrator of the Chelsea Gardens, dated from Bolt Court, 1st July, 1795, excusing himself from joining a party formed to investigate the Rydate bogs, etc. Can any reader tell the publisher where these bogs are situated?

This amiable man, who is said to have been an indulgent husband, a steady friend, and a lively companion, an innocent, honest man, died in the beginning of or early in the year 1797.

His name appears in the earlier volumes of 'English Botany,' where Mr. Sowerby acknowledges his obligations to Mr. Rayer for specimens therein figured; also Sir J. E. Smith, the learned author of the 'English Flora,' commemorates his (Mr. Rayer's) claim to the discovery of *Althæa hirsuta*, one of the rare Cuxton plants. He bequeathed his botanical books, herbarium, papers, and botanical memoranda to the Medical Society of London.

SENEX.

MALVERN BOTANY.

BOTANY OF THE GEOLOGICAL PERIODS.

It has been suggested that with regard to the Scottish and Welsh mountains, that they retain traces of an early or "Glacial"

Flora, as it has been called, when the climate of Britain was generally of a much more severe character than at present. Several Saxifrages and a few other alpine plants, now left as relics on the summits of the Scottish Alps, and numerous on the sea-shores of the Polar regions in the present day, are supposed to testify to a time when a rigid climate was the character of countries now in the temperate region; while it is also inferred that those lofty heights were then lifted above the Northern primæval seas, if not so elevated above the ocean level as they now are. But no remnant of a Polar vegetation exists on the Malvern Hills, and no plant remains indicative of an earlier state of things than the present aspect of this part of the globe. Hence the inference must be, that these eminences never for any length of time ascended into loftier regions of the atmosphere than they now do. Certainly, no existing vegetation at present here suggests the idea.

Grasses and Mosses of the Malvern Hills.

Contending for dominion with the fine-leaved Grasses—especially those of the genera *Anthoxanthum, Agrostis, Aira, Festuca,* and *Avena*—which probably ever since the rude Celts established themselves in Britain, have been nibbled by sheep upon these breezy heights, Cryptogamic vegetation abounds; and has in the course of ages filled up all the gaps and inequalities of the hills. The growth of Mosses, especially, combined with imbral action year after year, has at length caused such an accumulation of soil that the rocks are in many places hidden by this soft verdant inundation, and cultivation gradually creeps up the declivities, and might be extended almost to the extreme height of the chain, which is but 1444 feet, though it is to be hoped that this will never take place. It can hardly be doubted, then, that combined with the disintegration of the brittle and baked rocks, Mosses have been the chief originators of the soil upon these hills. In proof of this it may be well to extract the following passage from 'The Botany of the Malvern Hills,' a work of detailed research to which I have alluded previously:—

"The Lichens have been generally considered the first pioneers of vegetation, but their efforts to create a *humus* for the nourishment of other plants are but trifling when compared with the economical powers of the Mosses. To test this by experi-

ment, I took a tuft of *Bryum capillare*, Linn., from the roof of an outhouse at Malvern Wells, which was abundantly studded with it, together with the black earth collected about its base. The mass altogether weighed six ounces, but when, after repeated and careful washings, I had extracted all, or nearly all, the black mould that enveloped the roots, the actual residuum of frond essence that remained when again weighed amounted only to *half an ounce*; thus satisfactorily showing that the Moss, through atmospherical and imbral agency, had formed a soil exceeding its own weight at the very least above ten times! I had reason to believe too that this had been accomplished within three or four years. By operations on a more extended scale, it is easily conceivable how a bare mass of rock may, in the course of years, be covered with a thick coating of soil sufficient for the nourishment of grasses or any of the phanerogamous families, adapted to the climate and elevation where they may take up a position. The excessive growth alone of such Mosses as *Sphagnum palustre*, *Bryum hornum*, *Dicranum glaucum*, *Bryum palustre*, and *Hypnum molluscum*, *scorpioides*, *cuspidatum*, etc., in the course of time entirely fills up bogs, drinks up their water, and conduces to their ultimate establishment as component parts of *terra firma*, fit for useful cultivation. In this manner, then, have the original bare crags of the Malvern Hills received that rich compost now covering their sides; and which, combined with the disintegrating touch of Time's mouldering fingers, renders their soil in the present day capable of immediate cultivation even in the steepest places."

Lichens of the Malvern Hills.

But we must not forget the Lichens, for they probably preceded the Mosses in the first efforts of vegetation upon the reef of rocks here, when at length wrested from the dominion of the primæval seas. As some of the Lichens are almost imperishable—those in particular that are glued to the surfaces of granitic rocks—doubtless the age of some of them must be very great, carried back, perhaps, to the origin of the present state of things upon the globe. The *Parmelia stygia*, that blackens one of the upper rocks of the North Hill, may be older than the Pyramids of Egypt, for it is inseparable from the hard surface of the scar on which it reposes.* A recent writer on cryptogamic plants extends

the date of living Lichens to a far remoter period. He says—"The geographical Lichen, which often spreads over the whole rocky summit of a mountain in one continuous patch, many separate individuals being absorbed in one, must date from fabulous periods. I have gathered it in this form on the mountain of Schiehallion, on smooth quartz rocks, which exhibit here and there the glossy polish and deep striæ or flutings peculiar to glaciated surfaces, as distinct and unchanged by atmospheric disintegration, as though the glacier which had left these unmistakable traces behind it had only yesterday passed over them. And if these ice-marks can be accepted as an indication of the age of the Lichen—the first and sole organic covering of the rock, be it remembered—then in all probability it was in existence during the last great changes of the globe, which preceded the creation of the human race." I am not, however, disposed to extend the growth of the Lichen into "fabulous periods," as we do not know when it actually began to grow, nor can in general the individual Lichen be considered as a continuous living organism, like an Oak-tree or a Yew. Such species, indeed, as *Lecidea geographica*, *Urceolaria cinerea*, *Lecidea atrata*, *Lecanora glaucoma*, and *Isidium corallinum*, when once bound to a rock, live on it for ever, unless forcibly abraded; but the great majority of Lichens wither and crumble into powder with time like other vegetation, but in so doing they fulfil their appointed lot as servitors of Nature, and assist by their own decomposition to form a layer of soil, which, mixed with the broken *débris* of rocks, forms a *humus* at their bases, and is even swept onward by winds to help to fertilize the valleys below.

Including those that grow upon trees, the number of Malvern Lichens has been put down at 254; and when to this is added 145 Mosses, 28 Jungermanniæ, besides a numerous minute tribe of *Algæ*, and the *Fungi*, it is not to be wondered at that the Cryptogams considerably exceed the flowering plants in number within the Malvern district. As however the Lichens are a very slow-growing race, while the Mosses have a rapid and luxuriant extension, unless burnt up by fervid heat, and portions of them die and wither away every year, uniting with the black soil they may be said to have manufactured, it must be evident that they do more in the creation of mould than the Lichens, and this has been their work on the Malvern Hills.

I must refer to the Malvern Botany for a catalogue of the Mosses there given, to which one has been since added—the *Bryum alpinum*—which is located in reddish patches at the northern base of the Herefordshire Beacon. *Encalypta streptocarpa* and *Didymodon flexicaulis* are confined to the Silurian limestone at the western bases of the hills; while the rare *Zygodon Mougeotii* only forms its round cushiony tufts upon a wet rock of the Worcestershire Beacon.

The Lichen and the Moss, then, must be acknowledged as the pioneers of vegetation on every bare rocky surface, and the depth of mould with which they have covered the once hard and bare ribs of our Malvern Hills suggests a long period for their accumulated action—but on this I forbear to speculate, being averse to "time bargains" as much in geology as on the Stock Exchange. Yet whatever Lichens and Mosses commenced to do has been carried on by the Grasses, that vegetated here as soon as circumstances gave the slightest covering on which their seeds could rest—

> "Green leaves every one
> Spread in their countless thousands to the sun,
> Still growing, and no solitary blade
> Of all their verdure ever disobeyed
> The law of Nature: ev'ry stalk that lifts
> Its head above the mould enjoys the gifts
> Of liberal Heaven—the rain, the dew, the light."

And what is the "law of Nature" that they have to fulfil? Let any one pull up a tuft of grass, and mark the innumerable fibres of its roots, graduating into the finest hairs, spreading into every cranny pushing out on every side, and all loaded with the minute particles of the soil that they have broken up and elaborated through the rain that has filtered down over their leaves into the moistened earth below. The rain itself is loaded with fragmentary particles of fertility, which are received and treasured by the leaves of the humble plants on which they fall, and so ultimately placed in the recesses of the earth. So month after month soil accumulates, a nutriment for other plants ever seeking where they can find unappropriated sustenance. As an instance of the penetrating power of roots in urging their course downwards to break up the soil, however hard, on which they may be located, I may refer to a round tuft of grass from these hills, represented in Knapp's delightful 'Jour-

nal of a Naturalist,' where the fusiform yet fibrous root has become four times the length of the blades at the surface. The author says that the figure given "represents the tufted head and entire roots of a grass gathered from a down (at Malvern) fed by sheep from time immemorial. It is probably that of the hard Fescue (*Festuca duriuscula*), which, having been constantly eaten down, has never thrown up flourishing stems, giving out only radical leaves. These appear to have been cropped short as soon as they have sprung up, the less succulent and strawy portions only being left, as a bush constantly clipped by the gardener's shears. The root appears to have *annually increased*, though the upper parts it was destined to nourish have been destroyed, until it became a lock of closely compacted fibres, like a tuft of hair six or eight inches in length." Grasses continually cropped by sheep, as long the case on the unenclosed Malvern Hills, increase much by their roots, and gather soil about them, thus continually increasing the crust of mould on the rocks beneath, now hidden by verdure.

EXTRACTS FROM CORRESPONDENCE.

Euphorbia Lathyris.

Many truly native British plants are very uncertain in their periodic appearance; they may be abundant in one season and may disappear in that locality for several years.

This is certainly the case with the above plant, *Euphorbia Lathyris*, which sometimes grows in the greatest abundance in the little Yew wood at the foot of Boxley Hill, near Maidstone, and then it may disappear for many years.—E. M. A.

I remember very many years ago seeing a single plant or so of this species, usually called "Caper Spurge," in the Bedford *Purlieus*, a part of Rockingham Forest between Wansford and Kingscliffe, but much nearer to the former than to the latter. I had often seen it in a semi-spontaneous condition, and concluded that the plant or plants seen in the *Bedford Purlieus* had sprung up from a seed accidentally dropped by the woodcutters, who might have seasoned their bacon with its acrid fruit. The above extract from Mr. E. M. A.'s letter throws considerable suspicion on this inference.

Concerning the Maidstone station, our kind correspondent who contributes the above notice of *E. Lathyris*, further informs us that Boxley Hill is a very productive locality.

"You will find the Bluebell and Boxley Hills well worth botanizing on; all the common Kentish Orchids are to be found there; the Bee, the Fly, the Fusca, the Man, the Butterfly and the Conopsea, *Epipactis grandiflora*; while near Stockbury the early Spider grows on one bank in abundance, and not far from the latter place is the *Helleborus viridis*, I believe, a much rarer plant than the *H. fœtidus*, which is common all about the chalk, and about as truly British as the Daisy."—E. M. A.

Verbascum thapsiforme.

I have not yet seen *Verbascum phlomoides*. I have found a variety of *thapsiforme* with all the flowers in twos or threes, or singly in the axils of the leaves, and not with a decided spike as it ought to have. My impression is that it takes this form when it grows as an annual plant in a shady place.—E. M. A.

Centaurea nigra.

A plant like the English radiated *Centaurea nigra* is common here (near Rouen) in the meadows. A form very like this grows in the Vale of Gloucester, and seeds taken from these latter produced the ordinary form of *Centaurea nigra*.—E. M. A.

Harebell, or Hairbell.

(See 'Phytologist' for 1861, vol. v. p. 191.)—There are divers opinions about the name of this popular flower, and the dispute is only about the name.

"Like doctors thus, when much dispute has pass'd,
They find their tenets just the same at last."

I never heard the Wood Hyacinth called "Harebell." When a child, my nurse taught me to call it "Bluebell." Among the rustics it bears no particular name. The rustics and old Master Gerarde are the best authorities for English names."—E. M. A.

Petasites vulgaris.

I do not know where to find the above plant within an easy walk of London. It grows near Maidstone, by the brook which runs from Boxley. It is rare about Maidstone, and the above is the only place where I have seen it.—E. M. A.

Palm.

(See 'Phytologist,' vol. v. p. 224.)—About Birmingham the early flowers of the Willow were always called Palm, and if in flower, were gathered on Palm Sunday, a relic of Popish times. In France the Box is the Palm; it is sold at the church-doors on Palm Sunday, after having been blessed by the priest, and is then hung up in the house for the twelvemonth.—E. M. A.

Cyclamen hederæfolium.

(See p. 343, *et supra.*)—*Cyclamen hederæfolium.*—"Woods not very far from Hythe or Cranbrook." I never heard of the *Cyclamen* growing near Hythe. Cranbrook is a considerable distance off, on the other side of the Weald. It still grows in plenty in the celebrated old station of Sandhurst, near Cranbrook. A relative of mine a few years ago brought many roots from that station, a wood, and I have seen the plant in flower in a garden at the Bower, near Maidstone; and I could see no difference between the wild plant and the common garden one. My aunt often sowed the seeds in a wood at Barming, near Maidstone; and I have known a fine plant brought from that place, doubtless one of the seedlings from seeds which she had deposited.—E. M. A.

Odoriferous Plants.

I have long purposed to send you a paper for the 'Phytologist,' "upon the odours of certain plants as an unfailing means for the determination and limitation of species." This of course could only refer to the odorous plants, either good or bad smelling; the scentless could have no place in my paper. As this is a subject which has occupied my mind and observation many years, and one which I have never seen mooted or brought before the public or hitherto noticed by any of our botanical brethren, my object is to direct the attention of the botanical world to the fact that the odour of plants is a sure means for the identification of the species, being unchanged and unchangeable in all plants possessed of that property, whether cultivated or wild, native or exotic.

As examples, I will adduce *Viola odorata* and *Viola hirta;* the former is *always* scented, the latter *never*. I have cultivated both for some years, and culture has not changed these natural characters. Another example is the Wallflower, which is scented with its peculiar and grateful odour, whether produced in the

garden of the peer or of the peasant—whether growing on old walls and roofs, or on the bare exposed rocks of Kinnoull."

J. S.

[We are obliged to our excellent correspondent for his good intentions. The paper will be very acceptable, and will doubtless be appreciated by the readers of the 'Phytologist.']

BOTANICAL NOTES, NOTICES, AND QUERIES.

Hyoscyamus niger.

Sir,—In the month of July I formed a picnic party of youths of both sexes, and spent the day on the magnesian limestone. As we were passing a walled enclosure where pigs were kept, the young persons saw several plants of *Hyoscyamus niger* in flower within the enclosure, and brought two or three to their teacher. I was not a little surprised, on smelling one of the plants, to experience a sensation I had never known this plant to produce before. I felt as if I had been struck a hard blow at the top of the head by a mallet padded with wool. The sensation was only momentary, and the effects passed off immediately. Thinking that this result might be owing to some idiosyncrasy of my own nervous system, I said nothing about it, but merely asked the young people to smell the plants; and though they each described their feelings in different words, they all agreed with what is above stated. One young lady said, "Oh! it's just as if some one had struck me very hard at the top of my head without hurting me." On only one occasion since have I met with plants of this species which produced this peculiar sensation; and these were growing in a similar situation. The specimens were more dwarfish than those found by waysides round the coast. The cultivated plant, which I have examined many times, is still taller, and produces no sensation like that above described. I am anxious to know if any of your readers have noticed this property of the Henbane.

Ruricola.

Lathyrus tuberosus.

A correspondent obliges us with the following economical scrap:—

"La Truffe de Lorraine.—On lit dans l'*Echo de l'Est* de Bar-le-Duc: On fait aujourd'hui beaucoup d'efforts pour acclimater les animaux et les végétaux exotiques. Nous nous étonnons donc avec raison qu'on n'attache pas plus d'importance à la multiplication d'un tubercule qui se produit spontanément dans nos terres argilo-calcaires, le *Lathyrus tuberosus*, connu sur les marchés de Paris sous le nom de Truffes de Lorraine. C'est le *macajon* ou *maquehon*, délices des enfants du village, qui suivent la charrue pour les récolter. Laiteux, sucré, à fécule blanche, on le mange cru dans les communes rurales; à Metz, à Pont-à-Mousson, à Langres, on le vend cuit sur les marchés, du mois de février jusqu'en avril. Nous n'en avons pas vu à Nancy, quoiqu'il croisse dans les environs. Ce tubercule, plus agréable que la pomme de terre, vaut infiniment mieux que l'igname et la

patate. La plante qui le produit appartient à la famille des gesses, et se reconnaît à ses belles fleurs rouges de la forme de celle des pois."

The author of the above paragraph intimates that the merits of *Lathyrus tuberosus* have been strangely overlooked, especially in this age of material progress, wherein so many successful efforts have been made to acclimatize both foreign animals and plants. "The plant," he continues, "grows spontaneously in our marly soils, *terres argilo-calcares*, and is known in the environs of Paris as the *Lorraine Truffle*. It is the *macajon* or *maquehon*, relished by the village children, who follow the plough to pick up these tubers and collect the roots.

"This tuber has a milky, saccharine taste, with a whitish fecula, and in the rural districts it is eaten raw; but about Metz, Pont-à-Mousson, and Langres they dress and sell it in the months of February, March and April. It is more palatable than the potato, and infinitely more valuable than the Batatas." The plant, as all our readers know, belongs to the *Leguminiferæ*, and is readily known from the yellow Meadow Vetchling by its large, beautiful red flowers, which are about the size of a pea-blossom.

Note. Will any of our correspondents who have the means make experiments on the culture, produce, and economical importance of this native British plant, which grows spontaneously in Essex, and, in Adam Buddle's days, grew in Lincolnshire; and will such be so kind as to send us the results?

John Parkinson, the Herbalist.

Sir,—I am desirous to obtain information relative to the family and descendants (if any) of John Parkinson, the celebrated Herbalist. From biographical dictionaries we learn little or nothing about him. The inscription round his portrait in the 'Paradisus' proves him to have been born in 1567. His *arms* are given at the bottom of it: *On a chevron, between three feathers, as many mullets, a martlet for difference.* Felton (on Portraits, p. 91) states that "he died about 1645, aged about seventy-eight," but gives no authority for his statement. I am inclined to think that he was born in Nottinghamshire. The martlet in the arms proves him either a fourth son, or the descendant of one. His will, were it found, would probably give the best information to be obtained; but before one can find it, the place of his death must be ascertained.

George W. Marshall, LL.B.

Ward-End House, Birmingham.

Honey-Stalks of Shakspeare.

Several plants bear the prefix *Honey*, viz. *Melanthus*, Honeyflower; *Cerinthe*, Honeywort; *Lonicera*, Honeysuckle; but neither the great poet above mentioned, nor anybody else, means by *Honey-Stalks* a plant, but only part of a plant. "Baits to fish and honey-stalks to sheep" are not of necessity entire animals or whole plants.

Several plants exude something which becomes thick and clammy when exposed to the air and heat. *Sclerochloa fluitans* is one; when young, we have often licked its stalks, and thought "there was nothing half so sweet." We have often sucked the little saccharine juice at the base of

the Clover flower, which is also sweet; but the stalk yielded no sugary exudation. In Virgil's fourth Eclogue, the 30th line is as follows:—

"Et duræ quercus sudabunt roscida mella;"

and in Georg. lib. i. 131: "Mellaque decussit foliis." The sense appears to be, "that in the golden age, to be restored under Marcellus (the hope of Rome), the Oaks should sweat honey,"—a metaphorical expression for exuberant fertility, plenty, and happiness. SIGMA.

CUCKOO-BUDS.

Sir,—In the 'Phytologist' of the present month (March, 1862), a correspondent, S. B., in reply to a former correspondent, says that the "Cuckoo-Buds" of Shakspeare ('Love's Labour Lost') are the flowers of the *Ranunculus Ficaria*, or Pilewort. He may be right, though I do not quite agree with him, but am of opinion that the "Cuckoo-Buds" have their representatives in the several species of Meadow Crowsfoot or Buttercups, since the lines referred to by S. B. say that "Cuckoo-Buds" of yellow hue

"Do paint the *meadows* with delight."

It might be said that the *Ranunculus Ficaria* is more a flower of the hedgebank and the roadside, than of the meadow, but of course it is also found in meadows. Therefore may not the several species be combined as the

"Cuckoo-buds of yellow hue,"

which the poet says "do paint the *meadows*," and not the hedgebank? The merely observant admirer of flowers would see little or no difference between the *R. repens*, *R. acris*, and *R. bulbosus*, more commonly known as Buttercups; and these three meadow species, together with the *R. Ficaria*, are in all probability the "Cuckoo-Buds" of the poet. I wish to say further, that not only is the Pilewort, before it expands with the sun's heat, "*like a bud closed*," but it may be said that the whole of the *Ranunculaceæ*, and, indeed, hundreds of flowers besides, are like buds closed before they expand with the sun's heat. I am not aware that the pretty little Pilewort is called "Cuckoo-Bud" by any of the early writers on botany, but I know of one modern botanical writer who affirms the poet's flower to be the *Ranunculus repens*, or Creeping Buttercup. T. S.

Burnley, March 13, 1862.

[*Query.*—Who is this modern botanist?]

Communications have been received from

John Sim; W. Ashley; Archibald Jerdon; C. J. Ashfield; S. Beisly; T. R. A. Briggs; Walter W. Reeves; James Lothian; Walter Galt; T. Moore; H. Beisly; Mrs. Merrifield; James Backhouse, jun.; W. Pamplin.

RECEIVED FOR REVIEW.

The Preston Chronicle, May 7th.
On the Value of Rheea as a Silky-looking Fibre, etc.
James Lothian's List of Florists' Flowers, etc.

CHAPTERS ON FUNGI.

By Archibald Jerdon.

CHAPTER VIII.

The second great division of the Class Fungi is, as we formerly saw, that of Sporidiiferi, in which the reproductive bodies, denominated *sporidia*, are enclosed in sacs or cases. These sacs, or *asci*, as they are termed, are generally of an elongated form, and contain a definite number of sporidia, eight being the usual or typical number, and they are frequently accompanied by threads, called *paraphyses*, which are abortive asci, and which are often jointed or septate. The number of sporidia is however sometimes indefinite.

The external forms of the Fungi of this division are very various. Their size is, in general, small, but they are in many cases important agents in the scheme of nature, in hastening the decay and destruction of dead substances. Some of the higher forms are subterraneous in their habits and very curious in their structure.

Order V. Physomycetes.

This is a small and curious order, intermediate between Hyphomycetes and Ascomycetes, and possessing the enclosed sporidia of the latter combined with the free fertile threads, or flocci, of the former. It is distinguished by the bladder-shaped fertile cells being scattered on the threads, which are not compacted into an hymenium. The number of sporidia is indefinite.

The plants of this order are commonly classed under the general name of *Moulds*, along with those of the previous order (Hyphomycetes), and are generally met with on decaying substances of various kinds.

Suborder 1. Mucorini.

Threads free, bearing terminal or lateral asci (or *sporangia*).

The genus Mucor is the type of the group.

Mucor.

Sporidia discrete, contained within a rounded membranaceous dehiscent sporangium, bursting forth when immersed in water.

Mucor Mucedo, L. *Common Mould.* Byssoid, flocci simple,

sporangia and sporidia globose, at length blackish. On fruit, paste, preserves, etc. Very common.

From a white floccose stratum arises a forest of little pellucid stalks, each bearing a roundish vesicle, which at length becomes blackish from the contained ripe sporidia. This Fungus forms a beautiful object for the microscope.

Order VI. Ascomycetes.

This is a very large and important Order, and comprehends a vast multitude of genera and species, the external appearance of which differs widely, though all agree in a common structure of fruit; the essential character of the division being the development of a definite (or in some few cases of an indefinite) number of sporidia, within certain cells of the hymenium, which are generally of an elongated form, and accompanied by paraphyses.

Among the Fungi of this division are the Morell and the Truffle, both well-known edibles and much esteemed.

Suborder 1. Elvellacei.

Substance carnose, waxy or tremelloid, cup-shaped or clavate; hymenium generally open.

This is a large group, and is characterized by a fleshy or soft texture, and by the exposed surface of the hymenium, or fructifying part. It contains many interesting Fungi; and many species of the extensive genus Peziza are extremely beautiful.

I shall notice the genera Morchella and Peziza.

Morchella.

Receptacle pileate; hymenium costate, lacunose.

Morchella esculenta, L. *Common Morell.* Pileus conical, ovate or globose, its base adnate with the stem; ribs firm, anastomosing into distinct cells.—*Grev. Sc. Crypt. Fl. t.* 68.

Woods, orchards, cinder walks, etc. Spring and early summer.

Pileus two to three inches high, yellowish, olivaceous, or cinereous; the ribs sometimes tinged with white or red. Stem hollow, whitish, one to three inches high.

Generally of a brownish-yellow colour, with a cinereous tinge. The pileus varies in being sometimes conical, but the usual shape is globose or ovate.

This is the common eatable Morell, and is esteemed as a valu-

able article of food, though it is not much known in this country. It is easily recognized by its honeycombed pileus, and agreeable (though faint) smell.

Peziza.

Cup-shaped; cup more or less concave, soon expanded; the disc naked. Asci fixed, accompanied by paraphyses.

Of this genus many more than 100 species are described by Fries, in his 'Systema Mycologicum,' and many more have been added since.

Peziza coccinea, Jacq. *Carmine Peziza.* Cup infundibuliform, externally whitish and tomentose as well as the stem; disc carmine.—*Grev. Sc. Crypt. Fl. t.* 171.

On rotten sticks, lying on the ground or buried in the soil, in woods. Spring. Not uncommon.

Cup one inch or more broad, deep carmine (or rather of a colour between crimson and scarlet) within. Stem half to one inch high, but frequently the plant is sessile. Asci long. Sporidia elliptic.

A large and handsome species, rather rare. It often appears to grow out of the ground, but on examination it will be found attached to some rotten branch buried in the soil. It is a lovely object, when its deep red cups are seen in some dark sequestered spot, contrasting charmingly with the black soil or moss-grown stump on which it grows.

Peziza æruginosa, Pers. *Verdigris Peziza.* Verdigris-green; cup turbinate, at length expanded, and more or less flexuous; stem short.—*Grev. Sc. Crypt. Fl. t.* 241.

On rotten branches, stumps, etc. Not uncommon.

A curious species, which possesses the remarkable property of staining the wood on which it grows of a deep verdigris-green, for a considerable depth. The cups, which are not often developed, are pale externally and sometimes wrinkled.

Suborder 2. Tuberacei.

Hypogæous. Hymenium mostly convolute and forming veins, in which the asci are irregularly distributed.

The plants of this Suborder grow more or less completely below the surface of the soil, and the asci and sporidia are enclosed within their substance, which is often compact and solid.

The various kinds of Truffles belong to this group, of which I shall take, as the type, the genus Tuber.

Tuber.

Uterus closed, marbled with veins internally. Sporangia (asci) pedicellate, confined to the veins.

Tuber cibarium, Sibth. *Common Truffle.* Warty, black.

Buried in the soil of woods, especially Beech-woods.

Common in some parts of England, but generally rare.

Forming rough, irregular, rounded bodies of 1 to 2 inches (or more) in diameter, covered with small, sub-pyramidal warts. Within white, marbled with darker veins.

This is the common Truffle of this country, and is now named *Tuber æstivum.* Attempts have been made to cultivate Truffles, but hitherto without success.

Suborder 3. Phacidiacei.

Hymenium at length more or less exposed; disc orbicular or linear; margin generally involute; walls coriaceous.

In this subdivision, the perithecium is generally of a hard or cartilaginous nature, and often of an elongated form, and the hymenium (or disc) is at first closed, and afterwards expands more or less as the plant reaches maturity. The species generally grow on dead wood, or other vegetable substances.

I shall instance the genera Hysterium and Rhytisma.

Hysterium.

Perithecium elliptic or elongated, bursting by a simple longitudinal fissure.

The Hysteria are very nearly allied to the Lichens of the genera Opegrapha and Graphis, but the want of a crust and of green gonidia places them among the Fungi.

Hysterium Fraxini, Pers. *Ash-turf Hysterium.* Erumpent, elliptic, hard, black, lips tumid even, disc linear.—*Grev. Sc. Crypt. Fl. t.* 72.

On the smaller fallen branches of Ash. Winter and spring. Common.

A common species on Ash-branches, forming groups of small, elliptic, black excrescences, sometimes arranged in a circular manner. It is the *Sphæria sulcata* of the older botanists. The asci are clavate, and the sporidia large, yellow, and fenestrate.

Rhytisma.

Perithecium of no regular form, bursting, with a more or less flexuous fissure, into transverse fragments. Asci erect.

Rhytisma acerinum, Pers. *Sycamore Rhytisma.* Innate, spots confluent, rugose, bursting by flexuous, labiate fissures, disc pale.—*Grev. Sc. Crypt. Fl. t.* 118. On leaves of the common Sycamore and Maple. Extremely common.

Almost every Sycamore-tree appears to be more or less affected with this Fungus, which appears in the form of black spots on the leaves in early autumn, disfiguring them much, and appearing to produce a premature decay and fall of the infected leaves. The plant does not perfect its fructification till the spring of the following year, when the leaves have lain long on the damp ground, and the fissures then open and discharge the sporidia in clouds. The asci are clavate, and the sporidia long and filiform.

Suborder 4. Sphæriacei.

Perithecia free or immersed in a stroma, or receptacle, opening by a distinct punctiform or short linear aperture. Asci mostly springing from the walls.

This is a very large and important group of Fungi, and contains an immense number of species. Of the genus *Sphæria* alone two hundred species are described in the 'English Flora,' and at least one hundred more have been added to the list of British species since the publication of that work.

This group is distinguished by the more or less spherical shape of the perithecia, but the plants vary much in outward appearance. I shall take the genus Sphæria as the type, and describe several species of it.

Sphæria.

Perithecia rounded, entire, furnished at the apex with a minute orifice. Asci converging, at length dissolving.

This extensive genus is now divided into a number of different genera, corresponding (generally) with the principal divisions of it, as given in the 'English Flora;' but as I have taken this as my text-book, I shall not distinguish these new genera. The sporidia of the *Sphæria* are very various in form, and often very curiously marked and divided. They are beautiful objects under the microscope.

The little black spots, so often to be seen on decaying branches of trees, mostly belong to this genus.

Sphæria Hypoxylon, Linn. *Flat-horned Sphæria.* Compound, club-shaped, stipitate, simple or branched, corky, compressed, at first pulverulent with white meal, then naked, stem villous.

On sticks, stumps of trees, etc. Very common.

A common species on old stumps, etc., everywhere. It is from 2 to 3 inches high, at first white, with black tips to the branches, then becoming black, and the stem villose. The perithecia are borne at the apices of the branches, which become swollen when in fruit, but the plant is often barren. This Fungus was formerly associated with the *Clavariæ,* and called *Clavaria Hypoxylon.* The asci are long, and the sporidia cymbiform, of a brown colour, and each contains two sporidiola.

Sphæria disciformis, Hoffm. *Disc-like Sphæria.* Compound, orbicular, plain, even black, whitish within; perithecia attenuated into a slender neck; ostiola punctiform.—*Grev. Sc. Crypt. Fl. t.* 314.

On dry branches of Beech, etc. Common.

About 2 lines broad, at first reddish, then becoming brown and finally black. It forms little circular raised spots on the affected branch, surrounded by laciniæ of the cuticle, which has been torn asunder by the bursting forth of the Fungus. The disc is dotted over with the ostiola of the perithecia. The asci are slender, and the sporidia simple, oblong and curved.

Sphæria cinnabarina, Tod. *Vermilion Sphæria.* Compound, cæspitose; perithecia globose, corrugated, vermilion, at length brownish; ostiola papillæform.—*Grev. Sc. Crypt. Fl. t.* 135.

On dead branches of trees. Extremely common.

Forming little clusters of brownish-red capsules (perithecia), which, when examined by the lens, are found to be rough and granulated, and which somewhat resemble strawberries. The asci are short and obtuse, and the sporidia short, oblong, and simple (or sometimes septate).

Suborder 5. Perisporiacei.

Perithecia free, mouthless, at length dehiscent, often surrounded by threads distinct from the mycelium, and called fulcra. Asci often absorbed at an early stage, springing from the base.

The species of this group are distinguished by considerable development of the mycelium, by their habit of growing on living plants, by the thin brittle walls of their perithecia, and by their tubular or sac-like asci springing from the base (and not from the walls) of the perithecia.

At an early stage they present the appearance of Moulds, consisting then entirely of interwoven filaments or flocci, generally of a white colour, and in this state they constitute the mildew of the Vine, the Rose, the Turnip, etc., and do much injury, especially to the Vine, which in some places has been almost destroyed by it. In some species the plant never seems to advance beyond this stage, but perithecia and fruit are produced in most species.

I shall instance the genus *Erysiphe*.

ERYSIPHE.

Perithecium fleshy, opening at the collapsing apex; mycelium floccose, effused, free; fulcra floccose.

ERYSIPHE COMMUNIS, Schlecht. *Common Erysiphe.* Flocci effused, arachnoid, dirty white, at length forming spots; fulcra simple, acute, deflexed; perithecia many.

On various herbaceous plants, common. Frequent on the garden Pea, forming the Pea-mould of gardeners, *E. Pisi.—Grev. Sc. Crypt. Fl. t.* 134.

Appearing at first in the form of a white floccose stratum on the affected leaf (or stem). After a time, minute yellow bodies appear, which become darker and finally black. These are the perithecia and contain short sac-like asci, within which are broadly oblong sporidia, generally four in number.

Suborder 6. ONYGENEI.

Receptacle club-shaped or globose, peridium brittle, filled with branched threads, which produce asci at different points. Asci soon absorbed. Sporidia filling the cavity of the peridium, pulverulent.

A very small group and little known. I shall describe the genus *Onygena*.

ONYGENA.

Peridium capitate, crustaceous, at length splitting. Asci delicate, evanescent; sporidia at length forming a dusty mass.

The species of this genus are remarkable for growing on *animal* substances, as hoofs, horns, flannel, etc.

ONYGENA EQUINA, Pers. *Horse-hoof Onygena.* Head lenticular, furfuraceous, dirty-white, at length splitting all round; stem abbreviated. *Grev. Sc. Crypt. Fl. t.* 343.

On the hoofs of horses, cows, sheep, etc., and also on horns. Rare.

A curious little fungus, from two lines to a quarter of an inch high, having a short solid stem and a globose, often flattened, head. The plant is of a whitish colour, and the sporidia when ripe are pale reddish-brown.

Since I commenced these chapters, an excellent work on British Fungi, entitled 'Outlines of British Fungology,' has been published by the Rev. M. J. Berkeley (one of the greatest living Mycologists), which brings down the science to the latest period, and which should be in the hands of every one who wishes to pursue the study of Mycology in this country.

THE DENS OF BONHARD AND MURRAYSHALL.

A Few Hours' Botanizing in the Dens of Bonhard and Murrayshall. By JOHN SIM, A.B.S.Ed.

The house and lands of Bonhard lie about two miles east of Perth. The mansion and domains of Murrayshall a mile further onward in the same direction. The situation of both estates is beautiful and highly desirable. The lawns and pleasure-grounds are laid out and decorated very tastefully, and nature herself has contributed liberally to the adornment of these two localities. But it was not their natural beauty, increased by art, that led the writer of this paper to visit their woods and dens; it was their wild flowers that stimulated my desires to know personally somewhat of their botany.

Some time ago I had sent from the Den of Murrayshall a plant which the finder did not know and asked me to name. It was the *Claytonia alsinoides*, and I was told it grew there in abundance. I was determined as soon as I was able to verify this new locality by a personal inspection. Accordingly, on the 28th of May, 1862, the day being fine, I started for the Den of Murrayshall, taking with me my young son (ten years) to bear me company. I left Perth about nine a.m. and on my way passed

through the village of New Scone; I there found the young man who gathered the *Claytonia*, and who is just setting out on his botanical career, full of zeal and ardour. He kindly guided and accompanied me to the *locale* of the *Claytonia*, as well as of a few other rarities which will be enumerated by-and-by. After rest and refreshment at my young friend's residence, we left about half-past ten and wended our way along the banks of the Burn which runs through the Dens of Murrayshall and Bonhard. Neither of these dens is so romantic and picturesque as the Den of Invermay, nor so densely wooded; yet they are both pretty, and studded with trees both natural and planted.

The Den of Bonhard begins a little to the east of New Scone village, and terminates about two hundred yards to the northward of Bonhard house. It is about a half a mile in length. The south side is steep and wooded, and contains the usual sylvestral plants of the district, none of them apparently very rare; the north side is low and cultivated to nearly the edge of the stream. Passing along this den we observed the following plants, some of which were in flower and some not. *Cardamine pratensis*, *Carex præcox*, *Prunella vulgaris*, *Alchemilla vulgaris* and *A. arvensis*, *Veronica Beccabunga*, *Carduus palustris*, *Reseda luteola*, *Hyperica pulchrum*, *hirsutum* and *perforatum*, *Viola sylvatica*, *Geum rivale* and *G. urbanum*, *Luzula pilosa* abundant, *Luzula campestris* and *L. sylvatica*, *Lathyrus macrorhizus*, *Bunium flexuosum*, *Stellaria uliginosa* and *S. Holostea*, *Ajuga reptans*, *Geranium sylvaticum*, *G. molle*, and *G. dissectum*, *Hieracium vulgatum* and *H. Pilosella*, *Orchis mascula*, *Galium verum* and *G. saxatile*, and *G. Aparine* in the hedges. *Primula vulgaris* and *Orchis mascula* in profusion along with *Saxifraga granulata*, all in blossom, adorned the banks and braes of the purling stream. In a rather inacessible spot, at a few yards' distance, a single plant of *Campanula latifolia*, not yet in flower, caught my eye.

Mercurialis perennis also occasionally appeared under the shade of the trees. Our common Broom, with its golden blossoms, added to the beauty of the scene; its less hardy companion, *Ulex europæus*, still showed some signs of animation, though almost entirely killed by the intense frost of 1860–61.

Polypodium vulgare, *Lastrea Filix-mas*, and various species of *Hypnum*, blended together in sweet confusion. *Rosa villosa* is

here far more common than *Rosa canina. Helianthemum vulgare* and *Thymus serpyllifolium,* not yet in flower, carpeted the dry mounds and barren rocks, *Oxalis Acetosella* was plentiful, nearly out of flower.

Leaving now the Den of Bonhard, we passed along the county road a short distance; and to the right, at the foot of the hedge, observed *Adoxa moschatellina,* but gone out of the flower. Passing eastwards a little further, we observed by the side of the hedge a plant of *Polemonium cæruleum,* the first I ever saw truly wild; we let it alone, as it was a rarity (in Scotland at least) and not yet in flower. Crossing over the hedge to the left, we again come to the side of the small stream and the end of the Den of Murrayshall, when all at once I was struck with something on the sides of the burn in large patches of a snowy white colour: on approaching it, I soon found it to be the object of my pursuit, the *Claytonia alsinoides,* in the most lavish profusion and greatest luxuriance, not five or six inches high, but fifteen or eighteen, and so abundant as to rival the daisies of our fields and meadows. It was really astonishing to see it. It was in such abundance, not merely under the trees along the margin of the brook, but distributed elsewhere in large luxuriant patches throughout the plantation. I ascended the Den for about a quarter of a mile, as far as my strength would permit, and still the lovely *Claytonia* was my companion. It is a dainty little plant, with its starry corollas and magenta-coloured (pink) anthers. I said in my own mind, surely this is the "head-quarters" of the *Claytonia,* that of the Scone wood being only a "detachment." Whatever botanists may say about the nativity of this plant, I am as firmly convinced in my own mind that *Claytonia alsinoides* is as much indigenous to Scotland as *Stellaria Holostea,* which no one ever called in question. People may cavil about this plant as they do about many others, and cry out, "outcast from gardens," "escape from cultivation;" but let any unprejudiced observer see this plant in the Den of Murrayshall, and I think he will at once subscribe to my creed. I may mention, that prior to entering this Den, by the hedge-side and elsewhere, we collected *Arenaria trinervia,* a plant frequent about Perth. *Fragaria vesca* and *Potentilla Fragaria* were abundant in Bonhard Den. I neglected to mention this while enumerating its plants. Having now traversed the bottom of Murrayshall Den for

about a quarter of a mile, I became greatly fatigued, and made my way in a sloping direction to the walk which went along its southern side. I sat down, unable to proceed further: after resting a little, my juvenile companion informed me that two or three very large plants grew a little further up the stream, but that he knew neither their name nor nature. After being rested a little I proceeded some few yards further on, and my companion told me he was now at the place. I looked across the ravine and espied some robust plants with large leaves under the trees, and requested him to descend and bring some of them, as I was unable to go from sheer fatigue. I waited patiently for his return, and after a delay of about a quarter of an hour my companion recrossed the brook, climbed the brae, and laid the following at my feet:—*Doronicum plantagineum, Pulmonaria officinalis, Symphytum officinale,* the red-flowered variety and four feet in height, *Valeriana pyrenaica,* and *Asperula taurina,* the latter in no great quantity, the others tolerably plentiful. *Asperula taurina* is recorded in 'Babington's Manual' as having been found in two localities in England; this is now a third one,—the Den of Murrayshall, three miles east of Perth. The beautiful mosses *Mnium hornum* and *M. punctatum* lined the sides of the Den, the former in fruit, the latter barren. I now wended my way home; and after rest and refreshment at my friend's domicile, arrived at No. 9, Bridge End, greatly fatigued, but amply satisfied at finding so many rare and beautiful plants.

JOHN SIM.

CHAPTERS ON BRITISH BOTANY.

CHAPTER VII.—BOTANICAL BIOGRAPHY.

London Botanists:—Turner Lyte, Lobel and Pena, Gerard, Parkinson, Johnson, How, Merret.

Johnson, the learned and gallant editor of Gerard's 'Herbal,' introduces the first name entered in the above list, thus:—"Let me now at last looke home (he had previously been describing foreign botanists, both ancient and modern), and see who we have had who have taken pains in this kinde. The firste that I finde worthy of mention is Dr. William Turner, the first of whose

works that I have seen was a little book of the names of herbs in Greeke, Latine, Englyshe, Dutche, and Frenche, etc., printed at London in 1548. . . . He was a man of good judgment and learning, and performed well what he tooke in hande." The readers of the 'Phytologist' know that there is still extant a printed and published work of this eminent early botanist, which bears on its title-page the date of 1539. A manuscript copy of this precious relic is in the possession of the writer of this article.

Dr. Turner's residence for a short period in Sion House, at Isleworth or Brentford, where he localized some plants described in his History, and his subsequent residence in London, where he died and where he was buried, entitle him to a place among the metropolitan botanists. His merits and his works were described at some length in a former number of this periodical.

Mr. Henry Lyte, the translator of Dodoens or Dodonæus, forms a link between Dr. Turner and the celebrated botanists Lobel and Pena. The first edition of Lyte's work appeared in 1578. Lobel was of Flemish origin, and born at Lisle in 1538, and very early in life showed a decided partiality to the study of plants. Johnson says that he was born at Ryssele, in Flanders. Dr. Pulteney informs his readers (vol. i. p. 97) that he studied at Montpelier, under the famous Rondeletius, who was celebrated as an *ichthyologist*. During his residence at this celebrated seat of learning, he made collections of plants in that locality, so renowned for its salubrity and its botanical riches.

At Narbonne, the same author says, he formed a connection with Pena, who was jointly concerned with him in his first work, the 'Adversaria,' which contains some original notices of British plants, and was published in 1570. A more complete edition of this learned work was published in 1605.

Dr. Pulteney informs us that this work contains the first sketch of a natural method of arrangement, by which the plants are grouped according to their external appearance or their habit and flowers. Though rude, it is considered by this critic—surely no mean judge—far superior to Dodoens' divisions.

The learned doctor, quoting Ray's remark, further states that Lobel points out precisely the particular spots where some of the rare English plants are found growing spontaneously; also, that he has been "in this respect inaccurate, or trusted too much to his memory, since many have been sought for in vain in the

situations he specified." This is a remark which might be made about some of Ray's own localities, and probably about those of every local botanist; for plants are sometimes nearly, if not quite extirpated; sometimes the very locality is so changed that certain species cannot possibly grow in places where they once flourished in abundance.

Johnson, the editor of the *emaculate* edition of Gerard, says, "Lobel and Pena's figures are very small and imperfecte, by reason (I conjecture) they were taken from dried plants." This is repeated by Dr. Pulteney in these words:—"Lobel's own figures are small and insufficient in many cases to express the habit of the plant, the delineation of which was almost the extent of the efforts of those days." We cannot ascertain exactly what figures are Lobel's own; but if the figures of the two forms of the common Valerian have been borrowed by Lobel, Clusius, Gerard, Johnson, and Parkinson have not scrupled to follow his example. These eminent contemporaries and successors have imitated his cuts as accurately as could have been done by a photographic apparatus. Most of his figures are as large as those common in his time, and no marvel, for one set of engraved blocks might have supplied all the botanists of Europe during the sixteenth and seventeenth centuries. They were all probably made at one *burin*.

The historian of the progress of Botany in England, states that Lobel died in 1616, aged seventy-eight, and he also enters a little bit of scandal about the peevishness and morosity of our early English botanist, who felt the infirmities of age in his temper as in his aged limbs. He was probably soured by disappointment. See Pulteney's Sketches, vol. i. p. 105, and also the preface to a work which Lobel began, and which was never finished, viz. 'Illustrationes Plantarum.'

Lobel was born in 1538, and died, as stated above, in 1616, in a good old age; and posterity has recognized and immortalized his memory in the genus *Lobelia*, which contains a great number of very useful and ornamental plants, most of which grow in a warmer climate than our own. We have two British species.

Of good old Gerard very little is to be gleaned from contemporary history. We only know that he was born at Nantwich, Cheshire, in 1545, and was educated for the medical profession. All our early botanists were in some way or other connected with the Æsculapian school.

Gerard was patronized by the great Lord Burleigh, also an amateur of the innocent craft, and who had, for these early times, a choice collection of botanical rarities. Our hero superintended his Lordship's garden, as he tells us, "for the space of twenty years." "To the large and singular furniture of this noble island," Gerard writes, "I have added from forreine places all the varieties of herbes and floures that I might in any way obtaine. I have laboured with the soile to make it fit for plants, and with the plants that they might delight in the soile, that so they might live and prospir under our clymat as in their native and proper countrey. What my successe hath beene, and what my furniture is, I leave to the report of they that have seen your Lordship's gardens, and the little plot of mine owne special care and husbandry." The worthy author then refers to the general mutability of human things, from which gardens are not exempt, for a good gardener may be followed by an ignorant successor; and proceeds to tell both his Lordship, in his dedication, and the botanical public, *a small one*, that he trusts to his pen for the perpetuity of his *furniture*, both of his garden and of his mind and spirit. The result has proved the wisdom of his resolution, for both gardens have perished, but the memory of their superintendent is still as green as the holly and mistletoe at merry Christmastide.

The little that we know of Gerard is to be gleaned from his book; all other memorials have passed away. His garden in Holborn, the little *plot* which he called his own, and the large and well-furnished garden of his noble patron, are now, alas! no more; they have for ages been occupied or traversed by thousands and myriads of men, women, and children, many of whom never heard of the humble botanist, nor knew much about the powerful minister of Queen Elizabeth, his powerful patron.

Gerard's earliest work is a catalogue of the "furniture" of his own garden, as he calls his plants; now so scarce, that the library of Sir Joseph Banks, in the British Museum, possesses only a manuscript copy of this rarity, published in 1596.

His 'Herball' was published in the following year, 1597, and dedicated as aforesaid to his noble patron, the great Earl of Burleigh. Gerard died about 1607, being upwards of threescore.

Honest John Parkinson should be placed before Johnson, the learned and brave *emaculator* of Gerard; for, although Johnson's

edition of Gerard's 'Herball' was published some years before Parkinson's 'Theatrum Botanicum' (theatre of plants), the author of the latter was born many years before Johnson.

The subject of this notice was born in 1567, according to Dr. Pulteney, who further tells his readers that his 'Paradisus' was dedicated to Queen Elizabeth; it is dedicated "to the Queene's most excellent Majestie," but not to the celebrated *Queen*, who had now, in 1629, been dead above twenty years (twenty-three years).

In this early work mention is made of several rare English plants, which were known to Parkinson as natives of our isle: for example, our two Hellebores, which "grow in divers places within eight or nine miles of London;" also that "the blew Periwinkle groweth in many woods and orchards by the hedgesides in England." This original work will convince those who value only the far-fetched and the costly, that our own land produces many of the most curious and beautiful species of ornamental flowers, for example, Snowdrops, Crocuses, Daffodils, Tulips, Pinks, Anemones, Columbines, and many more with which the great treasury of nature is so abundantly stored.

Sprengel, in his history, 'Rei Herbariæ Historia,' lib. v. cap. iv. vol. ii. p. 144, mentions Parkinson as the royal gardener, or superintendent of the garden at Hampton Court. What authority the learned historian of Botany had for this fact he does not state. Pulteney merely says that he had conferred on him, by Charles the First, the honorary title of *Botanicus regius primarius*. If the Hampton Court garden was founded by the great Queen, or even patronized by her, John Parkinson might have been, as Sprengel states, its first superintendent. His 'Paradisi in Sole,' 'Paradisus terrestris,' is an ample testimony, both to his ability and energy.

The numbers of Tulips, Narcissuses, Carnations, Pinks, Crocuses, Anemones, etc. then cultivated, might even still excite our admiration and our sense of obligation to the botanists and florists of that early period, and show that our predecessors were not unsuccessful cultivators, though they had but few of the modern mechanical appliances which are now so commonly adopted in the service of floriculture.

The Earthly Paradise is divided into three parts, viz. flowers for ornament, culinary plants, and fruit-trees. The number of

figures is nearly eight hundred, and these are, on the whole, very fair illustrations of the plants which they are intended to represent.

His next great work, the greatest that had ever been compiled in England on this subject, appeared eleven years later than the 'Paradisi in Sole,' which was published in 1629, and dedicated to the Queen Henrietta, the consort of Charles the First.

The Theatre of Plants, 'Theatrum Botanicum,' was published in 1640, four years after Johnson's emaculate edition of Gerard; and it was dedicated to the King. Like most books published at this period, it was introduced by many and highly eulogistic commendations; one of the most flattering is by Sir Theodore de Mayerne, who panegyrized the Paradise on the Earth. "I know that whosoever shall runne through so many fields, woods, hills, etc., as this work includeth, and shall trip at no time, 'hic erit mihi magnus Apollo;' I will crowne him with such a garland as neither his antecessors or successours ever did or shall weare." This famous physician, of whom there is an account in A. Wood's 'Athenæ,' had been employed in his medical capacity by four kings, viz. Henry IV. and Louis XIII. of France, and by James I. and Charles I. of England. We have pleasure in recording that this great doctor was one of the notabilities of Chelsea, a locality celebrated for great men, learned professors of the healing arts, and successful botanists, of which last class more will be recorded hereafter. This member of the faculty was interred in the church of St. Martin's-in-the-Fields, where there is a grand monument to his memory, and on which is inscribed the long catalogue of his virtues. All the good qualities with which humanity has ever been or ever will be characterized, resided in him:—

> "Quid de Mayernio plura?
> Mayernium dixeris, omnia dixeris."*

The MSS. of this royal medical professor are in the Sloane collection, or many of them. Twenty volumes, exclusively on his medical cases, are in his own handwriting, and form the medical annals of the Court during the first half of the seventeenth century.

The King's herbarist, the author of the Theatre of Plants,

* Newport's 'Repertorium Ecclesiasticum,' 660.

John Parkinson, was not unmolested by the strife of tongues. He had probably heard, prior to the publication of his great work, disparaging remarks both on his social rank and his qualifications, and, like a prudent man, disregarded them as the pitiful effusions of spiteful envy. But in his preface he manfully repelled the insinuations urged against the purity of his motives, and the objections made to the method which he purposed to adopt. He acted like a man conscious of good intentions, as one who could appeal to his labours to prove that he had taken pains to realize his purposes; and bravely anticipated and repelled the malicious, disparaging innuendos of his envious detractors.

On this subject (detraction) he continued, "One bout more with *Momus* (the personification of fault-finders), that would teare this worke in pieces because I have not followed Gerard's method in setting letters to the several virtues of the plants, etc. . . . I verily say unto you (the reader), that by the alteration you enjoy a double benefit; first in the bulke of the book, which, if that course had been followed, would have enlarged it neare halfe as much more, and made it the more unwieldy, and likewise the dearer, and never a whit the better. Secondly, in recompense of the time spent in looking for what you seek, you may reade that which may be more helpeful and more beneficial to you. Let *Momus'* chaps therefore be sowed (sewed) up to barke no more."

Parkinson knew that the best-devised schemes, however honestly and laboriously carried out, are not always successful; but he conscientiously appeals to his long practice and his diligence in consulting the learned works of his contemporaries and predecessors, as a proof that he had not been negligent in preparing his materials.

Possibly his rivals jeered him about the length of time his work had been on the anvil. The process of incubation had been going on for probably above half a century. Waggish and waspish people, who delight in the ignoble work of ingeniously tormenting, might say, "the egg is addled." To these facetious calumniators, he, Parkinson, properly rejoined, "Master Johnson's agility could easily wade through it [Gerard's Herbal, which was done in a short space], and his younger yeares carry away great burdens, for, saith he, 'heavy taskes are worst borne by them that are least able,' but his quicke speede may conclude

with this adage, *Canis festinans cæcos parit catulos*, or as they say in Scotland, 'the more haste the less speed,' and in England, 'the most haste the worst speed.'"

This great work of Parkinson's justifies the title, "England's chiefest herbarist," bestowed on our author by the greatest of his panegyrists, Sir Theod. de Mayerne, was not ill applied. Dr. Pulteney's opinion is ours, and we are pleased to have so excellent an authority on our side (see p. 144, vol. i.) :—"It is manifest, even from a cursory view of it [the 'Theatrum Botanicum], that it is a work of much more originality than that of Gerard, and it contains abundantly more matter than the last edition of that author, with all Johnson's augmentations." Again, in p. 148, the same ingenious historian wrote, "In this view, if I am not mistaken, he will appear more of an original author than Gerard or Johnson, independent of the advantages he might derive from being posterior to them. His Theatre was carried on through a long series of years, and he profited by the works of some late authors, which, though equally in Johnson's power, he had neglected to use. Parkinson's descriptions, in many instances, appear to be new. He is more particular in pointing out the places of growth, etc."

The writer of these brief notes on the labours of our early English botanists has much pleasure in indorsing the favourable estimate of Parkinson, above given by the amiable author of the 'Progress of Botany in England;' and he further presumes to add, that he has perused no work, compiled either previously or contemporaneously with the 'Theatrum Botanicum,' which contains so much information about plants, so much sound learning and judicious criticism.

Its author did not profess scholarship; he very modestly told his readers that he was in the humblest rank of the honourable profession to which he belonged; yet no previous author had collected the opinions of the learned in all ages on plants so industriously and learnedly as Mr. Parkinson.

His work contains descriptions of nearly 3800 plants, or about a thousand more than are to be found in Johnson's improved and amplified edition of Gerard, according to Dr. Pulteney (p. 150, vol. i.), and as it has been, almost in every case, quoted by Ray, it has been "raised to classical eminence in English Botany," an eminence which it must retain as long as the works of the most renowned of British botanists are consulted.

We have not yet ascertained the year of Parkinson's death; all certainly known about this important event is that he was alive in 1640, when his great work appeared, and was then in his seventy-third year; and also that he had departed prior to 1656, when a second edition of the Paradisus was published.

Notices of William How and Christopher Merrett are postponed; they will be inserted in some subsequent number.

SHAMROCK (Trifolium repens).

(*To the Editor of the 'Phytologist.'*)

Sir,—In 'Phytologist,' Vol. VI., N. S., p. 30, W. J. H. Ferguson boldly tells your readers that they are all in the "wrong boat" who say or write that Erin's green, immortal Shamrock is *Trifolium repens,* the common white Clover, the commonest of all our *Trefoils* in England, and which a writer in the 'Phytologist' has recently informed us was not introduced into Ireland at so early a period as St. Patrick's arrival in the Isle of Saints. What will Professor Babington say to this? Will he admit its true nativity in England, and brand it as an alien in the sister island? *Nous verrons:* i.e. time will tell us. We must wait with as much patience as we can muster, while the oracle is silent.

Mr. Ferguson starts no new game; he only tells us what we have heard before, viz. that the genuine Shamrock is not the White Clover, as all Irish botanists say,—and Ireland's greatest poet also clinches the assertion,—but the *Wood Sorrel,* an idea first promulgated by Mr. Bicheno,* of the Linnæan Society, and published in the 'Journal of the Royal Institution.'

* This eminent authority relies on the subjoined extract from Spenser's 'View of the State of Ireland.' It is quoted entire, and our readers are requested to form their own opinions on its relevancy. Mr. Bicheno also quotes Fynis Moryson and the poetical lines from the 'Irish Hudibras.'

"Spenser, in his 'View of the State of Ireland,' proves that one of the Shamrocks was an edible plant. His description of the half-famished natives and their hunting after this herb is related in the following extract:—"Out of every corner of the woods and glynnes, they came creeping forth upon their hands, for their legs could not bear them; they looked like anatomies of death; they spoke like ghosts crying out of their graves; they did eat the dead carions, happy where they could find them, yea, and one another soon after, inasmuch as the very carcases they spared not to scrape out of their graves and if they found a plot of Watercresses or *Shamrocks* there they flocked as to a feast for the time, yet not able to continue long there,

Also Mr. Ferguson affirms, that this is satisfactorily established by a remark in Mr. Fynis Moryson's 'History of the Civil Wars in Ireland between 1597 and 1603,' where it is written that "the natives willingly eat the herb Shamrock, being of a sharp taste." The ingenious historian gives the names of many other esculents and viands on which the Irish at that period fared; and from his account it may be inferred that they were not delicate eaters.

It may however be a fair inference, that as this herb, viz. the Wood Sorrel, yields only a scanty herbage, they had but short commons. It is possible, however, as Mr. W.—another writer on this obscure subject—remarks, that the herb they (the Irish) ate was Cress of some kind or other, either water or land Cress. The latter has, however, started a new idea, viz. that the Shamrock may be *Oxalis corniculata*—a hypothesis which surely no reasonable man would deny, any more than he would doubt that there are possibly a hundred plants in Ireland which would do as well to represent the Shamrock as either of the two popular favourites.

If it be worth while to discuss the subject a little further, it may be remarked—not in hostility to Mr. Ferguson's view—that *Oxalis Acetosella* does *not* grow in ditches, nor *much* by roadsides. Its habitat is the wood on old roots, or on bushy banks. Watercresses grow in ditches, and they are to this day both eaten and sold by Erin's rosy-cheeked maidens, who hawk them about the streets of this great town; and their shrill cries are very annoying to those who have musical, or sensitive, auditorial organs, and to those who indulge in contemplative moods, like Mr. Babbage.

withal, that in a short space there were none left, and a most populous plentiful country left void of man and beast: there perished not many by the sword, but all by extremity of famine."

From the Irish 'Hudibras,' the following lines are taken:—

"Shamrogs and Water Grass he shows,
Which was both meat and drink and close" (clothes).

"Nees, when the Shamrog he did spye,
Cries out, 'I have it in my eye.'"

Again,—

"Within a wood near to this place
There grows a bunch of three-leaved Grass
Called by the boglanders Sham Rogues,
A present for the Queen of Shoges" (fairies).

Again, a hint may be offered to both of the gentlemen who have been so kind as to give us their opinions on the subject; it may be remarked that the Irish name of *Oxalis* is *Seamsog*, and of *Trifolium*, *Seamrog*, and the latter is also synonymous with *Seamair bhan*, or White Clover. Etymology is therefore clearly in favour of White Clover's being *Shamrock*.

Again, though historical tradition is silent on the subjects legendary lore agrees with the commonly, received notion, that *Trifolium repens* is the national vegetable emblem of Hibernia. Before St. Patrick's arrival, there were no monasteries in Ireland; these establishments did not precede, but were long subsequent to, the introduction of Christianity. There could therefore have been no monastic gardens, whence the Saint could have plucked a leaf of *Oxalis corniculata* to illustrate his doctrine.

Furthermore, the botanists of Ireland have with one consent agreed about the identity of White Clover with Shamrock, as may be shown by the following quotations.

First, Threlkeld, in his 'Synopsis Stirpium Hibernicarum,' a brief treatise on the native Irish plants, under the name of *Trifolium pratense album*, has the following note:—

"White-flowered Meadow Trefoyl. The Meadow Trefoyls are called in Irish Shamrock, as Gerard writes in his 'Herbal,' which was first published in 1597, the editions after being 1633 and 1636. The word *Seamar Leaune* and *Seamar oge* being in signification the same, the first signifying the *Child's Trefoyl*, the other the *Young Trefoyl*, to distinguish them from the *Seamar Capuil*, or Horse *Trefoyl*, as I suppose.

"This plant is worn by the people in their hats upon the 17th day of March, yearly (which is called St. Patrick's Day), it being a current tradition that by this *three-leaved Grass* he emblematically set forth to them the *mystery of the Holy Trinity*. However that may be, when they wet their *Seamar-oge*, they often commit excess in liquor, which is not a right keeping of the day to the Lord, error generally leading to debauchery."—Dublin edition, 1727, 8vo.

Dr. Mackay, the modern great authority on Irish Botany, in his 'Flora Hibernica,' published 1836, gives the following statement under *Trifolium repens*, White clover:—"This is the Dutch Clover of agriculture, and is deservedly in great repute for pastures. It is the plant which I have observed for the last

thirty years to be worn as the Shamrock on Patrick's day."—*Mackay, Fl. Hib.* p. 77, 1836.

The next authority is that of the greatest of lyric poets, both of the ancient and modern masters of song. Thomas Moore (see 'Irish Melodies,' illustrated by Maclise, note 42, p. 88) has the following observation on the triple-leaved grass, *Trifolium repens*. "St. Patrick is said to have made use of that species of the Trefoil to which in Ireland we give the name of SHAMROCK, in explaining the doctrine of the Trinity to the Pagan Irish. I do not know if there be any other reason for our adoption of this plant as a national emblem. Hope, among the Ancients, was sometimes represented as a beautiful child, standing upon tiptoes, and a Trefoil, or three-coloured Grass, in her hand."

Finally, it is notorious that this is the leaf universally worn by Irishmen on the 17th of March; also it is well known that the origin of this national emblem is still to be discovered. Like the Scots' Thistle,—What is the identical plant? is a question that can be more easily asked than answered.

The exhibition of the Shamrock, whatever be the genuine plant, on St. Patrick's Day, is probably only a modern usage. I have looked into the early histories of Spenser and Moryson, and discovered no record of this observance. I wish some learned reader of the 'Phytologist' would tell us if he has been more successful than the writer of these remarks has hitherto been. Is there anything about this plant recorded in the numerous early biographies of Ireland's celebrated apostle? I have not met with a trace of the tradition. Any definite information on this question would much oblige the few literary antiquarians who find amusement if not instruction in such obscure memorials of bygone times.

HIBERNICUS.

British Museum, April 1st, 1862.

Reviews.

The Manuscript Magazine of the Glasgow Naturalists' Society, Vol. II. January, 1862.

The readers of the 'Phytologist,' some of them at least, may remember that the formation of associations for the study of

natural history has been urged more than once in these pages; and, it is to be hoped, not without some good consequences. If the numerous contributions to this Journal have had any hand in effecting this good work, we are thankful; and at all events the merit of good intentions, and that of being well-wishers to the diffusion of knowledge and to the progress of humanity, may safely be claimed.

The contents of the manuscript publication (if the term be admissible) placed at the head of this article are multifarious; for example, "Incidents of an Arctic Voyage, on the Gorilla, on Geology, Zoology, Muscology, Entomology, Botany, Chemistry, Biography, Poetry, on Current Literature," etc. etc.

The work, which consists of nearly three hundred post-octavo pages, is entirely in the autographs of the respective authors, and several of the articles are well illustrated with original drawings, or cuts of the objects described.

A cursory notice of the botanical articles is all that we can afford to enter in the 'Phytologist.' There is no room for criticism, and if there were it would be out of place; as the work cannot be read by the majority of our readers, they could have no means of judging about the fairness of our critique.

The first botanical essay is on British Bryology; and as it is purely elementary, it needs only to be said that the brevity and clearness of its descriptions are commendable.

"Addenda to the British Flora" is a paper on the localities of some species only recently admitted into our national botanical works. *Lilium Martagon* has been detected in the woods of Ashbrook, in the parish of Clondermott, in the county of Londonderry. A note in Dr. Mackay's 'Flora Hibernica' told the fortunate observer that it had previously been seen in the same locality by W. Lawers, Esq., now deceased.

Veronica peregrina was recorded some years ago by the Rev. W. M. Hind; and this species, now no novelty to our British floras, has been discovered in a new locality, and reported for the first time as a rather common agrarial and roadside species. Our author (see MS. Mag. p. 124), states, "We found it growing abundantly in the Londonderry Infirmary grounds, and in parts adjoining the Model School, as a weed of cultivation, along with *Euphorbia Peplus, Senecio vulgaris, Sonchus oleraceus*, etc."

To the description and history of this fresh importation there

are added, from the pen of a learned professor, some remarks on its origin and introduction into Europe, but the proof that it is American and not European is not *very* strong. This authority further says that it has probably been introduced into the north of Ireland with seed-corn from the south of France. This is not improbable, if it be true that the Irish farmers buy their seed-corn in the south of France. *V. peregrina* has been seen *wild* in Bohemia, Germany, Belgium, France, Naples, Russia, etc. It is described in Cosson and Germain's 'Flore des Environs de Paris' as being plentiful about Versailles, which is considerably further north than the centre of France. "A. R., assez rare spontané? Observé depuis plus de quinze ans aux environs de Versailles, dans le voisinage des habitations et dans quelques jardins, où il persiste, bien qu'on l'y arrache chaque année avec soin comme une mauvaise herbe" (*De Boucheman*). It has grown about Versailles for fifteen years, in spite of all their diligence in rooting it out of their gardens. See Coss. et Ger. sub *Ver. per.*

Mons. Crepin, in his 'Manuel de la Flore de Belgique,' localizes it thus:—"*V. peregrina:* Lieux cultivés, jardins. R. (rare.) Louvain, Vilvorde, env. de Bruxelles, Habay la Vielle; indigène?" British botanists will, it is believed, unhesitatingly answer this query with an emphatic No.

But these extracts show that its claims to a place among European plants are not altogether groundless.

In Linnæus's 'Systema Plantarum Europæ,' both *V. romana* and *V. peregrina* appear as European species; they may, however, be only varieties of one species. *V. romana* is localized in the south of Europe ("in Europæ australioris agris"), and *V. peregrina* "in Europæ hortis arvisque."

In Müller's Danish Flora the locality is "in insula Amagria, p. 5 (cum signo †)."*

There is strong evidence that the plant has been known as European for above a century, and it has not been confined to a corner. But granting that its nativity, or even spontaneity, is not fully established in the North of Europe, *i. e.* in Denmark, Holland, Belgium, Ireland, Scotland, etc., it should not be inferred that it is not European, because in some parts it is only an acci-

* *V. peregrina* is figured in Fl. Danica, iii. 407; in Reichenbach's 'Plantæ Criticæ,' i. 36; in Mutel, 'Flore Française,' 46; in Cosson's Atlas, 16.

dental, or casual, or stray plant, nor because it is found in the United States of America. Have we no British and European plants which are wild in America? We have several. May not *Veronica peregrina* be one of them? If not a British plant, it has been, for more than a century, received *consensu omnium* as a European species. Because it has overleaped its ancient bounds, it is to be banished to America, the *locus pœnitentiæ* the stool of repentance of evil-doers during the seventeenth and eighteenth centuries."

Our author continues his notice of this novelty by remarking that he never saw "it growing with corn-crops but in gardens, in potato and flax fields, etc., which may militate against the Professor's theory, that it was originally introduced with seed-corn from the South of France. It is as plentiful in the habitats specified at the beginning of this article as *V. arvensis* or *V. agrestis*, . . . and on the whole I consider it as well established in these localities as any of our native Veronicas. It has been stated that a late Irish nobleman purposely introduced it; but the evidence for this rumour is too vague and scanty to be trusted. Whether foreign or not, European or American, this *Veronica* is established in sufficient profusion to justify its permanent addition to our Flora. It has a better title to be entered among the natives than some species, such as *Buffonia tenuifolia, Swertia perennis, Gentiana acaulis, Stipa pennata*, etc., which, on Smith, Hooker and Arnott's authority, are neither native nor naturalized in Britain."

"*Centranthus ruber*.—This pretty, though almost indisputably exotic plant grows not far from the village of Buxerand, on an abutment of a wall, at no great distance from a garden. Hence its origin in its present locality is not unaccountable.

"In the same district we observed *Crepis paludosa, Apium graveolens, Asplenium marinum*, and some other plants of more common occurrence."

We would cheerfully commend this paper, which is a good one, to the notice of our readers, but few of them can have the pleasure of its perusal.

"A Day on Ben Lomond" is the next botanical essay which attracts our attention. We anticipate and deprecate all the unfavourable strictures which our Glasgow readers might feel disposed to entertain about "the great cry and little wool" of this

attractive title. Those who have most experience in mountain botanizing, they who have toiled up Snowdon, Helvellyn, Benledi, etc., know best how barren in results such long wearisome acclivities generally are.

Only a few interesting plants are reported in this paper, none of great rarity, the chief of which follow:—*Hypericum Androsæmum* (will the author be so obliging as to tell us at what elevation or altitude he observed this fine species?); *Viburnum Opulus, Osmunda regalis, Habenaria bifolia, Lastrea spinulosa, Rubus saxatilis, Asplenium viride, Hymenophyllum Wilsoni, Oxyria reniformis, Hypnum proliferum, H. undulatum, Bryum ligulatum, Hookeria lucens, Neckera crispa,* etc.

Further up the mountain, *Chrysosplenium oppositifolium, Saxifraga aizoides, S. stellaris, Cochlearia officinalis,* and *Cerastium alpinum* were abundant. *Cystopteris fragilis* and *Sibbaldia procumbens* are a very respectable rear-guard to the foregoing array of Ben Lomond vegetation.

"The Second Botanical Ramble of a City Naturalist" embodies notices of plants growing between Rutherglen and Dalmarrock bridges—historical and classical ground to the brave men of the "western metropolis." "The Flora of Lanark is a rich and rare one: many an undiscovered floral gem lurks in these glens and by these mountain-streams, awaiting the coming botanist, who will reveal the beauties concealed in this beautiful region, deformed though it be by the industrial progress of modern times. Only three short years ago, two Geums, *G. rivale* and *G. urbanum,* with *Lychnis dioica, L. Flos-cuculi; Galium saxatile, G. cruciatum, Doronicum Pardalianches,* etc., have been forced to quit their quarters, or what may be worse, to succumb to the continual progress of brick buildings."

We are pleased to hear that near Rutherglen still grows *Vinca minor,* a white variety, not common in the south of our island; also *Pyrola minor, Campanula latifolia, Humulus Lupulus, Ribes alpinum.* Here we should rather wonder to find the two last-named in juxtaposition; are they native or even spontaneous at Rutherglen?

"Botanical Habitats," p. 184, is a selection of localities taken from a popular description of the plants of Lanarkshire, etc., by the Rev. W. Patrick, published in 1831.

The author of this paper asks if the editor of the MS.

magazine, or any of the readers thereof, can help him to some information about the 'Flora Glottiana', which he believes "is occasionally seen here." He is hereby respectfully informed that the 'Flora Glottiana' was composed by Thos. Hopkirk, and published in 1813. Has the querist read the rev. botanist's popular description of the botany of Lanark, and failed to find therein any mention of this Glasgow list of plants? Has he hunted the bookstalls as eagerly as it is to be hoped he will scrutinize and localize the now existent plants which have already been observed by his two predecessors?

The following are not in Hopkirk's list, viz.:—

Cornus sanguinea.	Vaccinium Vitis-Idæa.	Lepidium hirsutum.
Ribes alpinum.	Pyrola minor.	Geranium columbinum.
Polemonium cœruleum.	Arenaria verna.	Gnaphalium sylvaticum.
Petroselinum sativum.	Aconitum Napellus.	Listera cordata.
Allium Schœnoprasum.	Scrophularia vernalis.	Listera Nidus-Avis.
Ornithogalum umbellatum.	Lepidium campestre.	Carex ovalis.
Rumex pulcher.		

The following species are in 'Flora Glottiana,' but not in the MS. list selected from the 'Flora of Lanarkshire,' and entered in the MS. magazine, p. 184.

Campanula Trachelium.	Rumex sanguineus.	Stellaria nemorum.
Viola palustris.	Vaccinium Oxycoccos.	Stellaria glauca.
Verbascum Lychnitis.	Daphne Laureola.	Sedum villosum.
Hyoscyamus niger.	Polygonum Bistorta.	Ranunculus arvensis.
Atropa Belladonna.	Adoxa moschatellina.	Bartsia viscosa.
Ribes Grossularia.	Pyrola media.	Linaria minor.
Chenopodium murale.	Chrysosplenium alternifolium.	Orobus sylvaticus.
Œnanthe pimpinelloides.	Saxifraga stellaris.	Tragopogon porrifolius.
Scandix odorata.	Saxifraga umbrosa.	Hieracium prenanthoides.
Viburnum Opulus.	Silene maritima.	Carduus heterophyllus.
Parnassia palustris.		

It is however more than probable that there are few discrepancies between the 'Flora Glottiana' of 1813 and the 'Flora of Lanarkshire' of 1831. Some of the species in the latter list, though usually entered among the "rariores," are not rare in that district; and again, Mr. Hopkirk's district may be of smaller extent than that comprehended in Mr. Patrick's flora.

"The Botany of Loch Ranza," in Arran, need not detain the reader. The "rariores" are *Osmunda regalis, Asplenium marinum, Valerianella dentata, Lepidium latifolium. Salicornia herbacea,*

Lamium amplexicaule, and *L. purpureum*, are not rare anywhere between the four British seas.

Let not the above remark be construed in a sense contrary to the writer's intention. In a small island, every plant is interesting to those who take an interest in plants and their distribution, whether the species be frequent or rare on the adjoining continent.

If there be a single sentence or word, in what has been above stated, depreciatory of these essays, or of their multifarious and interesting contents, such is quite unintentional, and the author apologizes for it accordingly.

There are several reasons why the notice of our readers is called to this unique periodical. First, it is a work on natural history, and a considerable part of its contents are as a matter of course interesting to all genuine *phytologers* (botanists). In the second place, it is evidently the production of true, energetic, though young amateurs of natural science. A catholic spirit, an unmistakable sympathy with the beautiful and the good, is manifest in every page. There is a striking absence of egoism (selfishness), toadyism (too much deference to the mere accidents of wealth, title, reputation, etc.), and cliqueism (blindly following a leader). We are not able to praise in sufficiently appropriate and appreciative terms the fresh, manly, healthy, moral tone which uniformly pervades these pages. Our third reason for bringing them thus prominently before the public, is to encourage the authors to persevere in their efforts to acquire and disseminate knowledge. This is a gratifying duty, and it is done both for the sake of encouraging the writers themselves who are thus enlarging the sphere of their future usefulness, while they are contributing to the onward progress of society. Our fourth and last reason for this notice is, that our readers may be urged to imitate so good an example,—to associate, if only in parties of two or three, and to communicate to each other their respective discoveries.

One of the greatest obstacles to progress is sectarianism, which is as obstructive in science as it is in religion. Associations of unprejudiced, unfettered, independent men, among whom there is none to take the lead, and where no one is afraid of another, but where all are equally observant of nature, all lovers of the truth and fearless in expressing their opinions, their experiences, and the results of their observation, may be in time a remedy

for the evils of scientific coteries, which lie like a nightmare on science, pressing her "as a cart loaded with sheaves."

It is only among the young, the strong, and the resolute that any profitable resistance to the influence of patronage and prestige can be offered. One young man is powerless, and unless backed by a patron is despised; but a band of bold youths is quite another matter. They can make their way upwards to reputation, and need not submit to the degradation of retailing secondhand information and science, when they can go to the source, the fountain-head, and imbibe and observe for themselves and deliver the results of their labours with both originality and confidence.

If the young men of Glasgow will take the counsel of an old man, who has observed that the intelligence and wisdom of the wise and scientific are generally estimated by the weight of their purses, they will cling to each other as they would to their bosom friend (their wife or *chère amie*); they will never despise help, from whatever quarter it may be offered; but, to succeed, they should value truth above all things, and deem independence, sturdy self-reliance, as their sheet anchor.

They will not want helpers when they show that they can help themselves. Their manuscript magazine is a very fair beginning; and they will not be offended when told in a friendly spirit, that there is a beginning, a middle, and an end in all activities, whether epic, scientific, moral, or spiritual. The end is perfection, and the middle is the connecting medium, composed of repeated continuous efforts to reach the end. They should not be seduced from this grand object, either by the sneers of the great and eminent, or by the more insinuating and dangerous attractions of seductive indolence. In the spirit of kindness they should honestly and rigorously criticize their respective productions. Young men can bear criticism; they are never so touchy, thinskinned, nor sensitive under correction as the aged. The better and the more efficiently they can perform this friendliest of all friendly duties to each other, the more patient they will be when reminded of their own shortcomings. Blessed are they who can bear correction might be added to the beatitudes, if piety and reverence of the sacred oracles did not warn us not to take this liberty. Finally, it is a truism, and consequently a universally-received maxim, "that unity is strength," and it is equally true

that selfishness, conceit, prejudice, and pride effectually hinder the hearty co-operation of those who are engaged in kindred pursuits. Personal emulation is productive only of useless bickerings, strife, and animosities. From such evil dispositions all should manfully strive to be delivered.

A Manual of British and Foreign Plants, with their Latin and English Names. By Leo H. Grindon, Lecturer on Botany, Author of the 'Manchester Flora,' 'Manchester Walks and Wild Flowers,' etc. etc. London: William Pamplin, 45, Frith Street, Soho Square.

The main object of this systematically-arranged book, as the author concisely states in his preface, "is to provide persons with the means of readily learning the Latin name of a plant when the English one is known, or *vice versâ*."

The names of the orders, genera, and species are printed in massive bold characters, and most of them are marked, to help the uninitiated to give each term its correct pronunciation.

A general index of all the English and scientific names concludes the work, which will be a handy companion to the field botanist, to the visitor of flower-shows, also to those who visit botanical collections and other assemblages of native and foreign plants. Its typography is very creditable to the provincial press, and its bibliopegistic finishings, or fittings, or appointments are good specimens of the taste of country publishers.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Claytonia alsinoides.

I have just had put into my hands, by one of our members, specimens of *Claytonia alsinoides* from the island of Bute. I am informed by another of our members that he has gathered it at Gourock, whilst the first working botanist of our "guid town" gives Cadder, towards the north of Glasgow, as a third locality. Nevertheless here we are not ambitious to have the plant recorded as British, for we look upon it as an alien; but at the same time it would be better to admit it to the honours of the Flora with an asterisk appended, to mark it as an interloper. I confess it does look strange to find naturalists recording as British, seaweeds and other objects, vegetable and animal, that are rare visitants here, and yet persistently brand and shut out our foreign relations when they come across to see us and take up their abode at our doors. Widely different is the spirit of Asa Gray, in his

'Manual of United States Botany;' see how many he has admitted that are natives of the Old World, and followed our forefathers across the Atlantic.

List of Early-flowering Plants observed in Flower near Plymouth, with the date of their first appearance.

Primula vulgaris	(1861) Dec. 23	Prunus Avium	April 8
Ranunculus Ficaria	(1862) Jan. 11	Vaccinum Myrtillus	„ 8
Potentilla Fragariastrum	„ 16	Euphorbia Helioscopia	„ 8
Capsella Bursa-pastoris	„ 16	Euphorbia amygdaloides	„ 8
Galanthus nivalis	„ 20	Orchis mascula	„ 8
Draba verna	„ 28	Agraphis nutans, *Link*	„ 8
Cochlearia danica	„ 31	Arum maculatum	„ 8
Tussilago Farfara	„ 31	Ranunculus parviflorus	„ 12
Chrysosplenium oppositifolium	Feb. 5	Acer Pseudo-Platanus	„ 12
Mercurialis perennis	„ 7	Lathyrus macrorrhizus, *Wimm.*	„ 12
Narcissus Pseudo-narcissus	„ 7	Ajuga reptans	„ 19
Linaria Cymbalaria	„ 10	Sisymbrium officinale	„ 21
Caltha palustris	March 1	Pyrus Malus	„ 21
Sisymbrium thalianum, *Hook.*	„ 1	Veronica montana	„ 21
Viola sylvatica, *Fries*	„ 1	Viola palustris	„ 23
Fragaria vesca	„ 1	Polygala vulgaris	„ 23
Adoxa moschatellina	„ 1	Geranium molle	„ 23
Nepeta Glechoma, *Benth.*	„ 1	Medicago maculata	„ 23
Fedia olitoria, *Vahl.*	„ 11	Potentilla Tormentilla, *Nesl.*	„ 23
Myosotis arvensis	„ 11	Luzula sylvatica	„ 23
Sinapis arvensis	„ 15	Narcissus biflorus	„ 25
Oxalis Acetosella	„ 15	Geranium rotundifolium	„ 26
Prunus spinosa	„ 15	Poterium Sanguisorba	„ 26
Saxifraga tridactylites	„ 15	Linaria supina, *Desf.*	„ 26
Luzula campestris	„ 15	Barbarea vulgaris	„ 28
Veronica serpyllifolia	„ 17	Lepidium Smithii	„ 28
Pulmonaria angustifolia	„ 18	Geranium dissectum	„ 28
Lychnis diurna, *Sibth.*	„ 22	Trifolium minus, *Relh.*	„ 28
Smyrnium Olusatrum	„ 22	Torilis nodosa	„ 28
Stellaria Holostea	„ 24	Myosotis versicolor	„ 28
Geranium lucidum	„ 24	Potentilla anserina	„ 29
Alchemilla arvensis	„ 24	Bunium flexuosum	„ 29
Fumaria officinalis	„ 29	Viburnum Lantana	„ 29
Barbarea præcox	„ 29	Lithospermum officinale	„ 29
Cardamine pratensis	„ 29	Lysimachia nemorum	„ 29
Mœhringia trinervia, *Clairv.*	„ 29	Medicago lupulina	May 1
Stachys arvensis	„ 29	Cratægus Oxyacantha	„ 1
Anthriscus sylvestris	„ 31	Stellaria uliginosa	„ 3
Sherardia arvensis	„ 31	Geranium pyrenaicum	„ 3
Anchusa sempervirens	„ 31	Geranium columbinum	„ 3
Veronica Chamædrys	„ 31	Heracleum Sphondylium	„ 3
Ranunculus bulbosus	April 4	Galeobdolon luteum, *Huds.*	„ 3
Alliaria officinalis, *DC.*	„ 4	Anagallis arvensis	„ 3
Plantago lanceolata	„ 4	Lepidium campestre	„ 6
Ranunculus repens	„ 8	Potentilla reptans	„ 6
Viola tricolor	„ 8	Trifolium pratense	„ 6
Mœhringia muscosa	„ 8	Veronica Beccabunga	„ 6
Geranium Robertianum	„ 8	Polygonatum multiflorum	„ 6
Cytisus scoparius	„ 8	Geum urbanum	„ 7
Vicia sepium	„ 8		

Richard Briggs.

Claytonia perfoliata.

I found, a few days since, large quantities of the *Claytonia perfoliata* growing in a lane at Gorleston, near Yarmouth. I think the locality ought

to be marked, as it is now six years since I first found it there, and it has increased to such an extent, that the banks on both sides of the lane, for nearly half a mile, are covered with large patches of it. I shall be happy to send you some fresh specimens of it per post, should you like any.

HAMPDEN G. GLASSPOOLE.

DENTARIA BULBIFERA. NEW STATION IN SUSSEX.

I have much pleasure in recording what I believe to be a new locality for this plant. It grows abundantly in small copses in the parishes of Warnham and Rusper (Sussex), near Horsham, where I gathered specimens on April 25th, at which date only one or two specimens were in flower. It appears to like copses recently cleared of underwood, and I have little doubt that it is abundant in the neighbourhood. I am not sure whether some of the copses where I saw it were not in Surrey (parish of Capel). I hope soon to get specimens, and in an advanced state.

In the same locality I have noticed a few other good plants, such as, *Helleborus viridis*, *Vinca minor*, *Daphne Laureola*, *Galium tricorne*, *Bupleurum rotundifolium*, *Hypericum Androsæmum*, *Myosotis sylvatica*, *Habenaria chlorantha*, *Chenopodium polyspermum*, *Ophioglossum vulgatum*.

The soil is the weald clay, and all the land is cultivated except a few small woods.

HENRY TRIMEN.

ALLIUM AMBIGUUM, OR A. TRIQUETRUM, IN IRELAND.

A series of Irish Ferns were some years ago sent me from the neighbourhood of Fermoy, and among them a number of *Polypods*, which were planted in several parts of my fernery, and in two places the *Allium* grew up close to the Hibernian species of Polypodium. As it did not appear prior to the planting of the Irish ferns, and grew in juxtaposition to two of them, I infer that either the bulbs or the seeds reached Enfield in the mould about the roots of the Polypody.

I remember that my son, who sent the Ferns, said that there were many wild flowers in that locality which he did not recognize, and possibly the plant in question was one of the number. The locality is by a stream of water, near Fermoy.

M. A. WALKER.

Chase Cottage, Enfield, May 26th, 1862.

Communications have been received from

Walter Galt; Hampden G. Glasspoole; W. Pamplin; M. A. Walker; Mrs. E. Walker; John Sim; H. C.; C. J. Ashfield; H. Beisly; H. Trimen; G. B. Wollaston; Dr. Prior; R. C. A. P.; Mrs. Merrifield; W. Ashley; W. P.; E. B. Penfold; S. Beisly; E. B. P.; The Right Hon. the Earl of Ilchester; Berthold Seemann, Ph.D., etc.; W. Winter.

RECEIVED FOR REVIEW.

Chardons Nanciens, ou Prodrome d'un Catalogue des Plantes de la Lorraine, par le Docteur Hussenot.

MS. Magazine of the Glasgow Naturalists' Society, Vol. II.

Preston Chronicle, May 28th.

Notes on Books.

Canadian Naturalist and Geologist.

RAMBLES ALONG THE EASTERN COAST.

Rambles of Two Naturalists along the Coast, etc., from Yarmouth to the Humber. By W. Winter.

On Monday, the 13th of August, myself and a friend, Mr. Mathews, left Aldeby by the first morning down train to Yarmouth, our object being to ramble along the coast from that place to the Humber, to collect the beauties of nature, under whatever forms and circumstances they might present themselves, and also to admire any scenes in the way that might present themselves as worthy of notice. We had about three weeks' time to spend on this tour, and as time or place with us was no great object, we determined to spend it and take all chances, day or night, rough or smooth, as fate might determine. With this determination, and having provided ourselves with the apparatus necessary for collecting plants, shells, insects, etc., we started from Aldeby as aforesaid, for Yarmouth. Aldeby is a straggling village, about nine and a half miles from Yarmouth, on the East Suffolk railway. A very pleasant ride of about half an hour brought us to the town, famed for rizzars and bloaters. Here, we soon started on our excursion along the coast. One of the most agreeable pleasures is to ramble along the seaside among the sands, either at low water or among the rocks and tidepools; and there is no more healthy occupation, while inhaling the fresh, breezy, saline air, than noting the varied forms of animation by which we are there surrounded. Both the sea and the shore, and their inhabitants, are at all seasons objects of profound interest to the intelligent observer. No matter under what aspect we see the shore or the ocean, whether it be when roused by the influence of the storm or when calmly sleeping under a serene sky, it is always beautiful; on the seashore, while we are surrounded by much that is grand, we also find much that, though minute, is interesting and marvellous. At our feet the branching corallines and many-coloured seaweeds, by their fanciful groupings, form mimic gardens of fairy-like beauty. Further on, the bladder and larger algæ hang in dishevelled clusters or sprawl over the rough and jagged rocks, while the marine stores of objects that delight the botanist are endless. Yarmouth and its neighbouring coast have long been known to be a produc-

tive locality for the naturalist. Yarmouth, that is, mouth of the Yare; but the Yare is not the only river which flows into the sea here, as many of your readers know. It is an estuary which affords exit to the confluent waters of three streams, the Waveney, the Yare, and the Bure.

These rivers flow for many miles through a glorious district (particularly the latter) of drained and undrained fens. There are many *broads* of water, as they are called in Norfolk, some being over one hundred and two hundred acres in extent; and there are numerous salt marshes, as well as swamps and bogs, which make it a good locality for botanists.

The day we reached the sands was a blazing hot one. Just out of Yarmouth, on the north side of the Denes, we came up to the side of a mill, of which there are several. By the side of a wall adjoining the mill we found a quantity of *Atriplex portulacoides,* and large patches of *Centaurea Calcitrapa,* both in flower, on which were swarms of bees: *e. g. Andrena florea, Hylæus albibris, Saropoda bimaculata,* etc., abounded; the latter plant was plentiful all along the coast, past the Ordnance Establishment.

We came upon some sandhills which were literally teeming with insect life, as every patch of verdure was covered with the flowers of the beautiful *Galium verum,* giving out their pleasing odours. Mixed with this were the *Convolvulus Soldanella,* as far as the eye could reach. We kept on our course towards the north, arriving at Caistor, two miles from Yarmouth. Here many of the people are employed in making nets for the fishing trade in the neighbouring town of Yarmouth, as well as for several boats that are fitted out for fishing, and are called "alongshore boats," as they never go far from land.

Going through the village, which contains a population of 1203 inhabitants, we rambled to the west, into the marshes, which are but a little way from the sea, thinking they would reward a search. In this we were not disappointed, as they were well stocked with plants, as the list I now append will show. Here we spent three hours. The first plant noticed, the Water Soldier, *Stratiotes aloides,* was growing in abundance in ditches. Although not in flower, it was so abundant that a ditch would have afforded nearly a waggon-load of it. The following plants were seen, some past flower, and some in flower. *Thalictrum*

flavum, Ranunculus aquatilis, R. Lingua, R. Flammula, Glaucium luteum, Lepidium ruderale?, Nasturtium sylvestre and *N. terrestre* grow in the salt-marshes at Yarmouth and Burgh Castle. The two last are abundant at Ranworth, and also here at Bressingham, inland. *Sinapis tenuifolia:* two or three stunted plants found on the old ruined tower near the bridge, and on the old wall, St. Nicholas' churchyard, Yarmouth, found years ago by Dawson Turner. *S. muralis,* sparingly on sandy fields, Hemsby, five miles from Great Yarmouth; since found at Corton, Suffolk. *Viola flavicornis* and *Cerastium arvense,* var. *strictum,* both growing very abundantly on the North Denes, at Yarmouth. Of the last, I think I sent you some specimens last year. *Query:* How is it that this plant, so abundant in bogs at Ranworth, is quite different from those growing in sands? how can this be accounted for? They are now in flower at Yarmouth. April is its first time of flowering. *Frankenia lævis?* abundant in salt-marshes on Breydin Water, Yarmouth, and all over the marshes at Caistor; *Silene maritima,* sandhills, Yarmouth, Hemsby, and near the high lighthouse, Winterton. *Hypericum Elodes, Stellaria nemorum?* in Alder Cars, Caistor Marshes. *Trifolium maritimum?* salt-marshes at Great Yarmouth, sparingly. *T. suffocatum,* sandhills in different places between Orford and Yarmouth; *Lathyrus palustris,* Blue Marsh Vetchling. This beautiful plant seems to have a wide range in the Norfolk fens. Its blue flowers are conspicuous amongst the brushwood, and its half-arrow-shaped, lanceolate stipules appearing like wings, make the plant easily observed, particularly when the Grasses and Carices are faded. It grows at Caistor, Aldeby, Ranworth, Loddon Norton, Kirbycane, Bressingham, Lopham, and near Thetford. *Hottonia palustris,* ditches at Caistor, Aldeby, Ranworth. *Sium latifolium* and *S. angustifolium,* ditches at Caistor, and all over the Norfolk fens. The *Œnanthe* is a plant which I never saw till that day, and a friend, who is now botanizing the islands of Bornholm and Gothland, told me it was distinct from what I thought to be *Œ. fluviatilis.* I will, as soon as I can get it in flower, send a specimen. *Peucedanum palustre,* in the marshes at Caistor; it was out of flower and scarce when we saw it. At Ranworth one might gather waggon-loads of it. I sent a large number to the Thirsk Society last year. I shall be happy to gather it for any correspondent next month (July) who may

want it. *Valeriana dioica,* marshes at Caistor, and all over the Norfolk fens. *Carduus Marianus,* a few plants at Caistor; but I have since been told that they were introduced by the late rector. It grows at Ranworth, and is easily distinguishable by its milk-veins from all others of its family. It never could have been introduced there, as it is far from the footsteps of introducers, and must have been there for ages. *C. pratensis,* in marshes at Caistor; it was out of flower. This plant is so abundant as to form nearly the sole occupant of the soil in the fens at Herning, Ranworth and here at Bressingham; I could go and cut down large quantities now in flower. I saw men mowing it here last night, and swearing about it. *C. heterophyllus* occurs sparingly in the fens. (What fens?) *Anacharis Alsinastrum;* this promises to be the possessor of a number of our streams. At Ranworth one part of the Broad has to be cleared every year, that boats may pass with their loads of rushes, fodder, etc., the marshes being so extensive that flat-bottom boats are the only mode of conveyance to clear the fens of their rushes. They sell the rushes at as much as 60*s.* a waggon-load, and reeds at £5 per hundred fathoms.

Of *Carex extensa* I have not a specimen left: I sent some to Thirsk, I believe, last year, and the last specimen I sent to our exhibition at Loddon on Whit-Monday. I will try and get some: they are not common. *Alopecurus bulbosus,* in the salt-marshes at Great Yarmouth, sparingly. *Phleum arenarium,* among the loose sand at Ormesby, four miles north of Yarmouth. To this may be added *Poa bulbosa,* once abundant on the Denes at Yarmouth, but now very scarce. *Triticum loliaceum,* at Hemsby, Winterton, and as far as Orford, south, and Clay, north; never more than only a few plants. Clay I found very interesting, and will send an account of the plants of that place in my next.

DENTDALE AND RIBBLESDALE.

Three Days' Botanizing in Dentdale and Ribblesdale.
By C. J. Ashfield.

During the present month, my friend and fellow-rambler, the author of 'Rambles by the Ribble' (which rambles, by the way, have frequently been honoured by the favourable notice of the

'Phytologist') determined to take a trip to the source of our favourite river for the purpose of completing some observations we were making in that neighbourhood about the end of May, 1860, when we were put to flight by a severe snowstorm. An occasional companion in our rambles having almost at the last minute resolved to accompany us, we started late one evening for Lancaster, where we were to stop for the night. Before "turning in," we held a council as to the route we should take, which we were not long in deciding should be by Hornby, through the vale of the Lune, by Kirkby Lonsdale, from thence to Dent, and from the latter place through the vale of the Dee to Newby Head, the terminus of our journey. I will not expatiate upon the beauties of the scenery, nor make more than a passing allusion to the fine old castles of Hornby and Thurland, nor the handsome mansions of Burrow, Whittington, Underley, and Casterton, all of which we passed upon our road, such matters being foreign to the purpose of the 'Phytologist,' however they might be to the individual tastes of many of its readers. In justice to the Lune, though I must say that we were compelled to allow that it exceeds the Ribble in point of beauty, and indeed, I can scarcely fancy any river scenery more beautiful than the views from Kirkby Lonsdale bridge and churchyard. I believe the Ribble nevertheless has many more interesting places upon its banks than the Lune, and that in consequence 'Loiterings by the Lune,' if such a book were published, would not form so readable a volume as 'Rambles by the Ribble.' I can say nothing of the botany of the vale of the Lune, and not much of that of the vale of the Dee, as we took a conveyance at Hornby, our time being limited, and drove from thence to Dent and some distance beyond. The first plants that caught my eye grew profusely upon walls by the side of the road, for some distance before reaching Dent. These were *Saxifraga tridactylites, Geranium lucidum, Cystopteris fragilis, Athyrium Filix-fœmina, Asplenium Trichomanes.* After partaking of the staple dish of the district, ham and eggs, we drove on from Dent a couple of miles to a place called Gibbs Hall, where we left the conveyance for the purpose of inspecting some romantic places in the Dee, rejoicing in the euphonious names of "Hell's Cauldron" and "The Devil's Pulpit," the one being a fine waterfall, or rather the abyss into which the water flows, and the other a large stone by the top of the waterfall,

worn hollow by the action of the water, for which his Satanic Majesty was supposed to have a partiality. The plants that I saw in our short walk by the Dee were sufficiently numerous to convince me that a longer search could be amply rewarded. The most conspicuous and plentiful of these plants perhaps was *Geranium sylvaticum*, and almost equally abundant were *Myrrhis odorata* and *Allium ursinum*. *Gymnadenia conopsea* was not uncommon in meadows by the river, and in the same meadows I saw several specimens of a *Mentha*, but they were not forward enough to decide the species, and several *Hieracia* upon and about the rocks were in a similar state. I have no doubt many of the Fern tribe might be found in this neighbourhood rather later in the season. The Hawthorns throughout Dentdale were most beautiful: they had gone out of blossom near Preston, so we did not expect to see them in such perfection; and indeed we had the pleasure of meeting with two other vernal favourites to which we thought we had bidden farewell until next spring, *Primula veris* and *Hyacinthus non-scriptus*. After a walk of rather less than a mile we regained our conveyance and drove two or three miles further, when we finally dismissed it, and walked the remainder of the way, about four miles, to Newby Head. Here we stopped for the night; and on the following morning, after visiting a copious spring arising on the side of a hill near the inn, which we consider to be the real source of the Ribble, we took our course down the stream, which for the first three miles is called Gale Beck. We met with nothing remarkable in the floral way until we came to a romantic part of the stream called Thornsgill, and in the meadows here we found many interesting plants. *Trollius europæus*, *Primula farinosa*, and *Geum rivale* were abundant; *Habenaria viridis* and *Listera ovata* were frequent, and *Habenaria albida* almost equally so. In one meadow there was a great quantity of *Carduus heterophyllus* (not yet quite in blossom), which plant we also found near Horton, in Ribblesdale, from whence it was sent at the end of the last century to Sowerby, by a Mr. Bingley. *Geranium sylvaticum* was also abundant hereabouts. *Polygonum Bistorta* we saw in many places, as well as *Campanula latifolia*, the last of course not yet in blossom. We passed Lynn Gill, a mountain ravine, on our way to Horton, but made no further botanical discoveries worth recording previously to reaching the latter place. At Horton my companions left me, but I remained

there the night, for the purpose of botanizing the next day on my way to Settle, where I was to meet one of them at dinner. On the following morning, I sallied forth at an early hour, and, not wishing to take the direct road to Settle, I wandered about for some time until I came to Moughton Hill, on the other side of the Ribble, from Horton, which I determined to ascend. The slate and limestone join on this hill, and there are extensive quarries of the former. I had not climbed far up the hill before I discovered that I had got into a rich botanical district. The first plant of note that I met with was *Polygonum viviparum*, growing plentifully below *Coom, Combs*, or *Culms* Quarry, as it has been variously spelt. I have no doubt that this is the spot from which Mr. Bingley sent the specimen of the plant to Sowerby, which is figured in 'English Botany,' and which is stated to have been "communicated fresh from a moist spot of ground a little below the Culms, near Horton, in Craven, by Mr. Bingley, in July last." In the same neighbourhood also grew *Gnaphalium dioicum* plentifully and fine. A little higher on the face of the hill I met with abundance of *Helianthemum vulgare, Poterium Sanguisorba, Polygala vulgaris* of every shade and colour, and *Thymus Serpyllum*. In wet places and by the sides of springs were abundance of *Primula farinosa, Pinguicula vulgaris, Myosotis* two or three kinds, *Valeriana dioica* and *Lysimachia nemorum*. In the woods I observed *Pyrus Aucuparia, Melampyrum pratense, Asperula odorata, Sanicula europæa, Cardamine amara, Bunium flexuosum*. On rocks and banks, in open places in the woods, *Arabis hirsuta* was plentiful, and in one place I observed a quantity of *Eupatorium cannabinum*. On the scars grew several *Hieracia*, as yet in an immature state; *Anthyllis Vulneraria, Asplenium Ruta-muraria, Asplenium Adiantum-nigrum* occasionally, and *Cystopteris dentata*. On the top of the hill I found abundance of *Sesleria cærulea*, and occasionally *Arenaria verna*, and also a few plants of *Lycopodium alpinum*. I took my way over Swarthmoor to Settle, but, as I was getting rather pressed for time, I was unable to botanize much, but I observed in a damp place by the side of the road several specimens of *Sedum villosum* just coming into blossom. On a waste spot of ground in the village of Little Stainforth, I gathered *Meconopsis cambrica* and *Lamium maculatum*, but I should think they were probably introduced. Near them grew abundance of *Chenopodium Bonus-*

Henricus, and on old walls in the village *Geranium lucidum* was extremely luxuriant and plentiful, and *Arabis hirsuta* was frequently to be seen. I met with no plants after leaving Little Stainforth, except some of those already mentioned; in fact, I had no time to look for any, being obliged to hurry on to Settle, where my friend was waiting for me. We left Settle for Lancaster in the afternoon, and arrived at Preston in the evening, and thus ended our pleasant excursion. I have no doubt I missed many plants through lack of time to look for them, and in fact I saw a great variety of the *Carex* family during the journey, but did not stay to examine them.

Preston, June, 1862.

PLANTS OF MONCRIEFFE HILL.

By John Sim.

In a former number of the 'Phytologist,' I recorded a ramble to the hill of Moncrieffe in search of wild flowers. I again on the 4th of June this year, along with a young friend, paid it a second visit; but the day being most unpropitious, boisterous, wet, and cold, precluded us from any extended research among its rarities. We had, however, the good fortune to obtain one rarity, and several examples of other plants of very unfrequent occurrence. On arriving by rail at Bridge of Earn Station, we wended our way by the fine carriage road through the plantations and pleasure grounds of Sir Thomas Moncrieffe until we arrived at the foot of the wooded hill of Moncrieffe. In passing along its southern side, we observed in abundance very luxuriant forms of *Anchusa sempervirens,* in full bloom; this plant is a perfect beauty; no one by seeing its dry and blackened form in the herbarium could form the least idea of its handsome figure and azure blossoms while adorning the sides and slopes of Stenton Rocks and Moncrieffe Hill; in the latter place it is abundant, in the former not so. Patiently we waited for a "fair blink," but no, "the wind blew as 'twad blawn its last, the rattlin' showers rose on the blast;" we took shelter under the shade of an aged tree, and after waiting in vain for fair weather, collected, close by, several specimens of *Doronicum Pardalianches* and *D. plantagineum,* the latter almost out of flower. We observed

an abundance of *Agraphis nutans;* the ground under the trees was blue with its blossoms, indeed it is not rare in this quarter. *Vinca major* was plentiful around the foot of the trees, and overhanging also the rocky banks and ledges near the foot of the hill. We also met with *Allium Scorodoprasum*, not yet in flower; a little further eastward we came upon plenty of *Scrophularia vernalis*, and being in good condition we collected several specimens. On our way back, my companion proceeded for a little distance up the brae, and suddenly stopped, calling out to me to come and see *Asperula taurina*. I obeyed, and clambering up the brae, found it to be a large bush of this newly-discovered plant in full flower; we left the root, but very few of its branches. I am now satisfied in my own mind, that, like the *Claytonia alsinoides*, *Asperula taurina* is a true native, say to the contrary who will; for, considering the circumstances under which it grows, both at Den of Murrayshall and Hill of Moncrieffe, no unprejudiced botanist can with any reason doubt its claim as an indigenous plant. *Verbascum Thapsus* was plentifully dispersed here and there in the plantations, and on the southern side of the hill. Passing homeward along the northern wall of Sir Thomas's garden, we observed growing therefrom most luxuriant examples of *Asplenium Ruta-muraria*, and on the lawn plenty of *Avena flavescens*. The sun attempting to shine out, and the rain somewhat abating, we rested a little, and then wended our way to the station, much fatigued (myself only), and much disappointed at not getting a better day, but still gratified at meeting with *Asperula taurina* and a few others of less rare occurrence, but still very interesting and uncommon plants.

Bridge End, Perth.

SARGASSUM BACCIFERUM.

By JOHN SIM.

On my way home from the West Indies, in 1843, I was astonished at the immense fields of this strange plant through which we passed. I often wondered it did not impede the progress of the ship. On hauling up several fragments of plants of it, I could observe no base of attachment by which it had adhered to rocks or stones. My impression was, that it lived and vegetated like a floating Duckweed, and was carried to and fro by the winds

of heaven and currents of the great deep. Can a Harvey or a Griffiths enlighten the understanding of an ignorant but humble inquirer as to the mode of existence and manner of propagation of this remarkable pelagic vagrant? for, although occasionally found upon our western shores, I believe such stray plants have been drifted thither by the winds and waves of the great Atlantic.

Bridge End, Perth, 1862.

EARLY MEDICINAL PREPARATIONS FROM PLANTS AND ANIMALS.

Many of your readers who peruse the interesting description of British plants, their localities, etc., afforded by the 'Phytologist,' do not often refer to the opinions of our ancestors as to the properties of the plants, and see how many of the medicines then in use were prepared "with virtues excellent" from plants, etc. I was much amused some weeks since, by looking into the "Complete Chymical Dispensatory, written in Latin by Dr. John Schroder, that most famous and faithful chymist, and Englished by William Rowland, Dr. of Physick," printed 1669, for a plant called "Stinking Elder" and its virtues, to find many very curious receipts for almost all "the ills that flesh is heir to." According to this work, medicines were in early times prepared from animals as well as from vegetables; and I found one preparation termed "a Compound Water of Magpies," being a dozen of young magpies boiled in water of Lilly Convals; and its virtues, we are told, are cephalic and antepileptic. There is also a preparation termed "Water of Magnanimity," composed of "great ants that smell sour," digested with spirits of wine and cinnamon; its virtues were in healing cuts, and to be applied outwardly and inwardly for consumptions. A note to this compound says, "If you add the species of anacardi, it will make a brave extract to strengthen the memory." There is also "Water of the Philosophers," composed of flowers of elder, water-lilies, lettuce, purslane, henbane, nightshade, corn poppy, roses, violets, juice of houseleek, of plantain, endive, and sorrel, "good against all hot diseases." I think the physicians of the present day would hesitate to prescribe this medicine to their patients, even were some of them "laughing philosophers." What

would our fashionable fair ladies think of the following, given in this curious book? "Cosmetic or Beauty-water: take white ceruse, juice of lemons, whites of eggs, camphire, borax, myrrhe, frankincense, and mastick, infuse them twenty-four hours in tile-tree water and elder-water, and distill." This water whitens the skin and makes it smooth. There is also among the electuaries "An Electuary for Kings," compounded of "pine-nuts, red roses, sweet almonds, yellow saunders, ambergreese, musk, and sugar, dissolved in rose-water;" the virtues—"it cools, dryes, and strengthens." Among the extracts, there is one called an "Extract of Lungs," composed of fox's lungs, Paul's betony, hyssop, scabious, anise and fennel seed, "good against weakness and diseases of the lungs." Another, called "Celestial Treacle," composed of benedicta, magistery of coral, pearl hyacinth, rubens, smaragds, bezoor, scaled earth, unicorn's horn, bone of a stag's heart," etc.; "it is admirable to appease the troubled spirits, and strengthen the natural balsam of life. Among the ointments there is one called "Sympathetic Ointment," composed partly of washed earthworms, brain of a pig, red sanders, mummy, and the moss of a dead man's skull not burned; a note says, "the moss of a dead man's skull is to be taken in the increase of the Moon, and when she is in a good house of Venus, not of Saturn or Mars, and you must make the ointment when the sun is in Libra. All wounds are cured by this ointment (provided the nerves and arteries be not hurt); anoint the weapon that made the wound, daily once if there be need, and the wound be great."

The 'Dispensatory' contains also many curious preparations from minerals, earths, and precious stones; also from pearls, coral, and talc. There is a preparation called oil of talc, liquor of talc, cream of talc, tincture of talc; and most of the latter were used as cosmetics.

Dr. Rowland has an epistle directed to the Right Honourable and others the merchant adventurers in England, and to all ingenious druggists, chirurgeons, apothecaries, and all such as study philosophy or physic in their mother-tongue, and it ends as follows:—"And for you, my countrymen, that study physick and phylosophy in your mother-tongue (not with intent to deceive the people by damnable fortune-telling or rather witchcraft, for from such I expect nothing but railing, as I have formerly received since I first opposed that way), I humbly desire your

kind acceptance of this my last work in this kind of physick. The Lord bless and preserve you in all the ways of health and happiness, and give you both inward and outward riches according to your public spirits, for the honour of our God, King, and Country. So prayeth your truly loving countryman and ready servant, Wm. Rowland." S. B.

FAIRY RINGS.

Some Observations on Fairy Rings, and the Agarics that produce them. By GEORGE JORDEN.

Those circular green or brown marks observable in our old pastures are usually called fairy rings, from a belief that they were made by the fairies, imaginary beings, in which our superstitious ancestors firmly believed. Our simple forefathers had no knowledge of the mysteries of mycology, and they attributed these and similar phenomena to supernatural agencies. They were well acquainted with Agarics (Frogstools), but they never suspected that any members of the Mushroom family had anything to do with the production of these appearances. There are several species of Agarics that produce those green rings; the chief are *Agaricus campestris, A. multifidus, A. oreades, A. giganteus.* As each species proceeds from a spore which has fixed itself in a suitable locality, it sends out radiating fibres, that probably have not sufficient strength to produce a pileus (perfect Fungus) for several years, for much depends on the site and meteorological influences. In this manner fairy rings are formed, and will, if not interrupted, extend to a great distance.

One ring of *Agaricus giganteus* I have observed in progression for more than fifty years; its myceline fibres advanced annually, but did not produce any pilei more than once during that time, and then only a few.

When I first noticed this ring, it was about eight feet in diameter, and it then had a number of pilei on its ring; afterwards it produced no pilei, but maintained its narrow green ring, and also its inner ring of irregular dead patches, which this one and *Agaricus oreades* only do. This however was an unfavourable situation, for the aspect was to the north, and the soil was sandy and barren.

This Agaric prefers a stiff soil, a southern aspect, and a genial season, to produce an ample quantity of pilei.

Four rings caused by this Agaric I have been observing for some years; one, which is a much younger ring than the last-mentioned, produces pilei regularly, and is about eighteen or twenty feet in diameter. The situation is on a declivity, and has a south aspect.

The summer of 1859 was comparatively a tropical one, a temperature which seems to be suitable for this Agaric. It was so stocked with pilei in every part that they crushed and killed each other, being confined to space, that is to the green ring, which is not more than at most six or eight inches wide.

Some of the pilei I measured were eighteen inches in diameter, a splendid spectacle for a mycologist. The annual progress of the mucedinous filaments entangle the roots of the Grass and destroy them by the strong effluvia; for they have a strong scent, which they communicate to the soil, and is much like that of the pilei, but stronger. When the filaments converge and proceed to their extremity, they enlarge and there fertilize the soil, and produce the green ring from which the pilei spring.

Those myceline filaments never retrogress, nor have I ever seen a pileus spring up at the last season's terminus but only once, and that only a single one.

The Agarics have a fertilizing quality, from the quantity of ammonia they absorb from the atmosphere; for where these Agarics grow the herbage flourishes. *A. giganteus* in decay does not destroy the Grass; for when it decayed in the remarkable ring in 1859 it presented a most disgusting mass of matter.

This Agaric is undoubtedly poisonous, for I have frequently tasted it. At first it has an insipid mawkish taste, followed by a hot burning sensation in the mouth and fauces.

In 1860 I did not observe this ring, but in 1861 I examined it, but it contained, clustered together, only three pilei. This shows how much the Fungi depend on meteorological influences —warmth and moisture.

The Agarics are, most of them, a rather disagreeable unsightly tribe of plants, shunned by every living thing except slugs, beetles, and a few flies. Few, if any of them, can be eaten with impunity, and all may as well be left alone. By man's industry and skill, both in the animal and vegetable world are ample

stores of wholesome food, without the risk of being poisoned. Few would prefer a steak from *Fistulina hepatica* to that of an ox-rump, or one from *Lycoperdon bovista*, however skilfully prepared. Few persons can be taught to distinguish the wholesome from the deleterious Fungi; few would be found sufficient mycologists to distinguish *Boletus edulis* from *Boletus luridus*.

The cryptogamic tribes are in their habits most erratic and fugacious. We know not where they are, nor where or when they will appear,—appearing in abundance at one time, and afterwards not appearing again for many years, as I have frequently observed; subterraneous burrowers, ready to appear when the season suits. The air is also filled by embryal atoms of organic life, ready to germinate and continue their species when they can get a suitable locality. Not only is the air filled with organic life in embryo, but the atoms of disease afflicting all organic life.

When a child, I used to be shown the fairy rings, which were held sacred and approached with much reverence; and I was told not to step upon them, for it would offend the fairies; also that they met in those rings to dance by the light of the moon, but could only be heard, never seen by mortal eyes. Their singing and music was delightful. This took place at their levees, which were celebrated occasionally in some favourite human dwellings, when everything could be heard but nothing seen. I asked what fairies were; in reply they said they were the spirits of little children who died before they were christened, and that they would for ever remain on earth enjoying the greatest happiness.

When a child, and living in a place where legends of fairies, ghosts, witches, hellhounds, and other rustic lore were prevalent, these stories affected me with a terrific pleasure. When older, I sought for other reasons for fairy rings, and discovered more rational causes of their formation. Why the Agarics and *Boleti* are called Frog- or Toad-stools I know not, except it was from their shapes. It would have been more significant to have called them Fairy-stools, being so conveniently placed for the accommodation of these fabulous tiny beings, whereon they might sit down and rest when wearied with dancing within the green ring.

Bowdley, June 20th, 1862.

LASTREA DILATATA AND ITS VARIETIES.*

By Thomas Moore, F.L.S.

With the exception of a few very marked forms, of the nature of sub-species, this freely-distributed British Fern has not until lately been observed to sport into so extended a series of varieties or variations as most of the other common species; but as the keen eyes of Fern-fanciers peer more closely into its native haunts, it is found that many very curious and interesting forms occur. The normal condition is to have a short caudex, upright or nearly so, and furnished like the stipes with entire lance-shaped pointed scales of a light brown colour, and having a much darker bar up their centre; to have also fronds of an ovate outline, twice or thrice pinnate, with spinoso-mucronate serratures. These features include plants varying very greatly in size, from six or eight inches to five feet or more, the two extremes, which are perhaps permanent, being sometimes looked on as varieties. For the most part, the fronds are from two to four feet high, and of an arching or semi-drooping character.

Falling under the plant thus indicated as a type, but themselves of the rank of sub-species, are the following, which gradually pass from the normal ovate to an oblong-lanceolate outline of frond.

DUMETORUM, a dwarfish ovate variety, found well-marked in Westmoreland.

COLLINA, a medium-sized plant, with narrow-elongate ovate fronds, occurring in a characteristic form both in Westmoreland and Arran.

ALPINA, with fronds varying from six inches to two or three feet in height, and from ovate to oblong in outline, and when fresh of a soft succulent herbaceous texture, so that when dried it becomes very thin, a common form on the Scottish highlands, and passing into the North of England.

CHANTERIÆ, a tall slender plant, with lance-shaped fronds, broadest upwards, a West of England plant.

GLANDULOSA, a tall erect robust-habited plant, from the Forest of Dean, with oblong-lanceolate fronds, the link connecting *dilatata* with *spinulosa*.

* From the 'Gardeners' Chronicle.'

LEPIDOTA, a very remarkable form of doubtful origin, having short broadly-ovate quadripinnate fronds, the stipes and ramifications of which are so completely clothed with contorted whole-coloured rusty scales as to give them a scurfy character.

These all are abundantly distinct for the purposes of the cultivator, having marked individuality as to size, form, habit, and aspect; but independently of these, and of such as can be associated with them, this common Fern yields more than a quarter of a century of distinct recognizable forms, some of which have been only very recently found. There is a group of minimums; several interrupted laciniated and crested forms; and others of vigorous habit and gigantic stature, sometimes tall-fronded with a narrowish outline, sometimes thick-fronded with a bulky aspect and almost leathery texture, sometimes broad-fronded and remarkable chiefly for the expansion of their surface.

During the past year considerable additions have been made to the previously-known British varieties. The smallest of these novelties which has come to our knowledge is UNCINELLA, a Somerset variety, having the lamina of its fronds rather shortly ovate, and four to five inches long. It is bipinnate or nearly tripinnate, the pinnules rather peculiarly decurrento-confluent, and their teeth rather large for so small a plant, with a marked tendency in the teeth themselves or the lobes which they terminate to become incurved.

Another from the West of Scotland, which we propose to call CONCINNA, has a lamina of about nine inches on a six-inch stipes, and is somewhat oblong-ovate in outline, tripinnate with the parts small, the pinnules stalked, subfalcate, and acute, cut into small linear-oblong lobes, which have a few sharp teeth, most evident at their tips, the anterior basal lobes being most prominent; sori small. It is very neat and pretty.

That we call LEPIDA, from the confines of Yorkshire and Lancashire, is a rather larger but slender form, with more distant pinnæ and pinnules, the latter more obtuse, and with the lobes, which are oblong and sharply-toothed, more widely separated; the fronds, including the stipes, are upwards of a foot and a half long.

Then comes HANKEYANÆ, a Cumberland plant, also remarkably slender and elegant, and with the pinnæ and pinnules peculiarly distant. In this the pinnules are long and narrow, the

parts small and finely toothed, and the whole so remarkably convex that the fronds cannot be flattened. A form very like this has been found near Aberdeen.

Finally, in this series comes a Lowland Scotch plant which we call LATA, a broad form with large pinnules, not like the large broad ordinary plants common in England, but having a peculiar leafy character from the coarse lobes of the pinnules being broadly confluent.

Then of the oblong-fronded series we have STRICTA, a Somerset plant, with a narrow lamina of eight or nine inches to the upright-growing fronds, and the pinnæ all directed upwards at an angle of about forty-five degrees; it is a very unusual-looking dilatata.

Another is RECURVIFOLIA, from Aberdeen and Moffat, the latter rather the broader of the two, both comparatively dwarf plants, and remarkable for having rather crowded sessile pinnules, very decidedly convex on their upper surface, the fronds having at the same time a tendency to concavity along the centre of the pinnæ.

A third neat and very elegant form, received from the West of Scotland, which we call ADNATA, though small, the lamina being less than a foot long, is to the eye a much divided variety, from its evenly and deeply-cut character. It is rather slender; and the pinnules are sessile, and of a nearly regular oblong-ovate acute form, cut nearly to the midrib, and to about the same extent all the way up, into small even-sized acutely-toothed lobes, so that the midrib of the pinnules appears to have a narrowish equal wing throughout its length, with which the lobes are adnate.

Larger forms of the oblong-fronded series occur in the variety ALTA, an Aberdeen plant of erect robust habit, four or five feet high. This is distinctly tripinnate, with the pinnules averaging an inch, the larger ones two inches long, the lobes rather distant, oblong, a quarter of an inch long and strongly toothed at the tips, almost entire towards the base where they are more or less confluent. The prominent apical toothing somewhat resembles that of *grandidens*. It is, we understand, a well-marked and abundant wild plant.

Another very beautiful Scottish plant, but from the west coast, we propose to call ORDEANÆ, though of its position in this group we are not quite certain, having only seen portions of its fronds.

It seems to be a larger grower but slender, its parts being small like those of *micromera*. The pinnules are from three-quarters to one inch and a half long, with small distinct oblong or sometimes slightly falcate lobes, deeply cut into smaller lobes or teeth. Its finely divided condition makes it a very elegant plant.

The variety ROBUSTA from the lowlands of Dumfriesshire is again quite unlike any of the foregoing. It is tall and very stout, with crowded, broadly-ovate stalked pinnules, the lobes of which, the basal ones at least, are rather ovate than oblong; the teeth are small but spreading in the way of *collina* and *grandidens*.

The foregoing are all varieties in which the development is of a normal character, but there are some fine-looking novelties of the interrupted or abnormal series. The most striking of these we propose to name BLAKEI, after Mr. James Blake, by whom it was found near Aberdeen. It is a tall upright plant, resembling *alta* just noticed, and is indeed evidently a depauperated form which has originated from that variety. The whole of the frond is affected by that irregular development of the parts to which Fern fanciers owe some of the most highly prized sports of the Fern family; this is so completely the case in the var. *Blakei*, that the frond becomes symmetrically unsymmetrical, if such a paradox can be conceived, and it is this which, along with the tall oblong outline, is the peculiar feature of the plant.

We must just mention RAMOSA, another type of variation, in which the stipes and rachis become forked so as to produce a branch frond. It is a plant of Scottish origin we believe, having come to us through the Botanic Gardens of Edinburgh and Glasgow. This is a variation of the *dumetorum* sub-species.

In noticing a short time since some of the more remarkable new forms of Lady Fern, we should not have omitted to mention as the finest of all the crested forms, and certainly a most charming ornamental Fern, ATHYRIUM F. F. ELWORTHII, a "seedling" raised by Mr. Elworthy, of Nettlecombe. It is of the *multifidum* and *corymbiferum* class, with fine bold crests at the tips of its fronds and pinnæ, and the pinnules exhibiting also more or less of a crested character.

The plants to which this very rapid sketch refers are all such as Fern-fanciers would welcome to their gardens.

ON A NEW PINAX OR INDEX OF THE BRITISH PLANTS.

To the Editor of the 'Phytologist.'

Sir,—I beg to submit to you, and through you to the readers of your Journal, the following hints or suggestions on a new catalogue of the British plants.

It is far from my wish to disparage the useful list of our indigenous productions issued by the Botanical Society of London, a publication which is deservedly esteemed, and which has been eminently serviceable to the botanists of England; nor do I mean to criticize in an unfriendly spirit the Comparative List, now in course of publication in your miscellany. Give me leave to suggest the following query, viz. whether the following proposal is, or is not, a subject worth the consideration of British botanists: *i.e.* the compilation of a more comprehensive *catalogue raisonné* of our native or spontaneous productions? Without repeating the stale objections urged against the present list in various quarters, and especially in the old series of the 'Phytologist,' it may be asserted, that the catalogue of the London Society has not given universal satisfaction; of this fact the readers of the new series of the 'Botanical Journal' are aware. Several strictures on its inconsistencies and deficiences were long ago very fairly stated, and were met in a somewhat supercilious manner, and defended with more petulance than judgment and good taste.

Since the first appearance of this list, five editions have been printed and circulated, and with few exceptions it is substantially the same as it was originally. Some species have a double or a single asterisk prefixed, to denote that they were not there formerly, and the species named *Babingtonianæ* also grace the catalogue. These are the chief alterations. The question, has the knowledge of botany remained *in statu quo* (stationary) during the last fifteen years? may be fairly asked. The catalogue of British plants has made but small progress.

The Comparative List, for which botanists are greatly indebted to the compiler, is not quite up to the mark,—not all that might reasonably be expected in these times of progress and reformation; but the defects of the Junior List are not a fit subject for criticism, because it is the first attempt, and incomplete, and has not received the final touch from the author. He may modify the form, supply the defects and correct the errors in a more

satisfactory manner than any other botanist who has not made this subject of comparative nomenclature one of his pet studies.

The design of this suggestive note is to explain the writer's views about the compilation of a catalogue suited to the wants of students, and worthy of the increased and still advancing intelligence of the age; but not to criticize sharply the existing lists, which in their time have been very useful. But as it would be impracticable to explain to the reader the object of this paper, without contrasting the proposed Index with the lists already existing, their defects will be incidentally noticed, not with the view of blaming their authors, who have done their best, but to show a way of doing the same thing in a more serviceable manner.

The radical defect of the London Catalogue is its *one-sidedness* or *partiality;* and on the principles which regulated its compilation *this* was *unavoidable*. The author in this, as in all his other works, lost his reckoning, or missed a loop in his stocking and grounded or got himself entangled as in a ravelled hasp about native plants, spontaneous plants, plants that are certainly alien, and plants that are only suspected. Hence there are three lists of excluded species, viz. 1st, such as are sometimes found of spontaneous growth; 2nd, such as (in the author's judgment) ought never to have figured in any list of British plants; and 3rd, the extinct plants. How many botanists, well acquainted with the plants of Great Britain, will agree about the plants which should be classified under these three heads?

Again, the various expedients adopted to express the author's opinion about the nativity or non-nativity of the species in the body of the catalogue are, to say the very least, unsatisfactory; viz. the *star*, the *dagger*, the *italics*, the *brackets*, thus:—*† *P. somniferum* ( ). They are only the expressions of his individual belief, but are not binding on other observers, whose botanical creed may not be so limited as his.

As my design is to show how these defects may be supplied, and these blemishes and contradictions avoided, and not to blame what is admitted to be unavoidable on the principles adopted as fundamental, I will now explain what is the proposed scheme of a catalogue of the British plants.

A systematical and critical catalogue, which the London Catalogue professes to be, should, and easily might, be compiled so as

to be a complete index to all that has been written on the British plants. It need not be encumbered by the partial and conflictive judgments about nationality, spontaneity, citizens, denizens, colonists, aliens; but it should exhibit on its pages a brief history of every species, or distinctly cite where its history is to be found, and there leave the students to form their own judgment about its domestic or exotic origin.

The proposed Pinax or Index should contain the current or most popular names of the species, *i.e.* the names generally recognized as the generic and specific names—with the authority, the English name, and all the scientific synonyms, and in addition, all the authorities for said synonyms, with the page or chapter in the works where these names, current in those days, are found. It might be enough for general purposes to enter all authorities, from Ray inclusive to modern times; but it would be more satisfactory to ascend to the fathers of botany, Theophrastus, Dioscorides and Pliny, and to enter the names of the founders of botany in England, viz. Turner, Lobel, Lyte, Gerard, and Parkinson, as the authorities for the plants by them described.

Thus, if the name of Ray stood first after a synonymous name it would denote that it was first introduced or observed or described by him.

If Hudson, or Robson, or Withering were the original authorities, and if their names stood next to the name of the species, it would be inferred that these eminent botanists have the honour of introducing the species.

It would be easy to refer, by means of a well-constructed index, where the edition and page of any author were quoted, to the original authority for any given species. With this index any one, who will take the trouble, might investigate the history of species for himself; or he might find the authorities, on which he might infer either the nationality or non-nationality of every species.

But as there may be a few who are more disposed to follow implicitly *any* authority than to rely on themselves in the formation of their opinions, the proposed Index might be compiled so as to suit their prejudices and necessities. For example, all the British species that have never been challenged as non-British might appear in one division of the Index, and all aliens and suspected aliens, of which we have probably hundreds, should

appear in another division. This would simplify the London Catalogue, by reducing its four divisions to two, and would satisfy the conscientious scruples of the timid by the right line separating the genuine from the suspicious in-dwellers.

In most plants the question of nationality is both useless and unanswerable; yet, for the sake of the few species whose introduction is known, perhaps it would be judicious to make this concession; but the italics, the stars and daggers, etc., should be doomed to perpetual banishment or utter destruction, as the relics of barbarism, ignorance, and illiberality. These signs are as useless, and will soon be as antiquated, as the old leathern buckets that still hang under the ceilings of ancient establishments,—quite as ineffective for helping the botanical inquirer as these rows of utensils would be in a conflagration.

The numbers, and also the census, useless though the former be, and imperfect though the latter be, might be retained in deference to respectable prejudices.

The Comparative List, as previously said, is not labour thrown away, although a better one might be expected, shows what discrepancies exist among living authors both on nomenclature and species. But this is as nothing to the varieties of opinion about the origin of the plants as native or foreign, wild or cultivated, concerning which this elaborate new list gives no information beyond what may be derived from the author's works, from which it is derived.

An *Index* or *Pinax*, compiled on the principles proposed, would give all that is to be gathered from both the London Catalogue and from the Comparative List, and much more; for it would be an epitome of the history of every British plant, and it would direct the student to all the sources whence he could obtain the entire amount known about every plant,—at least all that has been recorded by authors whose opinions are worth consideration.

One of the most important features of the proposed Index would be that all the authorities for a given name would appear in juxtaposition. There would be no unnecessary repetition, and there would be no omission of what a student would wish to learn. When all the authors, or say all the descriptive floras, from Hudson to the present time, agree, there needs no entrance of this fact; it would be inferred that these are not critical

plants, and the elaborate working out of their synonyms would be superfluous.

It is not believed that the proposed index to the literature of British plants would affect the circulation of the 'London Catalogue,' or be an extinguisher to smother its lucid beams. Far less is it to be expected to strangle in the very birth its more ambitious successor 'The Comparative List.' There is room enough in the botanical world, small though it be, for all of them. Some would prefer one, some another.

The 'London Catalogue' was originally compiled as an index to the Herbarium of the Botanical Society of London; but since this society has been in abeyance, and its Herbarium now dispersed, this list has little more special importance than any other list would have, except this, that it is cheap.

The proposed 'Pinax of British Plants' would contain everything comprehended in this the original list, and much matter of a literary nature. It would also have an advantage over the 'Comparative List' in the juxtaposition of the authorities for the nomenclature of the critical species, without any unnecessary repetition.

Little more space than that of one number of Mr. Moore's 'Index Filicum' would suffice for this novel undertaking.

BOTANICAL EXCURSIONS.

To the Editor of the 'Phytologist.'

Dear Sir,—It has occurred to me, that if we could induce some of our members of the Lancashire Botanists' Associations to give *occasionally* some account of their local rambles, it would be interesting to the general readers of the 'Phytologist,' and might at the same time encourage and stimulate other societies similarly formed (which no doubt exist in various parts of the country,) to send their reports for publication. These accounts would be especially interesting to us, being derived from a source like our own. The language in which the facts would be recorded might not be in the most elegant style, and perhaps not so well stored with *antique ideas* and historical lore, yet, with the aid of a judicious pen, might be made acceptable to most of the readers of the 'Phytologist.' These few remarks are offered by way of preamble, and

I propose to give you an account of a botanical ramble which I and another mate enjoyed with James Percival, the talented President of the Prestwich section of Lancashire botanists, whose observant eye and perceptive mind are of so much value in a botanical journey. Availing ourselves of the new line of rail which has been recently made from Manchester to Knutsford, we took our tickets by the 9.30 train to the latter place, which we reached in about an hour; and the town may be briefly or barbarously described as a small place, with a large jail and a good race-course, which was the most inviting locality. Here we soon found *Teesdalia nudicaulis, Filago germanica, Scleranthus annuus, Ornithopus purpusillus;* but we were subsequently disturbed by a very smart shower of rain, and very cold, considering it was late in June; but in our retreat we found time to notice *Plantago Coronopus, Urtica urens,* and that beautiful flowering plant *Vicia angustifolia.* The rain abating somewhat, our next visit was to the bog, or moor as it is called, which is situated on the opposite side of the town to the race-course. This place is the old locality for *Saxifraga Hirculus,* and those rare mosses *Hypnum nitens, Hypnum Blandovei,* and *Paludella squarrosa,* but unfortunately not to be found there now; at the lower end of this bog there is a large mere (Tatton Mere), in which grows *Nymphæa alba* in great profusion, but well guarded by a broad long belt of thin jungle-like grass; *Phragmites communis,* growing in splendid condition; not far from this we found the delicate-looking Fern *Aspidium Thelyperis* in plenty, with *Orchis latifolia,* and a white variety of *Lychnis Flos-cuculi,* that beautiful moss *Climacium dendroides,* may be reckoned by the acre. In the hedges enclosing the bog may be seen *Bryonia dioica, Chelidonium majus;* but a bog is not very agreeable to stop in long together on a damp day such as this was, and we turned our faces towards Mobberly. By the road, on a small common (called Shaw Heath, I think), where were several pits, we saw more of the White Water-Lily, among which were floating *Polygonum amphibium* in bloom; on the edges of the pits grew *Galium palustre, Myosotis cæspitosa, Catabrosa aquatica,* and submerged were several *Potamogetons;* but having had a fair share of the water above the earth, we did not care for dabbling in that below the surface. In the hedge-banks adjoining were several tufts of *Festuca bromoides.* We resumed our journey down the

road, but could not resist looking into a field on the right-hand side of the road, in which was another large pit, and as my companion, Percival, remarked, as being likely to produce *Cicuta virosa*, a plant that we were in search of, but in this we were disappointed: *tant pis*, so much the worse; but instead we found *Ranunculus Lingua*, *Typha angustifolia*, and *Menyanthes trifoliata* growing most luxuriously in the next field or next but one; and best of all, we found *Cicuta virosa* growing in a pit similar to the other, and not far from it, and then with the lively Frenchman we said, *tant mieux*, so much the better. Our next stopping-place was at a large mill-dam, called Pedmore Hollow, till lately a very interesting place to the botanist, but it is now in process of being cleared of its plants, in consequence of its transformation into waterworks for the town of Knutsford; but at the top end still grows *Scirpus lacustris* and the genus *Carex* in great profusion. On its bank grows *Betonica officinalis* abundantly, as well as *Polygonum amphibium*. Soon after leaving this place, we came to a roadside public-house, and here, with plain fare and good appetites, we soon made ourselves comfortable. Our next way was through the fields, and although walking quick, we could not help noticing *Genista tinctoria*, *Linum catharticum*, etc.

On emerging from the fields, and entering the village of Mobberly, our attention was arrested by the interesting appearance of a garden wall, on which grew *Corydalis lutea*, intermingled with the Mother-of-Ten-Thousand, as the villagers quaintly call that beautiful plant *Linaria Cymbalaria*. Here we asked permission to get a plant or two of the *Corydalis*, which was growing both inside and out of the wall. I scarcely need tell you that our wish was freely complied with. We next passed along through the churchyard, stopping a few minutes to admire the splendid specimen of *Taxus baccata* which grows here. Bidding farewell to Mobberly, we resumed our journey through pleasant green lanes and field footpaths, till we got to Castle Mill, on the river Bollin, and here, on the skirts of the Clough called Cottrill (sacred to the pheasant and partridge) we noticed the following plants:—*Euonymus europæus*, *Vicia sylvatica*, *Daphne Laureola*, *Heracleum Sphondylium*, var. *angustifolium*, *Habenaria chlorantha*, *Malva moschata*, *Aquilegia vulgaris*, *Erythræa Centaurium*, *Chlora perfoliata*, *Tamus communis*, *Humulus Lupulus*, *Geranium pratense*, *Campanula latifolia*, *Ophioglossum vulgatum*, *Hypnum glareosum*,

Mnium ligulatum: the former Moss is very seldom found in fruit here, but the latter one frequently. We now chose the road in preference to the field way to Hale Barns; but before entering the village, we turned into the field through the stile on the left-hand side of the road, and noticed a single plant of *Pastinaca sativa* on the borders of the corn-field. We now entered a small clough at the bottom of the field, and here grew abundance of *Sanicula europæa, Asperula odorata,* and nice little bed of Herb True Love, *Paris quadrifolia.* Here we determined to close the lids of our vasculums for the last time that day, and proceeded to the Bowdon railway station, passing on the way a very interesting place to the botanist, called Hale Moss. To the muscologist it is particularly interesting, as containing, amongst others, the new British Moss *Hypnum giganteum,* also *Hypnum exannulatum, H. condensatum, H. stramineum* (which fruits here). The Ferns are *B. boreale, Osmunda regalis,* and *Lastrea spinulosa.* The flowering plants are *Acorus Calamus, Menyanthes trifoliata, Anagallis tenella,* and here and there a plant of *Parnassia palustris.* I mention this latter place, merely to show that we have a large field for botany within a day's beat from Manchester, as we were only deterred from visiting Hale Moss in consequence of the rain again.

THOMAS ROGERS,
Secretary to the Manchester Society of Botanists.

BOTANICAL NOTES, NOTICES, AND QUERIES.

NOTICES TO CORRESPONDENTS.

"H. T.," whose letter arrived on the 21st of June, is hereby most respectfully informed, that no contribution to science, however humble, will be DECRIED in the 'Phytologist.' The object of this periodical, for at least seven years, has been not to disparage, but to encourage; our motto is, like that on the begging box, "The smallest donation thankfully received." The same kind correspondent is reminded that *Allium ambiguum* of De Candolle is not *A. ambiguum* of Sibthorp and Smith; and it may be inferred, on Professor Babington's own authority, that the latter, *A. ambiguum* of Smith, is the species figured in the 'Supplement to English Botany,' No. 2803. For an account of *A. triquetrum,* sent to Mr. Babington from the Channel Isles, see 'Botanical Gazette,' vol. i. p. 6; *A. ambiguum* of Smith is probably *A. roseum* of Linnæus; and *A. ambiguum* of De Candolle is a synonym of *A. suaveolens* of Jacquin, *A. ericetorum,* Thore, and *A. appendiculatum,* Ramond. *A. triquetrum* is a Linnæan species, and is not honoured with so many *aliases* as its fair *congener.* Have we both these species as interlopers, or have we but one with two names, *A. ambiguum* and *A. triquetrum?*

"H. G. G.," of Great Yarmouth, is hereby thanked for his list of Norfolk rare plants, which we hope and wish may be increased. His white variety of *Lamium purpureum* is rare, but it has been recorded previously to the receipt of his report. (See 'London Flora,' p. 135, 1st ed., 1838.) "Var. with a pure white flower, near Donyland, Essex." And again in 'Handbook of British Plants,' p. 428, "Corolla purple (rarely white)." We hope H. G. G. will succeed in rediscovering *Senecio palustris*.

"C. J. A.," of Preston, has our warmest acknowledgments for his contributions.

"J. S.," of Perth, will receive a private missive, by way of answering some of his queries, long before the Greek kalends, and before he can send us a full, true, and circumstantial account of a Gaberlunzie man who turned up his nose at the offer of an alms of sixpence, or of a genuine Highlander who declined a pinch of snuff.

To "E. B. P.," of Wimbledon.—Is there no place nearer to Wimbledon than Ham, where *Chelidonium majus* grows? Since the list of Surrey plants appeared in the 'Phytologist,' *Teesdalia nudicaulis*, *Mœnchia erecta*, *Rosa spinosissima*, and *R. rubiginosa* have been seen on Barnes Common. The latter species of Rose was not growing in the hedges, its usual habitat, but on the open space, associated with the Burnet Rose.

At the same time *Acorus Calamus* was seen in flower in its old habitat. One of our correspondents showed us another locality for this rare species, near the reservoir on Putney Heath, close to Wimbledon Common.

Many have looked for *Leonurus Cardiaca* in Combe Lane, but unsuccessfully; no report of its being seen there in recent times has reached us. *Epilobium angustifolium*, like Motherwort, might have grown near "Robin Hood," and both might have been equally indebted to garden culture for their appearance in these two places, which are not a hundred miles asunder. The French Willow-herb, however, has a better reputation than its *quondam* neighbour. This handsome species grows wild in many parts of Surrey; for example, between Farnborough and Woking, by the railway; also in Weston Wood, Albury, etc.

It is very much to be wished that the zealous and successful botanists of Wimbledon and Mitcham would try to rediscover the Vernal Figwort, a rare plant, which was seen in its old habitat near the ancient Wandsworth and Merstham Tramway, and within half a mile of Mitcham church, less than ten years ago. Last year, 1861, we made an unsuccessful attempt to see it again. A greater success, it is to be hoped, will reward the efforts of the botanists resident near Mitcham, Merton, or Wimbledon.

It would be delightful to have a ramble along the sea-border of the Mull of Cantyre, especially with so intelligent and efficient a companion as "J. L.," of Campbelltown. But the International Exhibition, and other Metropolitan attractions, will fix us near town this season. We hope *sposa carissima* will have a new bonnet ere we visit Argyleshire. *Steenhammera maritima* is an attractive object, but it will not blow and blush unseen on the much-sounding shores of the Atlantic, even though we do not go thither to offer our admirations at its shrine.

To our most estimable correspondent, "C. H.," of St. Andrew's, our humble and hearty thanks are hereby tendered for his 'Essay on British Ferns and their Allies,' which was read to the members of the Botanical

Society of St. Andrew's; but our Journal is not the right channel for its circulation, and it will be returned in due course.

The Editor of the 'Phytologist' assures "M. P. M.," of Brighton, that he is very sensible of Mrs. M.'s kindness, and apologizes for the trouble he has given his fair and obliging correspondent. The seeds will be very acceptable, but he hopes that neither of the gentlemen will sacrifice either time or money solely on his account.

Our friend Mr. Winter's list has been duly received and appreciated. The rest of his notes and observations made on his maritime excursion from Great Yarmouth to the Humber, will be most acceptable.

An announcement of the formation and progress of another Natural History Association, viz. that of Warrington, has just been received. The constitution of this society will be noticed in a future number.

Would our kind correspondent who sent a note from St. Peter's College, Westminster, be so good as to send a frond of his Fern gathered near Henley, Oxon., to A. I., 28, Upper Manor Street, Chelsea?

Asplenium lanceolatum, from any of the Midland counties, would be a rarity, and what might well be called a "lucky find."

If our reverend correspondent who has observed the fatal effects of a grub on the Ash-trees of Craven will send us a specimen of the insect, the author of the mischief, we will hunt up its name, and print it in our pages, with a warning to the owners of the valuable timber put in jeopardy, to be on their guard, and try to find a remedy against the insidious attacks of this enemy to one of our most ornamental and useful trees.

"J. W. C.," of Hermitage Road, Richmond, is respectfully informed that his specimen of *Linaria*, from a wall at Petersham, appears very like *L. purpurea*, which grows plentifully on old walls at Eltham, Kent, and more sparingly at Hampstead, Middlesex. We have heard of *L. Pelisseriana* as a Surrey plant, viz. at Windlesham, in a cornfield, and it is an annual, and has broader leaves than *L. purpurea*.

Note. Mr. C.'s list of rare plants will appear soon.

Death of the Wyre Forest old Sorb-tree.

Our excellent correspondent, Mr. George Jordan, has recently (June 20th, 1862) informed us that our only native example of the famous Sorb, or Whitty Pear, or Choke Pear (*Sorbus communis* or *Pyrus communis*) is now extinct.

"I am sorry to inform you," Mr. Jordan writes, "that some evil-disposed person has burnt down the poor old Sorb, the pride of Wyre Forest, a tree which has been an object of attraction for more than two centuries. It has been much visited for many years, and was of great age, and might have existed for ages to come, although cruelly and ruthlessly mutilated, even by reckless visitors, who were desirous of possessing a relic of this rare vegetable curiosity. But for these ravages of scientific spoilers, it might have long been a flourishing tree. Its much shattered, though honoured remains, have perished by fire, for which better things are reserved (see 2 Peter iii. 10).

"I have also to report," continues Mr. Jordan, "that Wyre Forest is now visited by another calamity, a host of tiny caterpillars, and its

leafy honours are rapidly departing. Most of the oaks are denuded of their foliage by swarms not of locusts, but by the ravages of these voracious little pests, the grandmothers of the pea-green moths which entomologists call, as I believe, *Tortrix viridaria*.

"All the trees just now, near midsummer, have a midwinter aspect. Every one who walks in the forest is speedily covered with this caterpillar and its webs, which hang to the branches, and extend from tree to tree, and from the uppermost twigs to the ground. This plague is not confined to the forest, but is spread to the Oak-trees which abound in other parts of the country contiguous to the forest. I have formerly seen large portions of the forest infested with these destructive insects, but never so universally as in this season. No part has escaped, and at least there will be a loss of one year's growth of timber. The moths lay their eggs on the very top of the trees, and their *larvæ* (young) devour the leaves, moving or shifting from one branch to another, and from tree to tree, by the aid of their thread (web), by which they ascend or descend at pleasure. Their activity in winding their thread on their legs by their mouth, is a curious phenomenon."

Note. In the month of May last, this season, 1862, we observed the same mischievous agency at work in Dulwich Wood, adjoining the Crystal Palace. We, *i.e.* a friend and myself, were annoyed with these little green caterpillars, and our hats and clothes whitened with their gummy threads. The mischief they had already done was very manifest; and as their operations probably continued for several weeks longer, the destruction they caused in a large wood was fearful to contemplate.

Gentiana cruciata.

Is anything known of *Gentiana cruciata* as a British plant?—for although I do not find it included in any of our Floras, or recognized at all as a native, yet in Salmon's 'Herball,' pp. 413–14, we read, "No. 4, *Gentiana minor cruciata*, also *G. cruciata*, Crosswort, also the lesser Crosswort Gentian;" and at p. 415, "The fourth sort, or the Crosswort Gentian, groweth in a pasture at the west-end of Little Rayne, in Essex, on the north side of the way leading from Braintree to Much Dunmow, and in the horseway by the same close." This seems explicit enough, and would warrant any one, who has the opportunity, to investigate the matter further. The figure on p. 414 is certainly a good representation of *G. cruciata*, a plant occasionally seen in gardens. W. P.

Hyoscyamus vulgaris.

"A remarkable instance of its strange effects on men's bodies when taken inwardly.—The whole relation was told me by a gentleman who had the misfortune to be one of those who unwillingly (unwittingly) made the experiment on themselves. 'Twas the Rev. Mr. Burdett, Dean of Clonfert, who, making some alterations in his garden belonging to his house at Clonfert, in the province of Connaught, about Dec. 1695, as he stood overseeing his workmen digging, observed them to fling up a root in good quantity, which having no leaf he took to be roots of *Sisarum vulgare*, or *Skirrels*, a piece of garden-ware whose taste at least is well known, being very delightful and pleasing to the palates of many; of these roots he

ordered a parcel to be brought in and fried with butter and prepared for dinner, the usual way that Skirrets are dressed.

"That day, one Mr. Cruso, that lives in the same town and has been many years register (registrar) in the diocese of Clonfert, chanced to dine with him and eat plentifully of the supposed *Skirrets;* but Dean Burdett, being prevented by some accidental business that called him away before dinner was ended, did not eat above three or four of the roots.

"About two hours after he began to perceive himself troubled with a universal uneasiness or lassitude, as if he had been tired after a long journey, an unusual heat and dryness in his mouth and throat, a giddiness in his head, a confused sort of vision in his eyes, and an odd stoppage in his urine . . . without any disposition to vomit. . . . He told his wife of his illness, and that he was unable to imagine what ailed him, being so perfectly well before dinner. By this time one of the servants came running in, to tell him that a boy and two maids were suddenly fallen down in the kitchen very ill; and now they began to suspect the roots they had eaten had occasioned all this, and on inquiring, found that none had tasted of them but the Dean himself, Mr. Cruso, the two maids, and the boy; therefore, to make sure, they sent a messenger to Mr. Cruso's house, who had gone home after dinner, to know how he did. The messenger on reaching the house, found Mr. Cruso's wife in tears, bewailing the sad condition of her husband, who was lying on the bed and *had lost all reason*, storming and raging like a madman, abusing his friends, and calling his wife all to nought. Mr. Cruso had, as aforesaid, eaten plentifully of the roots, which cast him into a frenzy, that continued three days ere it went entirely off. The Dean and his servants, who had not eaten so much of the Henbane root, were well the next day. Still the Dean was ignorant what root it might be; and to ascertain this, he carefully set some of the same root in the ground, to observe what sort of plant it would send forth in the following spring, and found that it proved Henbane."

Plants of Surrey.—Wimbedon Plants.

Sir,—Allow me to say that *Turritis glabra* is still very plentiful on one bank (not on walls), and that I have gathered *Myosurus minimus* in abundance in a field, in company with *Papaver Argemone. Ophioglossum vulgatum, Corydalis claviculata*, and *Rosa spinosissima* are still abundant, but I am sorry to say that *Osmunda regalis* and *Chelidonium majus* have been recently destroyed, and of *Lastrea Oreopteris* only one plant remains. I will make inquiries about the other questions raised in the 'Phytologist' about plants growing in our neighbourhood. *Lathyrus Nissolia* I gathered on Box Hill in June 1860. *Fritillaria Meleagris* is not yet extinct in the Mortlake locality. When out with the Rev. W. W. N. on May 8th last, two fine plants were gathered by a rustic with us, who gave them to Mr. N., from whom I have one. There did not seem to be any more in the field. E. B. P.

June 10th, 1862.

Shamrock.

Sir,—I am pleased to observe that the question about the "true Shamrock" is revived, and that the believers in the identity of Ireland's far-famed national emblem, "the green immortal Shamrock," with white

Clover, are not to be allowed to have "all their own way," or to walk their pet plant over the course and claim the victory. There is another candidate for this honour, viz. *Oxalis corniculata*, a very rare plant indeed in Great Britain. Does it grow commonly in Ireland? No reasonable man can doubt "the possibility of the true Shamrock being neither *Trifolium repens* nor *Oxalis Acetosella*." Any trifoliate plant, like Buckbean or *Medicago lupulina* or the barren Strawberry, or the fertile one either, would have answered the Saint's purpose equally as well as either of the popular favourites.

Some curious readers might wish to learn what the Irish people themselves, or the poetic, heraldic, and antiquarian part of them, think about the claims advanced in support of the three rivals now in the field. Also British botanists might like to know why *Trifolium repens* did not grow in Ireland in the fifth century. It is one of the very commonest species of the genus in England; and if it be an introduced plant in Ireland, it probably is so also in *all* the British Isles. Again, it might be satisfactory to hear what sort of monasteries existed in Ireland before St. Patrick's advent: were they Druidical, Celtiberian, Carthaginian? certainly not Christian. EPSILON.

SHAMROCK.—TRIFOLIUM *v.* OXALIS.

I am not satisfied with Mr. Ferguson's conclusion, that because Fynes Moryson says, "the poor Irish willingly eat the herb *Schamrock*, being of a *sharp taste*, which they snatch like beasts out of the ditches," therefore the *Oxalis Acetosella* is the true Shamrock of St. Patrick; and to support the opinion that *Trifolium* has the greater claim, I give the following, from 'Synopsis Stirpium Hibernicarum,' by Caleb Threlkeld, M.D.:—"*Trifolium pratense album*, White-flowered Meadow Trefoyl. The Meadow Trefoyls are called in Irish, Shamrocks, as Gerard writes in his Herbal, which was first published 1597. The words *Seamar Leaune* and *Seamar Oge* being in signification the same, the first signifying the Child's Trefoyl, the other the Young Trefoyl, to distinguish them from the *Seamar Capiul*, or Horse Trefoyl, as I suppose." In the appendix to this work, by Dr. Thomas Molyneux, Physician to the State, we find *Trifolium acetosum*, Wood Sorrel, in Irish, *Seamsug*, with several other names, but it is not called Shamrock.

As the plant referred to by Fynes Moryson grew in ditches, how can Mr. Ferguson believe that it could be the *Oxalis Acetosella*, which grows in woods and shady places on elevated spots?—besides which, could this plant afford anything like food to the poor persecuted Irish? It would however be satisfactory to know the particular part of Ireland in which the ditches were, as referred to by Fynes Moryson, for the purpose of knowing what kind of plants now grow there.

Note. In Hone's 'Every Day Book,' March 17, Shamrock is called *Trifolium repens*. S. BEISLY.

POLYGONATUM MULTIFLORUM AND VIBURNUM LANTANA.

Since I last wrote I have found a station for both *Polygonatum multiflorum* and *Viburnum Lantana* in this neighbourhood, and consequently these species may be added to the list of uncommon plants to be found

within twelve miles of Plymouth, as the station of the former is little more than three miles thence, and that of the latter about eight. The habitat of *Polygonatum* is a hedge-bank near Stoney Bridge, where it occurs in considerable quantity, and has to all appearance grown there for years; notwithstanding this, however, the fact that the hedge bounds an orchard will, I dare say, be sufficient to cause some to regard its claim to be considered indigenous here open to doubt. The *Viburnum Lantana* grows plentifully in some hedgerows near Sparkewell, and a person must be indeed sceptical to question its being a true native there. I have not seen any other station of this species in this neighbourhood.

Plymouth, May, 1862. R. B.

Convallaria (*Maianthemum*) bifolia.

Query.—Has this plant, one of the rarest of the British species, ever been collected in fruit, or seen in England to bear fruit? The *Convallaria majalis* does sometimes occur with berries, but this is in England rather the exception than the rule.

Note.—There is a good description of *C. bifolia* in Wahlenberg's 'Flora Upsaliensis,' p. 111. See Park, 505; Ger. 409. In Fl. Lap. there is a long dissertation which explains, or proposes to explain, why this plant has a tetrapetalous flower and four stamens and a bilocular berry. Comp. Fl. Lap. Smith 85–88.

Butner, a botanist, about contemporary with Hudson (author of the 'Flora Anglica') as I suppose,—can you inform me if anything is known of him? I do not remember to have ever met with the name elsewhere. I find him mentioned thus in an interleaved and extensively annotated copy of Hudson's first edition, and *Plantago montana*, at p. 53,—"habitat in monte Snowdon, Walliæ, ubi D. Butner collegit et mihi dedit." His name occurs here and there among the manuscript notes in other parts of the same copy. W. P.

British Algæ.

Sir,—In reply to the inquiries in the May number of the 'Phytologist,' p. 156, I beg to mention that *Enteromorpha Hopkirkii* and *Laminaria fascia* are natives of this country as well as of North-eastern America; that *L. longicruris* is also included in the list of British species; but, according to Dr. Harvey, all the specimens which have been found on the British coasts have been merely the stipes, covered with barnacles, and deprived both of root and leaf. *Fucus furcatus* and *Delesseria denticulata* have not, I believe, been found in the British seas. M. P. M.

Communications have been received from

C. J. Ashfield; W. Pamplin; Hampden G. Glasspoole; Sidney Beisley; T. R. A. Briggs; John Sim; Rev. G. R. Beaumont; W. G. F. P; J. W. Chapman; John Peers; J. S. M.; Thomas Rogers; John Lloyd; William Whale; Mary Walker; Dr. Windsor; H. C.; M. A. Atwood, etc.

RECEIVED FOR REVIEW.

The Flora of Essex. Preston Chronicle. The Scotsman.

VISIT TO LONGSLEADALE.

By John Windsor.

In early life, now a long time ago, when a medical pupil in my native town, Settle, Yorkshire, I was accompanied by my late friend the Rev. John Howson, of Giggleswick, in a botanical excursion of a few days, to the neighbourhood of Kendal.

One of those days was occupied by a visit to Longsleadale, a spot celebrated as producing at one time, along with other interesting plants, that beautiful grass, the *Stipa pennata*. The excellent Ray says of it, "Found by Dr. Richardson in company with Thomas Lawson, on the limestone rocks hanging over a little valley (I should rather call it a long one) called Longsleadale, about six miles north of Kendal, in Westmoreland."

I am not aware that this plant has been found in this locality at any recent period, and on the only two occasions when I have visited it I have looked for it in vain. My explorations however have been confined to the lower part and the sides of the valley, not extending to the top of the mountains above, and therefore I could not say but that possibly it might yet be found by some more successful searcher; indeed, if I remember rightly, there was a notice by some one in a volume of the 'Phytologist,' that it was still to be found at no great distance from Longsleadale, although for obvious reasons it was thought prudent not to designate the exact locality.

On the 11th of June of this year, 1862, accompanied by my youngest son, I left Manchester in the afternoon for Kendal. A little before six o'clock the following morning we set off for the valley, taking the great North Road for about four miles, and then turning off by a lane on the left, which conducted us about two miles further into the romantic dale. By the side of the lane, in going along, we found in tolerable abundance *Geranium sylvaticum* and *Meconopsis cambrica*, also a solitary specimen of *Anchusa sempervirens*. The weather, we all know, has this spring and summer been hitherto strikingly cold and wet: if fine wholly or partially one day, the next has generally been the reverse; and the latter happened to be our fate on this occasion, which brought us an almost constant succession of heavy stormy

showers, inducing us frequently to creep under some neighbouring rock for partial shelter.

We were however intent upon making the best of our visit, and gradually wended our way to the very top of the valley, some four or five miles in extent, pretty thoroughly exploring every inviting spot in our course on the right bank of the central stream. This stream, which on my former visit was one insignificant and nearly dried-up rivulet, was now swollen by the late frequent heavy rains into a considerable torrent, exhibiting in its rocky course frequent foaming cataracts of striking grandeur. On casting our eyes towards the almost precipitous sides of the lofty mountain above, numerous rills, looking quite white from their rough and rapid course, were seen descending into the valley we were traversing, which was thus rendered for miles a perfect swamp. Buckbarrow well, which I had seen in my former visit, was not now distinguishable, but totally merged in the general rush of waters. Of *Oxyria reniformis*, which I had formerly collected there, I could not find a single specimen. On the other hand, I met with a much greater abundance of *Alchemilla alpina* and of *Saxifraga stellaris* than on that occasion; the former being found not only in the neighbourhood of the stream, but also copiously decorating the precipitous sides of the adjacent mountain cliffs. The latter was met with by almost every rill and damp spot in our ascent of the upper part of the valley, accompanied in some places with *S. hypnoides* and also *S. aizoides*, but the last had not got into flower, nor had *Epilobium alsinifolium*, which was growing in the same places; associated with these grew *Pinguicula vulgaris* beautifully in flower. I found *Teesdalia nudicaulis* not far off in moderate quantity, but in one place only *Cryptogramma (Allosorus) crispa* abounded everywhere; and we met with a few plants of *Lycopodium Selago*. *Juncus sylvaticus* grew copiously in a cleft of the rocks. A *Salix* with small obovate leaves, but without fruit, perhaps *oleifolia* or a form of *cinerea*, was met with on the margin of the stream. A few Lichens were seen; I collected chiefly forms of *Rhizocarpon geographicum* and *Cladonia rangiferina* (see Mudd's excellent 'Manual of British Lichens'). The only Grass at all abundant was *Aira flexuosa*. I have already alluded to *Stipa pennata*, but I may add that it would well occupy two or three days fully to investigate the valley, its steep, often precipitous flanks, and the

tops of the hills above; the last I have not yet visited. On a former occasion I saw *Sedum anglicum* growing plentifully on the other side of the valley, but on this, the breadth and force of the stream totally prevented any attempt to cross. This day's journey forcibly recalled to my memory the words of Curtis, when he visited the neighbourhood of Settle nearly a century ago (in July and August 1782). In one of his excursions thence he exclaimed, "What a treat for a botanist! What a recompense for one of the roughest journeys over Cam perhaps ever experienced!"

Returning to Kendal in the afternoon, we proceeded in the evening to the welcome abode of a near relative, within sight of Humphrey Head; but I have more than once before related in the 'Phytologist' the results of my botanical rambling over this interesting locality. On this occasion, June 12th, I found nothing additional of importance, except what I take to be *Galium montanum*, described by my intelligent friend Mr. J. G. Baker, as found near Settle. (See 'Phytologist,' New Series, vol. i. p. 182.) It occurred in one place, on rocky ground, as I approached the promontory. Near it, above in the wood, *Taxus baccata* and *Pyrus Aria* presented abundantly their strongly contrasted foliage. *Cochlearia danica* and *Armeria maritima* almost covered the adjoining beach, with other plants formerly enumerated. *Hypericum Androsæmum* was met with in the wood more copiously than before, but not in flower; whilst *Helianthemum canum*, on the cliffs above, was in perfection. In the wood, on the opposite (Lancaster) side of the mount, I collected what appears to be *Melampyrum sylvaticum*, and a few other sylvestral plants.

AZOREAN FLORA.

Our obliging friend Mr. Kennedy has put into our publisher's hands a letter from one of his correspondents, who is now in St. Michael's (San Miguel), acting as the superintendent at a botanical establishment in one of these islands. This gentleman writes to his friend Kennedy as follows. After a remark about the high price of necessaries in Ponta Delgada, the chief town, which has no trade except in oranges,* he proceeds thus:

* "Oranges are imported in boxes containing from 250 and more, and in chests holding 500 to 1000. The quantity of fruit imported has been steadily increasing

a very fine garden here and a first-rate collection of plants of all kinds except Heaths, which are impatient of the great heat of the summer months, which here is almost tropical. New Holland species thrive well in the open air. We have *Araucarias* from forty to fifty feet high; and *Banksias* and *Dryandras* grow too fast to live long.

The great enemy to vegetation is the wind, which here is so violent that no tree can resist its force. All arboreal vegetation, unless protected, is torn up by the roots or broken by the severity of the winds. All plants suffer from these visitations.*

Another enemy against which we have to contend is the salt spray, which these awful tempests drive inland for miles and wet the plants, several of which will not endure this salt-water drenching. These storms are all from the south.

Ferns are neither plentiful nor of the most prized kinds; one of the commonest is *Balantium culcita*, Kaulf. (*Dicksonia culcita*, L'Hérit.) This grows on open parts, at about 2000 feet above the level of the sea. It does not thrive in our garden.

The whole of these islands are volcanic, and the mountains which cover the whole surface are lofty and precipitous, and their

for some years past. In the three years ending with 1842, the average imports were 334,070 boxes; in the five years ending with 1850, they had increased to 380,000 boxes. Since then the quantity has been computed in bushels. The average annual imports in the five years ending with 1860 were 977,440 bushels. The quantity taken for consumption has now reached upwards of 1,000,000 bushels; and, assuming each bushel to contain 650, this would give 650 millions of oranges, or about 22 for each soul of the population in the kingdom. The Azores, or Western Islands, from whence the finest St. Michael oranges come, furnish us with the largest supply. The imports from thence have doubled in the last five years. The expense of walling and planting an acre of orange garden is stated to be £15 for the wall, £8 for 65 trees, and £2 for labour. It yields half a crop of beans or Indian corn during seven years, but no oranges; from eight to eleven years half a crop of oranges is obtained; then a full crop, which is sold for £10 to £15. Each tree on arriving at maturity will produce annually, on an average, 12,000 to 16,000 oranges; one grower is said to have picked 26,000 from a single tree. The tree blooms in March and April, and oranges are gathered for the London market as early as November. The Portuguese never eat them before the end of January, at which time they possess their full flavour."—*Gardeners' Chronicle.*

* The history of our insular colonies supports this; see 'Phytologist,' vol. vi. p. 32. There is the following quotation from a New Zealand paper:—"Canterbury (in New Zealand) certainly gives promise of being a first-rate fruit-growing country, wherever due precaution is taken to provide the first requisite of successful gardening, viz. good shelter."

tops are generally hidden by misty clouds. Smoking craters and hot springs abound; and sometimes so close to a cold one, that you may put your thumb into a spring which will boil an egg in three minutes and your little finger in another which is chilling cold.

The usual arboreous plant is *Erica mediterranea*, which grows everywhere from chinks in the rocks. The country is all rock, and all the rocks are honeycombed, as lava usually is.

The orange groves are fine when well sheltered by high stone walls, and where the soil is good. St. Michael oranges have a high reputation in Europe.

Pittosporum undulatum, a New Holland plant, is quite naturalized in our groves and gardens, many of which, ours among the rest, are like an Indian jungle, the plants are so crowded and drawn up. I am well pleased with the productions of these islands, but the places themselves are like penal settlements, and the natives are poor and also excessively conceited: though few of them have so much as a shoe to their foot, they despise people of other nations, and especially look upon Englishmen as a very inferior race, much lower in the scale of humanity than they themselves. Their ignorance is not overmatched by their conceit and their poverty, prominent though these qualities be.

Our friend's correspondent, Mr. Rieth, concludes with the expression of his longings for English newspapers and for letters from his friends. No marvel that he is heartily sick of a place like a convict establishment, and feels the want of something to relieve him from the tedium of so wretched an abode.

The Azores, like other volcanic islands, are probably still on the increase; for as late as since 1811 new islands have been emerging from the deep, and it is possible that some of those formed at an earlier period may have increased in their dimensions.

It would be worth the labour to write a brief history of the vegetation of some of the recently formed islands, said to be already 3000 feet high. As the plants of the entire group are probably not much above 400, those of a small, newly-born island would not probably be more than thirty or forty. But this would be a very interesting bit of the history of botany. Would it throw any light on the origin of species?

The *endemic* plants of the Azores (this formidable term means *peculiar*—found there and nowhere else) are fifty, or, in other terms, they constitute one-eighth of the entire vegetation of these islands; or in every eight Azorean plants one is found *only* here. Of these only five are cryptogamous species. The vascular plants of the British isles are probably about four times as many as the plants of the Azorean group. We know that an eighth part of these is not endemic to the British Isles. Is there one in a hundred peculiar to our native land? Is there one in a thousand which is only produced here and nowhere else? Is there as many as one?

Some will say, Yes, *Primula scotica!* Others will say, Nay, this is only a variety of *P. farinosa,* as it was long called. But an eighth part is a large proportion of endemic species! How came they there? Did the seeds or the roots of these fifty peculiar plants retain their vitality under water during thousands of years? Few would assert this. It may amuse the believers in Mr. Darwin's theory of the origin of species to hear that there are some people who want to know where the forty-three single plants and the four doubles (for there are two Spurges and two Nettles among these strict Azoreans) existed without increasing their progeny till the islands were in a condition to receive them and to afford them a habitation and a home where they could increase and multiply as they now do. Were they created when the land was drained?

Those who can crack this nut have better teeth than we,—but ours are aged,—and especially if they believe what we do not, that only a single hermaphrodite plant and a pair of monœcious species were originally created. It is not easy to account for their long lives, nor to imagine where they lived, nor to conceive why they were formed at all, when there was no place for them to occupy. These are questions to be solved only by those who can see further into nature's secrets than the mason can see into the millstone.

The climate of this insular group is about the same as that of the south of Portugal and Sicily, only rather moister. The lowest temperature is in January, 8° R., or about 50° Fahr., and the highest in August, 20° R., or 90° Fahr.

Heavy rains fall between the months of December and March inclusive, and these, by washing the rocky ground, diminish the

natural fertility of the soil. Hence the vegetation is both scanty in number of kinds and generally stunted.

This is the case especially with trees; and the devastation caused by the violence of the terrific storms with which these islands are visited is irreparable. Natural shelter is scarcely procurable, and artificial protection or high stone walls are erected, which are of course too expensive to be adopted except for the preservation of orange-trees—objects of commercial importance.

The Flora is rather meagre when compared with the extent of the islands.

The number of the Azorean plants of all kinds, as localized and described (see 'Flora Azorica,' by Hochstetter, father and son, edited by M. Seubert, Ph.D., etc.: Bonn, 1844), is 400. 50 are peculiar to the Azores; 316 are European; 23 are Madeira and Canary plants; 5 are African, and 6 American.

The botany and geology of the Azorean islands were investigated by the celebrated Chr. Fr. Hochstetter and his son, who were accompanied by Rud. Gygax, a Swiss mineralogist, in 1838; and the result of their labours was published at Bonn, as above stated.

These islands, for they constitute a numerous group, are almost equally distant from the two older continents of Europe and Africa and rather further from America; they are included between the 37th and 40th parallels of north latitude, and between 25 and 31 degrees west from Greenwich. They are 550 miles distant from the Madeiras and 740 from the Canary Islands.

Several English works on these islands had been published prior to the visit of the previously named *savants*, viz. by Fr. Masson (see Phil. Trans. vol. lxiii. 1778); by Ashe ('History of the Azores,' 1813, 4to); J. Webster, Boston, 1821; Captain Boid (Boyd), London, 1835; etc. etc.

The origin of these islands, or of some of them, is volcanic; extinct craters are still conspicuous, and on the loftiest hills (mountains), 7000 feet high, smoke and vapours are still issuing. In one island alone, St. Maria, there are calcareous strata, rich in fossils. In this island there are also beds of plastic clay, which the natives can use in their pottery works.

Flora Azorica.

As a sample or as samples of the Azorean flora, the following plants are entered; the first group are common in the British

Isles and widely distributed, the second group are also of home growth, but not so common as the former, and the third are all rare plants in our kingdom. The fourth group comprehends plants either peculiar to the Azores or species with which it is desirable that we should be better acquainted.

First Group :—

Holcus mollis.
Anthoxanthum odoratum.
Triticum repens.
Carex flava.
Carex stellulata.
Eleocharis palustris.
Juncus bufonius.
Juncus uliginosus
Potamogeton natans.
Lemna minor.
Callitriche verna.
Polygonum Persicaria.
Plantago major.
Plantago lanceolata.
Filago germanica.
Galium Aparine.
Galiumpa lustre.
Prunella vulgaris.
Convolvulus arvensis.
Veronica arvensis.
Veronica officinalis.
Euphrasia officinalis.
Calluna vulgaris.
Helosciadium nodiflorum.
Ranunculus repens.
Fumaria officinalis.
Nasturtium officinale.
Sisymbrium officinale.
Sagina procumbens.
Silene inflata.
Polygala vulgaris.
Geranium robertianum.
Peplis Portula.
Rubus fruticosus.
Potentilla Tormentilla.
Potentilla reptans.
Sarothamnus Scoparius.
Medicago lupulina.
Trifolium repens.
Lotus corniculatus.

Second Group. The following British species are not so common as the above:—

Trifolium procumbens.
Trifolium scabrum.
Agrimonia Eupatoria.
Poterium Sanguisorba.
Hypericum perforatum.
Hypericum humifusum.
Malva rotundifolia.
Chelidonium majus.
Sinapis nigra.
Lysimachia nemorum.
Anagallis arvensis.
Veronica Anagallis.
Solanum nigrum.
Echium vulgare.
Myosotis versicolor.
Verbena officinalis.
Sherardia arvensis.
Carduus tenuiflorus.
Chrysanthemum segetum.
Plantago media.
Daphne laureola.
Chenopodium rubrum.
Chenopodium murale.
Potamogeton pectinatus.
Isolepis fluitans.
Carex divulsa.
Hordeum murinum.
Festuca bromoides.
Poa loliacea (Triticum loliaceum).

Third Group. Rare plants common to the Azorean and British isles :—

Cynodon Dactylon.
Polypogon monspeliensis.
Bromus madritensis.
Lagurus ovatus.
Cyperus longus.
Euphorbia Peplis.
Euphorbia Lathyris.
Plantago Lagopus.
Filago gallica.
Mentha viridis.
Mentha rotundifolia.
Echium violaceum.
Antirrhinum Orontium.
Sibthorpia europæa.
Fœniculum vulgare.
Tillæa muscosa.
Delphinium Consolida.
Senebiera pinnatifida.
Oxalis corniculata.
Lythrum hyssopifolium.
Erodium malachoides.
Melilotus parviflora.
Trifolium glomeratum.
Lotus angustissimus.
Lathyrus Aphaca.

The most valuable productions of these islands are the introduced and cultivated species, viz. sugar and dyeing plants (*Saccharum* and *Isatis*), now discontinued, cereals, Potatoes, Yams, Lupines, Vetches, Flax, etc. Among trees, the vine, the date, the dragon-tree (*Dracæna Draco*), and above all the orange-tree, of which two species are cultivated, viz. *Citrus Aurantium*, Orange, and *C. medica*, Citron.

This is the most important growth of these islands, and the staple of their commercial intercourse with Europe. The plantations of these trees, or orange-groves, are protected by lofty stone walls, and further sheltered by the Azorean Myrtle (*Myrica Faya*) and by *Picconia excelsa*, Dec., *Olea excelsa*, Aiton, which are extensively planted about orchards, and reach to upwards of twenty feet in height.

The produce of orange-trees in St. Michael's appears fabulous, amounting in numbers from 8000 to 20,000 per tree, and in bulk sufficient to load a ship.

The Azorean flora has a far closer relationship with that of the south-west of Europe than it has with that of Africa. All the Orders represented in the Azores are common to the British Isles except *Asclepiadeæ*, *Oleaceæ*, and *Laurineæ*. Most of the genera are common to both these distant insular groups, and about 130 species are found both in the Azorean and in the British Isles.

Of the 400 Azoric plants 50 are peculiar (endemic); 23 are common to the three insular groups, Azores, Madeira, and Cape de Verd; 316 are European, 5 are African, and 6 American.

Species Azoricæ.

Some of the commonest and most widely distributed of our Ferns are Azorean, viz. *Polypodium vulgare* (var. *serratum*), *Pteris aquilina*, *Aspidium angulare*, *Cystopteris fragilis*, *Osmunda regalis*.

Among the Grasses the following are very common:—

Holcus mollis.	Briza.	Bromus madritensis.
Anthoxanthum odoratum.	Triticum repens.	Cynosurus echinatus.
Aira caryophyllea.	Hordeum murinum.	Lagurus ovatus.

Among the *Carices*, *C. flava*, *C. stellulata*, and *C. divulsa* are common.

Isolepis fluitans.	Callitriche verna.	Polygonum Persicaria.
Scirpus maritimus.	Euphorbia Peplis.	Plantago Coronopus.
Eleocharis palustris.	Euphorbia Lathyrus.	Plantago major.
Cyperus longus.	Parietaria officinalis.	Plantago media.
Potamogeton natans.	Chenopodium urbicum.	Plantago lanceolata.
Potamogeton pectinatus.	Chenopodium murale.	Plantago Lagopus.

127 vascular plants are common to the Azorean and British Isles. Some of them are among the most common, some the scarcest.

The following Azorean plants are peculiarly interesting, either being peculiar species or else belonging to well-known genera:—

Of the order Ulvaceæ there is in this Flora (Hochstetter's) a figure of *Bryopsis penicillata* with a description, p. 9.

In Hepaticæ, *Rhacotheca azorica*, with figures and an ample description.

In Jungermanniaceæ, *Gymnomitrion erythrorhizum*.

In Musci, *Hypnum Hochstetteri*.

In Filices, *Alantodia*, var. *azorica*.

In Lycopodiaceæ, *Lycopodium cernuum*.

We omit the *Gramineæ* and *Cyperaceæ*, etc., for want of room.

Among the Orchids there are two *Habenarias* peculiar to the Azores, *H. micrantha* and *H. longibracteata*.

The following are probably desirable species, viz. *Euphorbia azorica, Urtica azorica, Plantago azorica, Scabiosa nitens, S. neglecta*. *Bellis azorica* and *Solidago azorica* are both interesting species, especially the latter, which might be an ornament to the shrubbery. *Tolpis nobilis* is truly a noble plant, and as it grows at a great altitude, upwards of 3000 feet, is probably hardy enough to resist our winter's cold.

We should like to see specimens of *Erythræa latifolia*, from St. Michael's and Terceira.

E. diffusa is a species peculiar to these islands. *Myosotis murina* is another desirable plant. *Euphrasia grandiflora* is an elegant species, with rounded, singularly curled, rigid leaves. It grows between 3000 and 4000 feet altitude, and has large, handsome flowers; a fine plant for artificial rocks.

There is a new *Rubus, R. Hochstetterorum*, and a new *Rhamnus*, viz. *R. latifolius*, which has leaves five inches long and two and a half broad. *Hypericum foliosum*, Ait., is another desirable species. *Cerastium azoricum*, of which there are several varieties, might be a useful plant.

Sanicula azorica is, judging from its figure in 'Flora Azorica,' a lovely plant; the foliage is exquisite, and as it grows between the altitudes of 2000 and 4000 feet would probably succeed in our variable though not severe climate.

It is probable that the *Erica mediterranea* of our correspondent should be *E. azorica*. This and *E. scoparia* are the only Heaths observed by the Hochstetters in these islands. This shrub, which reaches a height of fifteen feet, grows as high up the sides of the rocky mountains as 6000 feet. It might be worth trying as an inmate of our more sheltered shrubberies.

There are also two *Vaccinia* which might become denizens of our gardens, viz. *V. longiflorum* and *V. cylindraceum*; the latter is almost a tree, and grows at as lofty an altitude as 5000 feet.

In concluding this rather long article, we beg leave to give our readers a hint or two about the introduction into their collections of some of the plants recently published in our columns as natives of the Pyrenees.

Among these, *Ramonda pyrenaica* is specially desirable; it is a very rare plant, and seldom to be seen in collections.

Several of the Editor's correspondents have seen samples of this rare species, for many have been distributed. To amateur cultivators and to nurserymen these alpines are especially recommended; indeed they commend themselves by their beauty, neat growth, and suitability to our somewhat cold and moist climate.

Nothing can exceed the brilliancy and intensity of the colours of the alpine Gentians, and their habit is unexceptionable. The same may be said of many Primulas, Pediculares, and even of the alpine Buttercups.

We have the addresses of botanists, resident in the Hautes and Central Pyrenees, who will, as matters of business and on moderate terms, supply applicants with both seeds and roots of these interesting species.

PROFESSORS JOHN AND THOMAS MARTYN.

Extracts from Gorham's Memoirs of Professors John and Thomas Martyn, with Notes and Remarks thereon.—June 5, 1862.

Daphne Mezereum.

"Nothing new," wrote Professor Martyn to his friend Dr. Pulteney (Aug. 6th, 1777), "has occurred to me here" (Little Marlow, Bucks), "except that *Daphne Mezereum* grows wild commonly in our woods."

Can any of the readers of the 'Phytologist' confirm the fact above stated? The authority is unquestionable, but is the *fact* itself generally known? The Professor resided during some years at Little Marlow, of which parish he was then incumbent. (Gorham's Memoirs of John Martyn, F.R.S., and of Thomas Martyn, B.D., F.R.S., F.L.S., Professors of Botany in the University of Cambridge. 8vo. 1830.)

List of Rare Plants in Surrey. (See 'Phytologist,' June, 1862.)

"About this time, he," Professor Thomas Martyn, "volunteered his services to Mr. Bray," one of the authors of Manning and Bray's History of Surrey, "by contributing" a list of rare plants in Surrey for his enlarged edition of Manning's history of that county. — *Note.* Mr. Bray completed this celebrated county history. Mr. Owen Manning lived to complete only the first volume; the work is in three volumes and very valuable. This list is printed in vol. iii. pp. lxv.–lxx. of that work, published in 1814. The plants noticed are chiefly those he met with in the years 1758–59, when visiting his father at the Hill House, Streatham.—Page 236.

County Histories and County Lists of Plants.

Professor Thomas Martyn wrote to his friend Dr. Pulteney, from Little Marlow, July 30th, 1783, on County Floras and County Lists of Plants, as follows:—"Will it not be remarkable if Cambridgeshire should have *four* Floras, viz. Ray's in 1660, Professor John Martyn's in 1727, Professor Thos. Martyn's in 1763, and Relhan's in 1785 [Sibthorp's 'Flora Oxoniensis' was not published till 1794], before Oxfordshire has one? Is it not also remarkable, that when Mr. Hasted designed to give a catalogue of

the wild plants of Kent, he should be wholly unacquainted with Hudson's 'Flora,' and even Ray's Synopsis; and that to the last he should be ignorant of Old Johnson's 'Itinerary'? It is not necessary that every antiquary should be a naturalist; but if he steps aside into the *flowery path*, he should at least procure a friend to direct his steps."—Page 165.

Dr. Goodenough's 'BOTANICA METRICA.'

From Professor Thos. Martyn's very interesting letters, published in Gorham's Memoirs, the following notice of the bishop's 'Botanica Metrica' is taken:—"Dr. Goodenough has long been about a 'Botanica Metrica,' which I presume will be more extensive and classical, as I understand he means to give authorities."

Does any reader of this note know aught about the above proposed botanical catalogue? Will any correspondent send the question to the editor of 'Notes and Queries.'

NICANDRA PHYSALOIDES.—*Peruvian Deadly Nightshade.*

This American exotic, like the Potato, has made several efforts to establish itself in this country. It abounded some years ago in gardens and cornfields about Guildford and Shalford, county Surrey; and only last year, summer, 1861, it appeared again on rubbish between Little Chelsea and Parson's Green.

The following extract from a letter to a young lady, sent by Professor Thos. Martyn with seeds of this plant, is a fair example of the kind, amiable, condescending disposition of the venerable botanist; he was now an octogenarian:—

"The seeds might have been enclosed in a nutshell; but as you seem curious in such matters, I was desirous you should observe the apparatus which nature has provided for the protection of the seed. There is first a shell, which, being thin and brittle, is, next, itself protected by the permanent calyx, in form of a regular pentagon with five bastions. I presume you do not send the seeds into Scotland, for they will not vegetate there, except in a hotbed; indeed even here (Bedfordshire), in untoward seasons, they scarcely flower soon enough for the seeds to ripen; it is safer, therefore, to commit a few of them to a gentle hotbed. You are aware that the plant is an annual."—Memoirs, p. 239.

HEMEROCALLIS FULVA *and* H. FLAVA.

"In the year 1788, Miss Welch (a woman of distinguished mental ability, very intimate with Dr. Johnson, as her father, a well-known magistrate, had been; her sister was Mrs. Nollekens, the wife of the eminent sculptor) laid out a new garden at Ardenham Hill, near Aylesbury, in which she removed several plants from Hampstead. Dividing a root of *Hemerocallis fulva*, she put one part into an argillaceous soil, and the other into a soil composed of rubbish from old ruins. The former remained unchanged; but the latter blossomed with the tint and appearance of *Hemerocallis flava*."—See Trans. Linn. Soc. 1790, vol. ii. p. 353.

The above fact is deserving of notice. But it may be observed that there are other marks which may serve to distinguish the above species, besides the colours of the flowers. The habit of the two plants is not alike. *H. flava* is taller and more elegant than *H. fulva*, and the latter increases more rapidly by runners and suckers than the former. The change of colour is a notable fact, especially as it is effected by a change of soil. The writer of this note does not wish to have examples of plants which are mutable in colour, such as the Primrose, the Hydrangea, etc., but he would be much obliged to any one to tell him if the two common Day-lilies are mutable both in colour and species.

Professor Thomas Martyn, on Natural and Artificial Systems of Botany. Extract of a Letter from Professor Martyn to Sir J. E. Smith.—March 9th, 1821.

"Your *Grammar of Botany* plainly speaks the hand of a master; concise yet full, remarkable for clearness, etc. . . . When your intended *Flora* makes its appearance, the British botanist will find everything that he wants in these three works of yours" (viz. the 'English Flora,' the 'Grammar of Botany,' and the 'Introduction to Physiological and Systematical Botany'). "I am not such a bigot as to think lightly of the *natural orders*, imperfect as our present knowledge of them is. Had I been younger, that very circumstance would have incited me to pursue so delectable a subject, and I hope you will continue to do it. I am only sometimes vexed when they would fain persuade me that the natural system may *supersede* the artificial."

The above extract is a conclusive proof of one thing, namely, that the professor was not a prophet, for the *natural* system has long completely superseded the *artificial,* at least in England and Germany; and possibly is evidence of a second, namely, that the British botanists of the present day want to find several things which are *not to be found* in the *three* works quoted above.

The reflective will say, How transitory is fame when it is founded on mere science! Sir J. E. Smith's great work, 'On the Plants of our Native Island,' had not been completed ten years, ere the British botanist had his attention solicited by other works, which have long superseded the now obsolete volumes of the learned author of the 'English Flora.' *Sic transit botanicorum gloria.* The fame even of botanists is not sempiternal; it does not last for ever.

EXTRACTS FROM CORRESPONDENCE.

August 7th, 1862.

In the Botanical Garden of Rouen I saw the other day (July 18, 1862,) a hybrid between the *Petunia* and the *Nicotiana Tabacum;* and in the same place a magnificent example of Mullein, labelled *V. Lychnitis,* of which the leaves were like those of the *Lychnitis,* but the spike of flowers like those of *thapsiforme,* but much larger. The gardener told me he had gathered the plant (I presume the seeds of the original plant) at Dieppe Salle, where the true, small-flowered, pale-white plant grows; and that it had *improved* by cultivation. I have no doubt it had hybridized with the *thapsiforme.* If it bears ripe seeds, I will send you some of the seeds.

I hope you will try the experiment of the *Centaurea* seeds, as I shall be curious to know if you get the *nigra* or the rayed variety. My garden is not a proper place to try the experiment in, as I have so many different sorts of Centaureas.—E. M. A.

Trifolium repens.—White Clover.

Considerable doubts have arisen about the originality of the above plant in Ireland (see 'Phytologist,' vol. vi. p. 64, number

for February, 1862). Mr. W. writes, "It is hardly likely that *Trifolium repens*, Dutch Clover, was introduced into Ireland so early as St. Patrick's time."

Another writer states that none of the Trefoils are indigenous in Ireland nor in Scotland either; and though botanists in their descriptive catalogues or floras give but uncertain information on this head, I, judging from observation, am disposed to question the nativity of both red and white Clover in the north-eastern parts of Scotland.

I remember having seen *T. medium* growing wild in Aberdeenshire, as well as in other parts of Scotland; and I have often seen *T. repens* naturalized on commons and bushy open places, whither it was conveyed in the stomachs of sheep and cattle, and dropped where they lay down to ruminate.

Both red and white Clover were, and probably are still, agrarial products. The seeds were usually sown with barley after turnips; and the crop of Clover grown with Ray Grass was mown the first year and grazed the second.

I am aware that there is considerable difference between the climate of the south and west, and that of the east and north, of Scotland. In the Rev. G. Gordon's 'Flora of Moray,' *T. pratense* is marked doubtfully wild. I never saw this species wild in the Garioch district of Aberdeenshire, though I have often seen *T. repens* wild here and there, as above stated. Both of these plants were treated by the farmers as agrarials, viz. like Rib Grass, Ray Grass, and other grass and fodder plants. I have never seen the white Clover cultivated in the south of England, where it is unquestionably wild.—Alpha.

Rare Plants about Henley, Oxon.

". . . In the woods chiefly north of Lord Cadogan's house, etc., were the most plenty of rare, beautiful, and, as the botanists say, *polite plants*, of any part of the kingdom. Not one mentioned in that district."—Letters of Mr. Daniel Prince, August 13, 1781, from Nichols's 'Literary Anecdotes,' vol. iii. p. 695.

"Mr. D. Prince, an Oxford bookseller, died in his eighty-fifth year."—Nichols's Anecdotes, vol. iii. p. 685.

In one or two places in this part of Kent, Broome Park, eight miles from Canterbury, on the Dover road, "Adder's Tongue," *Ophioglossum*, is found, but not very common. "Paris quadri-

folia" is extremely abundant with me. It is ill-named, for I find it with four, five, six, seven, eight, and even nine leaves. The children of the poor stray into the woods in hot weather, eat the black venomous seed-vessel of this Herb Paris, stagger home, become narcotized, and die.

In Lapland and in Finmark (not Finland), I find *Angelica Archangelica* in abundance. The blanched, involuted, convoluted, undeveloped, flower-head, is much more nutty and tender than the best Celery.

Upon the whole, I consider *Splachnum luteum* (the flower of it) the most beautiful object north of the polar circle; it inhabits moist Pine-forests.

If you care to find new and good plants (new to the British botanist), I know no region half so good as Carniola; the best head-quarters is the hamlet of Landohl, near Prevaldt, twenty miles due north of Trieste; time of year, May, when the abundance of good wild flowers is quite wonderful; there are also bears and capercalzies in tolerable abundance.—G. C. O.

Hymenophyllum tunbridgense and H. Wilsoni.

In Ray's 'Synopsis,' 1724, there is the following observation on the above, p. 123:—"*Adiantum petræum perpusillum anglicum.* This was first shown to Mr. Ray by Mr. Newton, who, in company with Mr. Lawson, found it on Buzzard Rough Crag, near Wrenose, Westmoreland, among the Moss. Mr. Dare found it near Tunbridge; Dr. Richardson upon the moist rocks in Wales, and near Settle, Yorkshire. It grows on the left hand as soon as you enter the mountain to go to the old castle near Lhanperis. Found also plentifully by Mr. Rand and Mr. Sherard amongst the pebbles at Cockbush, six or seven miles from Chichester, on the coast of Sussex." From the above it appears that Mr. Dare first found the Tunbridge Fern, unless the Westmoreland plant is the same as the Sussex one. Botanists generally believe that the northern and Welsh forms are *H. Wilsoni,* and the Sussex one *H. tunbridgense.*—Beta.

The following letter, accompanied with Sole's 'Mints,' from an eminent professor and demonstrator in botany to the Apothecaries' Company, will speak for itself. Mr. Jones had previously served as an assistant to the worthy apothecary of Bath, the author of the work on the British Mints:—

"St. Bartholomew's Hospital, Saturday, July 26th, 1823.

"My dear Sir,—Permit me most respectfully to express to you my grateful acknowledgments for your kind donation of your old friend's treatise on the British Mints. The impression of the plates is a very excellent one; and give me leave to assure you I shall always value the book while I live, and shall keep your very handsome and kind letter addressed to me in it, that independently of the gift, I have the additional gratification of remembering the donor's very gentlemanly and obliging attention conferred on his very humble servant,

"THOMAS WHEELER.

"When I was at St. Paul's School, I remember a Mr. Robert Sole, who went to the University of Cambridge, and was, as he used to tell us, the brother to Mr. Sole, the apothecary, of Bath.

"T. WHEELER.

"Mr. David Henry Jones, Apothecary, Aldersgate Street."

Stratiotes aloides (syn. *Acoroides, Alismoides, Aloides, Nymphoides*), *Limnocharis:* Parkinson, 1249; Ger. 826; Bauh. 286; Ray, 290.

Ray's 'Catalogus Plantarum,' p. 199:—"*Militaris aizoides*, Ger.; *Stratiotes* sive *Militaris aizoides*, Park.; *Aloe* 4, sive *palustris*, C.B.; *Aloe* sive *Aizoon palustre*, J. B.: Water Sengreen, or Freshwater Souldier. In fluentis (aquæ) pigrioribus et palustribus fossis in insula Eliensi copiose."

Lobel gives a longish dissertation on the origin of the name *Militaris*, as being descriptive of the habit of the plant:—"Nisi quis harioletur militarum, quia sine radice, quasi sine lare et re ut miles victitet vitam incertam et fluctuantem."

He says, "it is common in stagnant rivers in Belgium, not far from Antwerp." (Adv. 334.) In the observations, p. 204, there is a good figure of this plant, but he does not tell his readers that it grew in England.

"*Stratiotes sive Militaris aizoides*, Water Souldier," Park. 1249. "The Water Souldier hath divers and sundry long narrow leaves, sharpe pointed, set close together somewhat like unto the leaves of Aloes for the forme, but much less, and sharpely toothed about the edges like it also, etc. . . . It groweth in Germany, and the Low Countries also, plentifully, and in Italy and other countries also." Parkinson does not state that it grew in

England. Those who have seen this plant in the eastern counties of England or in some of the western, will not hesitate to say that it is a genuine British species.

Tradescant's Garden.

From an account of the remains of John Tradescant's garden, by Mr. W. Watson, F.R.S. (see Phil. Tr.) :—"We found there the *Borago latifolia sempervirens*, C. B., *Polygonatum vulgare latifolium*, C. B., *Aristolochia Clematitis recta*, C. B., and *Dracontium*, Dod. Yet remain two trees of the *Arbutus*, also of *Rhamnus catharticus*, twenty feet high."—Read May 25, 1749.

Reviews.

The Flora of Essex. By Geo. S. Gibson, F.L.S. London: W. Pamplin.

Owing to a press of matter, supplied during the last six months, this, the review department of the journal (an odd name for a monthly periodical; but there are anomalies in literature, as there are in science), has been in abeyance. The 'Flora of Essex' is the last received, and it is the first to be noticed; reversing the usual practice, "first come first served," this book, though the most recent arrival, is placed first for review, on the new principle of "last come first served."

The modest and sensible preface to the 'Essex Flora,' from which (*i. e.* the preface) the following quotations are taken, will give the reader an adequate synopsis of the contents of this work. After stating that detailed localities are given under each species, and several tables useful to such as desire to study the history and distribution of the Essex plants, there is the following:—"The first of these tables is a list of the rarer species of plants with the date of their first recorded discovery in Essex, the name of the original discoverer, and the year when they were last observed." Another table shows what plants are native and what are introduced. "The third is a comparison of the plants of Essex with those of the adjacent counties, Cambridgeshire, Hertfordshire, Suffolk, and Kent. The fourth is a summary of the Essex flora, compared with the sixth chapter of the fourth volume of Watson's 'Cybele Britannica.' A fifth list contains plants not hitherto

found in the county and which are likely to occur in it, and of those supposed to be lost. The sixth (not a table) is an account of some of the more prominent Essex botanists,—Ray, Dale, Warner, and E. Forster." (Preface, p. xi.)

Between these tables (for the first is prefixed, not appended) the Orders, genera, and species of the Essex plants are named and localized. The arrangement is the same as usual, viz. that which is by courtesy called the natural system; and this occupies the greater part of the book, viz. 407 pages. The Appendix contains the earliest and latest notices of the rare and of the questionable Essex species; also the tables of comparative rarity, frequency, etc., as before quoted.

A quotation, or occasionally two, from each of these prominent divisions will put the reader in possession of the merits of the 'Flora of Essex.'

The following species appear only in *one* of the eight districts into which Essex is divided, (see table, p. xxviii. etc.):—*Thalictrum saxatile, Ranunculus Drouetii, R. floribundus, R. peltatus, R. Lingua, Fumaria micrantha, F. parviflora, F. Vaillantii, Lavatera arborea, Viola palustris, Dianthus plumarius, D. deltoides.* In two districts grow *Ranunculus confusus, R. fluitans, Aconitum Napellus, Papaver Lecoqii, P. somniferum, Isatis tinctoria, Iberis amara,* etc. Three districts are ornamented with the flowers of *Ranunculus heterophyllus, R. trichophyllus, Papaver hybridum, Turritis glabra,* etc.

Cardamine sylvatica grows in four districts "cum multis aliis quas nunc præscribere longum est," as they teach and learn at Eton, and which in plain English means would be very tedious and useless to the reader and tiresome to the writer.

The preceding extract from this, the first table, is offered as an example of the pains taken to exhibit the distribution of the rarer species, and also to show that the results are not so great as the labour spent in trying to educe them. The novelties once all comprehended under the common name *Ranunculus aquatilis* are probably found or might be observed in more than in one, two, or three districts. The table is an effort to define the relations of species to particular soils and situations, which subsequent investigations will possibly much enlarge. The author's own experience will attest the justice of this observation.

Another quotation from the same table will set in a still clearer

light the inadequacy of all such well-meant endeavours. *Ranunculus acris* and *Nymphæa alba* are found in all the districts; but every one knows that these two plants are not equally common: for example, *R. acris* grows in every meadow, but the white Water-lily does not grow in every pond, nor in every deep pool or stagnant river.

Hypericum Androsæmum is not half so common as *H. perforatum* is; yet both are found in all the districts. Of this the author was well aware, for he states, p. 57, that *H. perforatum* is "commonly found in all the districts;" and also that *H. Androsæmum* is not uncommon about Halstead, but "very sparingly about Newport, etc."

Silybum Marianum and *Lapsana communis* are contrasted, to prove that the utility of these tables, professing to show the frequency of plants, may be over-estimated. Both the above plants appear in all the districts; but *L. communis* is "commonly distributed throughout the county, and *S. Marianum* is so rare as to have every station where it occurs entered."

If the reader will turn to the table on page 409, viz. the list of rare plants, with the earliest and latest notices of their having been seen, he will observe that *Thalictrum saxatile*, which was discovered in 1861, appears in both tables, viz. that on page xxviii. and that on page 409; while all the modern *Ranunculi* are omitted in the latter table, although equally rare, if absolute reliance is to be placed on the first table. It is not an unreasonable assumption that the author believed that the batrachian *Ranunculi* which are registered as occurring in one, two, or three districts, would eventually be detected in almost every ditch in the marshes of Essex.

Papaver Lecoqii has been found in only two districts; does not the author expect to find it in most cornfields where *P. dubium* grows? It is not entered in his table on page 409.

The next table, see Appendix no. 2, is a list of the wild plants of Essex distributed into three classes, viz. *common*, rather local, very local; and again into native, possibly introduced, probably introduced, and certainly introduced; to which is added a very large class, which has but slender claims to nativity or naturalization, though they do occasionally intrude amongst better company. Some members of this disreputable class have been seen only on doubtful authority, or rather it is doubtful if they

were ever seen, yet they have been so fortunate as to obtain *one* voucher, but one only to be credited or to be believed if he asserts a common fact, but to be suspected if the fact be rare. If a British jury were empanelled to try the validity of the claims of the members of this last class, how many would have their nationality admitted? Could twelve or twenty-four botanists taken from an alphabetical list ever agree about the nativity of one-third of the usually reputed British species?

The table, Appendix no. 3, is a comparison of the flora of Essex with the floras of Cambridgeshire, Hertfordshire, Suffolk, and Kent. Why is not Middlesex entered? We should be very thankful to receive well-defined localities for the undermentioned plants, entered in the 'Flora of Essex' as Kentish (see page 430):—*Lythrum hyssopifolium, Scleranthus perennis, Cicuta virosa,* and *Cyperus longus.* Stations for *Equisetum hyemale* and *Sedum anglicum* would be desirable. In return for the above requested information, we will tell the author of the 'Flora of Essex' where *Wahlenbergia hederacea* grows in Kent, or, if he likes, conduct him to the very place where it was gathered, not quite two years ago; and we will tell him where he will see a report of *Linum perenne* as a Kentish plant. We will also tell him where *Carex extensa* grows. We will undertake to show him localities for *Symphytum tuberosum* and *Stratiotes aloides* considerably further south than the county of Essex.

Again, another recent locality will be given him for *Lathyrus tuberosus;* and he is welcome to a fresh specimen of this reputed Essex plant from a root which was collected in a county south of the Thames. (Note. *Bupleurum falcatum* is from the same locality.)

Appendix no. 6, page 444, contains brief biographies of Ray, Dale, Warner, and the late Mr. E. Forster; the mention of the latter, who lived so long and usefully, reminds his contemporaries that botanists do not live for ever—they are not sempiternal nor perennial.

In the name of the botanists of England, gratitude is expressed and thanks tendered to the author of the 'Flora of Essex' for his notice of one of the most distinguished of the modern botanists of the county. He was *par excellence* not merely the botanist of Essex but of the neighbourhood of London, and of England.

In our simplicity we asked, when Robert Brown left the station

he so long honourably filled, "who will take his place in the botanical world?" There are great men still in being; but comparisons are odious, hated by those who have the misfortune to be compared. Mr. E. Forster and Mr. W. Borrer are kindred spirits, "lovely in their lives," were attached to the harmless science, but both lived for higher objects than botany. They were true philanthropists, genuine lovers of humanity, and natheless actuated by higher motives than philanthropy. Can any of our readers tell or surmise upon whom their mantle has fallen?

The reviewer has now given his readers a very brief summary of the 'Flora of Essex,' and he will not obtrude his opinion of its merits. Let the readers of the Flora judge for themselves. He will not however begrudge his own individual thanks, and he acknowledges the pleasure he has had in perusing a work of so much labour, research, and expense—a book which is so highly creditable to all who were engaged in its production, the printer, the engraver, and the author. Let it not be forgotten that the book is illustrated, and ornamented also with very excellent coloured drawings of the four plants presumed to be peculiar to Essex, viz. *Lathyrus tuberosus, L. hirsutus, Bupleurum falcatum,* and *Galium Vaillantii.* We are quite certain that the few botanists who will have the pleasure of seeing the 'Flora of Essex,' will enjoy its contents as much as ourselves.

That *Lathyrus hirsutus* is peculiar to Essex should be received *cum grano salis.* There are records of its being seen in other counties, and some of these are not unworthy of some respect. Derby, Durham, and Somerset have all been, even in modern times, debited with this species. The other three peculiar species have been observed in other parts of England, and as they are agrarials they may appear almost anywhere between the four seas.

No reader can reasonably expect a *first attempt* to be quite immaculate, nor *emaculate* like Gerard's 'Herbal' by Johnson; but it may be affirmed that the author and his friends have done their best, and their work, as the Germans say, will praise the workmen. ("Das Werk den Meister loben soll.") The author very modestly states that he is "aware of its shortcomings," and he indulges the charitable hope "that other labourers in the same field will endeavour to supply the deficiencies, which are to some extent unavoidable in a first attempt to describe the dis-

tribution of plants in an extensive county." The friendly aid of the 'Phytologist' is hereby freely proffered; its pages are free to all who have a new fact to publish, either on the nature, uses, or the distribution of plants.

The history of botany in Essex is an epitome of the history of the science in England. Among the early observers of Essex plants we find one of the universal favourites, the venerable JOHN GERARD, very frequently entered; he stands sponsor for above thirty plants, which still remain to attest the accurate observations of the brave ancient botanist.

The name of the eminent Ray occurs above fifty times as an authority for the localities of rare plants in Essex.

Parkinson is but rarely quoted, perhaps in about half-a-dozen places. Blackstone's work is easier to consult than the massive volume of the former, and, possibly not for this reason, his name appears about four times as often as Parkinson's. Warner is quoted probably thirty times.

But Edward Forster is most emphatically the hero of Essex botany. No ancient or modern botanist (all the living botanists, remember, *lector benevolentissime!* are expressly excluded from this comparison, in the charitable hope that they will not only surpass Warner, Ray, and Blackstone, but even E. Forster himself, in the number and importance of their discoveries) has approached the amiable botanist of Woodford in the merit of adding both plants and localities to the flora of Essex. His discoveries approach very nearly in number those of the four united, viz. Gerard, Ray, Blackstone, and Warner, who may be regarded as the great ancient foundations and main pillars of Essex botany. British botanists (many of them) have still to learn their obligations to this eminent member of the fraternity, who for above sixty years explored Epping Forest, in all directions, from Harlow to Plaistow Marshes, and from the river Lea and Chingford Hatch to the Rodings, Hainault Forest, and Brentwood.

Mr. Edward Forster's labours were not confined within the limits, of a county, but were co-extensive with the extent of the kingdom. Of his discoveries and contributions to the science of British botany, Sowerby's great work on our native plants will be a satisfying and imperishable memorial.

It is not undeserving of notice that the progress of British botany has been very considerably indebted to members of the

banking community. Our readers will readily anticipate that Mr. Dawson Turner, Mr. E. Forster, and Mr. W. Borrer are the botanists here alluded to. There are several persons living and still energetic amateurs, who, in the early part of their career, were contemporary with these eminent patrons and promoters of science.

Herbarium norddeutscher Pflanzen für angehende Lehrer, Pharmaceuten und alle Freunde der Botanik. In einzelnen Lieferungen herausgegeben von W. Lasch und C. Bænitz. Zweite Auflage. Abtheilung 1: *Goniopterides, Hydropterides, Selagines.* (Preis ⅔ Thlr.) Abtheilung 2: *Filices.* (Preis 1 Thlr.)

The above may be freely rendered in English as follows, and it is entered for the information of those who do not understand the original:—"A herbarium of North German plants for beginners, apothecaries, and all lovers of botany, published in parts by W. Lasch and C. Bænitz. Second edition. Part 1: *Equiseta, Marsiliaceæ, Salviniaceæ, Lycopodiaceæ.* Part 2: *Filices.*"

For several months the review department of the 'Phytologist' has been very much in arrear; and this is the apology we make to our readers and to the authors of the above-named work for the delay in announcing its appearance. We have not yet nearly exhausted the long-accumulating publications.

The editors, in a brief preface, inform the readers that their previously circulated specimens, viz. 'Herbarium Markischer Pflanzen' (30 no.), had a very favourable reception; "and the call for a second edition of the first portion," they remark, "is a proof that the undertaking has been both seasonable and duly supported."

"Our endeavours," they continue, "to render the present collection as comprehensive as possible have been ably seconded by the most eminent botanists, in all parts. To these friendly correspondents hearty thanks are duly tendered, especially for specimens of *Equisetum variegatum,* Schleich.; *Salvinia natans,* Hoffm.; *Isoetes lacustris, Grammitis Ceterach,* Sw., etc."

The portion before us contains all the British species of Horsetails (if *Equisetum Mackaii* be excepted); also *Pilularia, Salvinia, Isoetes,* all the Lycopods that grow in North Germany, and all the Ferns of the same extensive tract.

The title of the work, the preface and the contents, are printed on a folio sheet with a fly-leaf, and the specimens follow, from no. 1 to no. 49, viz. "*Equisetum arvense*, L., Acker-schachtelhalm, Sand- und Lehmacker; gemein. März, April. Bei Görlitz, von B. gesammelt." This or similar information is printed on each ticket, and the above may be rendered:—*Equisetum arvense*, Linn. Field-horsetail (Polishing-haulm), in sandy and clayey fields. Flowers March and April, collected at or near Görlitz, by B. (Bænitz). No. 49, *Struthiopteris germanica*, with a ticket similar to that of no. 1—or, the name of the species, the authority, the common name (German), the soil in which it grows, its census, time of flowering, the locality and collector.

The specimens are *all* extremely well dried, spread out, and strapped down. The paper is white, of about foolscap size (?), and the whole 49 are enclosed in a neat enough portfolio. About fifty fine specimens of plants, named, localized, etc., with printed tickets affixed, on as many half-sheets of writing paper, and a portfolio, is what may be called a bargain at a crown:

> "Wondrous cheap,
> And for the money quite a heap,
> Which any one would buy, with cash and sense."

Speaking seriously, we have never seen so cheap a lot; not even at Messrs. Stevens's, where large bundles of plants are sold for 10*s.*, or even sometimes as low as a half-a-crown. But consider, *bone lector!* that usually several duplicates are found in these lots, and none of the examples are mounted, and they are not seldom without names and destitute of any clue to their history.

We earnestly wish and have good hopes that, for the credit of the scientific world as well as for the promotion of botanical science, and for the help of tyros, young pharmaceutists, who should know what they buy of the itinerant herb collectors, success may attend this publication.

It was once thought that the addition of English names would be an improvement. A Frenchman would say, so would the French names. The scientific name is enough for all practical purposes; and this is truly the most practical and useful work on plants that has ever appeared.

The beautiful works of Reichenbach and Sowerby are not depreciated by comparison with these published examples of species by Lasch and Bænitz. Comparisons are odious or hateful only when one person or object is exalted at the expense of another.

This work, which is here so heartily commended for its excellence and usefulness, is cheaper than even the cheapest edition of 'English Botany;' it is certainly more valuable, inasmuch as the original objects, the things themselves, are more satisfactory than the best representations of them.

That this spirited undertaking may not fail for want of due support, it is recommended to all collectors and preservers of dried specimens; and we hope they will buy it, get it bound and place it on their shelves. It will be almost, if not altogether, a complete British Herbarium; and we should advise the editors to make arrangements for supplying the British forms or species which are not to be seen in the north of Germany.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers to Correspondents, Notes, Remarks, etc.

Our new correspondent John Peers, whose communication has been in hand some considerable time, is requested to accept the Editor's thanks for his marked list of British species, and he is hereby assured that the young Society of Warrington Naturalists has our sympathy and warmest wishes for its success. The rules of the new association have been mislaid; if our friend the honorary secretary will send another copy, it will be duly honoured in the pages of the 'Phytologist.'

The readers of the sole serial in which the progress of botany is regularly reported, will appreciate a list of Warrington plants compiled by a number of local botanists who co-operate in the undertaking.

Our amiable friend "H. C.," now residing and botanizing in Ross-shire, is informed that a series of Scotch Roses will be very acceptable. The varieties of *Rosa villosa* are quite as numerous as the forms of *R. canina*, and in intensity of colour, largeness of bloom, etc., they far surpass the common Dog-rose.

Astragalus hypoglottis is not uncommon on limestone, in Scotland; and the lobed-leafed form of *Cochlearia, C. danica*, is perhaps one of the commonest varieties of this variable species.

"W. G. F. P.," of St. Peter's College, Westminster, is doubtless aware that *Asplenium lanceolatum* is a rare British Fern, and also that Oxfordshire is an unrecorded locality for this species. It has occurred sparingly in Sussex, and it is not uncommon near Bristol (see below).

Lastrea Filix-mas, var. *pumila*, is not an unusual alpine form, and, according to W. G. F. P.'s experience, it is not confined to alpine situations.

Our estimable friend John Lloyd is entitled to our heartiest thanks for his offer of a list of the defunct and recently observed plants of Wandsworth Common. The notes of a resident botanist on the changes of locality, the disappearances and reappearances of plants in this well-known tract, will be very acceptable to our numerous readers.

Last month, July, 1862, we observed that *Epilobium angustifolium*, the French Willow-herb, was well established on the Balham end of Wandsworth Common, and on the Clapham side of the railway. *Note.* Has any of our Wimbledon or Wandsworth correspondents recently seen *Hottonia palustris* near Lower Tooting?

Our excellent Preston friend, who so kindly supplies us with "Rambles by the Ribble," is hereby informed that his lively graphic notes on antiquarian, legendary, and botanical subjects are not unread, although sometimes not reproduced here. The botany in No. 14 is so small that we have not been able to see it, not even when our spectacles graced the prominent feature of our face. We have heard this part of the facial organization called the "handle of the face." To this nomenclature there is a decided objection, viz. that *waxen noses* only can be safely handled in an unceremonious or irreverent manner. Descriptions of charming scenery, old halls, homesteads, ancient inscriptions, heirlooms, drinking-horns, etc., are very delightful. Many a time, during our annual peregrinations in July and August, we would not have needed two biddings to elevate the horn of Gisburn Hall, even had the contents been pure water, but suppose the horn charged with claret, our potations would have been long and deep; due honour to the hospitalities of the hall would have been duly paid.

The seeds of the presumed *Primula elatior* have been entrusted to a better situation than the Editor's little plot of garden in Chelsea can afford. In the 'Flora of Essex,' just published, *P. elatior* is reported as growing in most of the woods around Walden, with *P. vulgaris* and its variety *caulescens;* also about Bardfield, in meadows, accompanied with *P. veris*, and without *P. vulgaris*. I have the genuine plant from Northumberland.

The seeds of *Centaurea pratensis*, Brebisson, 'Flore de Normandie,' are also committed to the same safe custody. Mr. Atwood, in his letter, informs me that the meadows at Satteville are full of this Knapweed, *Tragopogon orientalis*, and *Crepis biennis*. Our correspondent further states that he sees no difference between this continental form of *Centaurea* and one equally common in the vale of Gloucester; from the seeds of the latter, he (Mr. A.) says he produced in Kent the common form of *C. nigra*.

Will our Cheltenham correspondents be so obliging as to look after this Gloucestershire variety and send a report? Some of Mr. Atwood's remarks on this subject and on varieties of *Verbascum* will appear in another place.

To our obliging correspondents of Egham and Richmond, Surrey, our special and hearty thanks are hereby tendered for their proffered kind assistance in completing the flora of the metropolitan counties. We rely on local botanists for accurate lists of the vegetation of the remoter parts of the counties of Surrey and Middlesex.

Adiantum Capillus-Veneris in Surrey.—Only a few days ago (Aug. 1st), intelligence reached us of the discovery of the true Maidenhair Fern, at Lingfield, in Surrey, on the very verge of the county, adjoining on the east to Kent, and on the south to Sussex. We are well aware that this will be by many botanists and pteridologists scouted as one of the grossest of mares' nests; but as there are several vouchers for the fact, it is confidently given to our readers as genuine.

Several years ago,—more than twenty, probably nearer thirty,—a young botanist told us he had seen *A. Capillus-Veneris* on or about West Hoathly

rocks, but, as he had no specimen and subsequently admitted that he had probably mistaken something else for this variety, we did not take any further notice of the communication. The gentlemen through whom the present information came are unimpeachable both for competence and veracity. A few lobes of the frond were sent with the notice of the discovery.

It is also deserving of notice that this is the same part of the country as that from which this Fern was previously as above reported; for Lingfield is in the Weald, and West Hoathly is in the forest on the Wealden border. The latter is in another county, but Ferns and other plants overleap political boundaries.

Our readers are likely to hear more about this inland station for what is a maritime plant here but not on the continent; and it promises to be a subject of discussion as long and keen as that about *Blechnum alpinum*. The latter fact has not yet been satisfactorily settled, except thus far, that *B. alpinum* was found in Scotland, and that there was but one plant in the Breadalbane locality, and that it would now be in vain to go there to look for it, because the single plant then and there discovered was taken away. One of our excellent correspondents, Mr. E. E., of Wheathamstead, has mystified the subject still more, for he sent a frond of the same from a fair collector and cultivator of Ferns, one of his neighbours, who assured him that she collected the Fern in the Lake district, and that there it was plentiful. Our informant says nothing about the plentifulness of the Maidenhair Fern in Lingfield parish, nor that he found but one plant, and took that away. We understand and believe that the plant is there still, and we hope it will long flourish and increase for the satisfaction of the curious, and for the conviction of the *sceptical*. Any of our friends may have the address of the gentleman who made the discovery, by private application. Lingfield is not so far from London as Killin; and there is more prospect of finding *Adiantum* in Surrey than *Blechnum alpinum* in the Highlands of Scotland.

Gentiana cruciata. (See 'Phytologist,' vol. vi. N. S.)—*G. cruciata* is said by Gerard, p. 434, to have been found by him "in a pasture at the west end of Little Rayne, on the north side of the way leading from Braintree to Much Dunmow, and in the horseway by the same close." This has never been confirmed. ('Flora of Essex,' p. 205.)

The Editor is obliged to "H. T.," of No. 1, Clarendon Villas, Southsea, Hants, for telling him that *Lathyrus Nissolia* and *Fritillaria Meleagris* should appear under another standard, protected or ushered in beneath another flag. *Suum cuique tribuatur* is a good axiom; "let him who blows the loudest or best blast bear away the horn." The readers are humbly requested to move the two beauties aforenamed from the responsibility of "E. B. P.," and put them under the charge and guardianship of "H. T." The benevolent reader is also requested to put an L, *i. e.* small capital, into the name of the place under which the Fritillary and the Grasspoly should not have appeared. The same kind personage is requested to change the heading of pp. 226 and 227 from western into eastern; or to take away the WE and put EA in their place.

The Editor is much indebted to "W. G. F. P.," of The Coppice, Henley-on-Thames, who has sent two small fronds of *Asplenium lanceolatum*, found on the wall of a cottage garden near Henley. This discovery is not

quite so striking as that of *Adiantum Cap.-Ven.* at Lingfield, but it is a new and hitherto unknown locality for this rare species.

To our excellent friend of Ross, "B. M. W.," we send our hearty thanks for a fresh specimen of *Sparganium minimum*, and especially for his kind promise of some more Dean Forest plants and localities, etc.

Mr. A., of Preston, will have received a private communication ere he see this.

To Mr. W. P., of 45, Frith street, Soho, and to John Jones, of Llanderfel, our kind acknowledgments are hereby tendered for communicating a locality for *Geranium sylvaticum* in North Wales, and for an account of unusual-coloured Foxgloves.

Mr. J. S., of Perth, has sent a box of living plants, viz. *Geranium pyrenaicum*, *Malva moschata* (white var.), *Cynoglossum sylvaticum*, *Circæa alpina*, *Campanula rapunculoides*, *Doronicum Pardalianches*, etc. etc. Mr. S. will receive a direct communication before long.

Our hearty thanks are tendered to Dr. Macalister for his notes on South Highland botany. The article will appear in October or November.

Our excellent friend and correspondent T. R. A. Briggs, is requested to accept our acknowledgments for the rare plants he promises, and we hope to have a parcel ready for him before *Yule-even*.

If Dr. Windsor observed anything worth recording in his late botanical excursion to North Lancashire, he will greatly oblige us by sending it for publication.

Enteromorpha Hopkirkii.—"In last month of the 'Phytologist,' a correspondent remarks, 'the *Enteromorpha Hopkirkii* is a British Alga.' I should feel obliged if yourself or your correspondent could inform me after whom this seaweed received its specific name, and any other information you may be able to afford respecting the person after whom it is named. . . . I am in anticipation of receiving a small parcel of South African Mosses, in exchange for English ones; and, if any of your correspondents care to have any of these specimens, I shall be glad to send some in exchange for English ones (when they arrive, which may be in a month or two). In the meantime, any English ones which might be entrusted to my care could be forwarded by next outward mail along with my own parcel.—CHAS. C. P. HOBKIRK."

Our kind Brighton correspondent is entreated to help our Huddersfield friend.

Our fair correspondents at Enfield (it is to be hoped and wished) have received a private communication ere this can reach Chace Cottage.

Our Australian relative and correspondent, D. Irvine, will receive a private notice.

F. Walker, of Arnos-Grove, Southgate, is hereby informed that his catalogue and note have been duly received. We can supply several of the specimens wanted, to complete his herbarium of the British species.

To the same gentleman our thanks are due for his note on the Oak-leaved Honeysuckle; it will appear soon.

A NEW EPILOBIUM?

I enclose a specimen and send the description of an *Epilobium* which grows in the neighbourhood of Plymouth, and which, although it bears a closer resemblance to *Epilobium montanum* than to any other

species of the genus with which I am acquainted is, I think, quite distinct from it, and may prove to be the *E. lanceolatum* of the 'British Flora' and Babington's Manual. It has the stem round, often branched, downy; leaves all stalked, lanceolate, irregularly and not very deeply toothed, entire near the base, glabrous, often pendulous; buds nodding, sepals acute, petals pink or nearly white, never purple, stigma four-cleft; root long, sometimes tapering, scions small or absent. The above description was drawn up after an examination of several plants. It grows at Lipson, about a mile from Plymouth, also between Lipson and Crabtree, in waste ground at the latter place, and at Colwell, near the river Plym. At three of these stations I also noticed plants of *Epilobium montanum*.

If any reader of the 'Phytologist' would send me a specimen of *Epilobium lanceolatum*, in order that I may compare it with my plant, I should feel obliged, and would send him in return a specimen from one of the stations I have named. T. R. Archer Briggs.

Localities of some Rare Plants.

Borago officinalis, var. with white flowers: Capstan Hill, Ilfracombe, Devon, just above the sea. *Lavatera arborea:* same place. *Fœniculum vulgare:* on Lantern Hill, Ilfracombe, the south side; abundant. *Geranium striatum:* beneath a hedge, leading from the pier at Clovelly, North Devon, to the entrance to Clovelly Court; about three plants found. *Andromeda polifolia:* in the Peat Bog, at Shapwick, Somersetshire; very abundant. *Epilobium angustifolium:* along the canal bank, near Shapwick, Somersetshire, for a considerable distance on both sides; also in a retired part of the wood of Holmwood, near Dorking, Surrey, on the top of the hill. *Linaria Pelisseriana?* (upright purple Toadflax): on an old wall, at Petersham, Surrey. J. W. Chapman.

Insect Ravages.

The Ash-trees in this neighbourhood have for a long time presented a very sickly appearance, being covered with scars instead of leaves; the foliage diminishing year by year. Many trees, which, within the last twelve years, were in a flourishing condition, have now scarcely leaves enough to keep them alive, and, in a few summers more, must inevitably perish. The cause of all the mischief is a small brown grub, which, as soon as the shoot makes its appearance, eats its way through the young green bark, and devours the tender inside. The whole shoot then withers and falls off, leaving nothing but an unsightly scar upon the branch. Many fine trees are denuded of all save the leading shoots, and these will no doubt disappear. The attacks of this puny ravager threaten a gradual but certain extinction of the Ash, which has hitherto been considered the glory of Craven. G. R. B.

June, 1862.

Lathyrus tuberosus.

(See 'Phytologist,' vol. vi. p. 190.) Is not this confounded with *Orobus tuberosus* in regard to the English habitat given? On the Continent it is an inhabitant of cornfields, *O. tub.* of woods. An allied species of the south of Russia, *Lathyrus rotundifolius*, Bieb., is known in gardens.

Odoriferous Plants.

(See 'Phytologist,' vol. vi. p. 189.) Some of the foreign *Violæ* are sweet, but without the peculiar fragrance of our violet. Several sp. of the Mint family seem to have different odours in different localities. The common Primrose, so deliciously fragrant in England, is scentless in Italy and Germany. *Oxalis cernua*, fragrant in Italian gardens, is without perfume here.

Cyclamen hederæfolium, *Clusii.*

(See 'Phytologist,' vol. vi. p. 189.) This, the true *C. hederæfolium*, is a Southern, spring species, with deep-pink, long-segmented, fragrant flowers, scarcely to be found native north of the mountains of Spoleto in the Apennines (where many other Southern plants cease to appear), and tender in England. The supposed English species (autumnal) is not the *europæum* of the Alps. A summer species, rather slow of cultivation.

Finding that you are preparing a New London Flora, and are desirous of procuring local information from the districts around London, I have put down a few plants which I have met with at various times. I may mention that *Anemone apennina* was flourishing in its old position in Wimbledon Park, in April last.—1. *Linaria repens:* Streatley, Berks. 2. *L. purpurea:* old wall, at Petersham, Surrey. 3. *L. Cymbalaria:* plentiful on old walls at Richmond. 4. *Scutellaria galericulata:* Richmond, Surrey side of river. 5. *Cynoglossum officinale:* Richmond Park. 6. *Chlora perfoliata:* railway-cutting near Weybridge. 7. *Antirrhinum Orontium:* fields near Croydon. 8. *Epilobium angustifolium:* Holmwood, Dorking, in a thick shady part of the wood; also railway-cutting near Weybridge, observed for the first time last Monday, July 28th. 9. *Thalictrum flavum*: river-side near Petersham. 10. *Aquilegia vulgaris:* top of Bluebell Hill, near Aylesford, Kent. 11. *Phyteuma orbiculare:* Denbies Park, Dorking. 12. *Melilotus officinalis:* railway-cutting close to the Anerley station on Croydon railway. 13. *M. vulgaris:* top of Park Hill, Croydon.

I am very desirous to find the localities where the *Anemone ranunculoides* and *Teucrium Botrys* grow. The former is said to grow near King's Langley, Herts, and Wrotham, Kent; the latter, on or near Box Hill, Surrey. If you could give me any information respecting these two plants, I should be much obliged. Sir W. Hooker was not aware of any one finding the *Anemone* in the localities named. J. W. C.

Communications have been received from

John Sim; Sidney Beisly; H. Beisly; W. Pamplin; Hampden G. Glasspoole; J. W. Chapman; John Peers; C. J. Ashfield; H. C.; F. Walker; H. Trimen; Walter Galt; B. M. Watkins; M. A. Walker; Dr. Windsor; M. F. Crepin; T. R. A. Briggs.

RECEIVED FOR REVIEW.

The Canadian Naturalist and Geologist.

Notes sur quelques Plantes rares ou critiques de la Belgique, par Monsieur François Crepin.

HIGHLAND BOTANY.

Two Days' Botanizing in the Highlands.

By Alexander Macalister, M.D.

About the middle of last July, with some botanical friends, I started for a couple of days' botanizing on the southern and most accessible part of the Highlands. Leaving Glasgow early in the morning, we were deposited by rail at the Bucklyvie station, in Stirlingshire, from whence we intended to walk to Loch Ard, a distance of eight or nine miles. The road from the station passes through a very pleasingly diversified country, at one time bordered by cultivated land and pastures, at another by extended districts of bog, and growing more picturesque as we skirted along the side of the Forth and entered the wilder and more rough part of our route. Few rarities came in our way, the only specimens we transferred to our vasculums being *Polypodium Dryopteris*, which we found in abundance, its delicate triangular fronds rising from the interstices of the stone dykes along with *Asplenium Adiantum-nigrum*, some fine specimens of which we gathered. Further on we found one plant of *Cystopteris fragilis*, and one very well marked, though small, plant of *Lastrea Thelypteris*, of which I took possession. Along with these, but in greater abundance, we found *Lastrea Oreopteris* and *Filix-mas*, a few plants of *Aspidium aculeatum*, *Polypodium vulgare*, and *Athyrium Filix-fœmina*. Along the hedgebanks abundance of *Campanula rotundifolia* grows, accompanied by the commoner species of *Hieracium*, *Lathyrus*, etc.; in one of the bogs near Gartmore I found *Salix cinerea* and abundance of *Narthecium ossifragum*, *Eriophorum vaginatum* and *polystachyum*, and *Carex pilulifera*. Having arrived at Aberfoyle, the romantic spot where the Avon Dhu and Duchray unite to form the Forth, we entered the inn, so well known from its connection with Sir Walter Scott's inimitable romance 'Rob Roy;' here we satisfied the cravings of our appetite with a substantial lunch and shelter from a very heavy shower, which however was soon over, and we proceeded on to Loch Ard, one of the most beautiful spots of Highland scenery. By the Avon Dhu which arises from the lake, we found *Ranunculus Lingua*, *Flammula*, *hederacea*, and *aquatilis*, *Galium saxatile*, *verum*, and *palustre*; in the loch we found, at its lower end,

Potamogeton natans, Eleocharis palustris and *acicularis, Rhyncospora alba, Juncus effusus* and *conglomeratus;* on ascending the loch we arrived at the most magnificent spot of Highland scenery I ever visited; on each side the hills rose thickly covered with trees, the lake lying calm below, and high towering over all appeared Ben Lomond, the monarch of the district. In the woods grow the *Pyrola rotundifolia* and *secunda, Viola canina, Rubus cæsius* and *cordifolius, Rosa tomentosa, canina,* and *arvensis;* in the more open districts we found *Pyrus communis, Hypericum quadrangulum, perforatum, pulchrum,* and *humifusum, Lastrea dilatata, L. recurva, Euphrasia officinalis, Nepeta Cataria, Galeopsis Tetrahit, Ornithopus perpusillus, Sedum anglicum* and *acre, Melampyrum pratense, Agrostis alba, A. canina, Festuca bromoides, F. duriuscula, Nardus stricta, Anthoxanthum odoratum, Melica uniflora* and *nutans.* Having feasted our eyes till it was getting late, we turned from this lovely spot and took the road to Monteith, where we had arranged to stop for the night; near the road on our way we found *Pinus sylvestris* and *Juniperus communis* in abundance, *Corydalis claviculata* among a clump of hawthorn-trees, and on the walls *Gnaphalium dioicum* and *uliginosum, Ægopodium Podagraria, Asplenium Trichomanes,* and *Ulex nanus.* Late in the evening we arrived at Monteith, where we stopped the night, intending in the morning to cross to the island Inchmahome, so celebrated as where the unfortunate Princess Mary spent her girlhood; but on rising in the morning we found dark clouds on the horizon, and the lake—which we left in the night calm and placid—a turbid stormy sea, so much so that we could not get a boatman to take us across, and had to content ourselves with a ramble on the mainland. In the lake we saw *Nymphæa alba, Nuphar lutea* and *pumila, Isoetes lacustris, Poa fluitans, Typha latifolia,* and *Chara vulgaris;* near it, in the ditches by the roadside, we found *Cicuta virosa, Menyanthes trifoliata, Alisma Plantago,* and *Comarum palustre.* We turned from the lake and went to the foot of the neighbouring hills, an offshoot of the Grampian range; we turned up these, and found on them *Asplenium Ruta-muraria* and *Polypodium alpestre, Pinguicula vulgaris, Parnassia palustris, Myrrhis odorata, Juncus squarrosus* and *acutiflorus, Veronica officinalis, V. montana, V. Chamædrys, V. Beccabunga,* and *V. Anagallis, Genista anglica, Sarothamnus scoparius, Lychnis Flos-cuculi, L. vespertina,* and *L. Githago, Spergula nodosa, Ilex Aquifolium, Myosotis arvensis, M.*

palustris, *M. versicolor*, and *Thymus Serpyllum*. From this walk we returned to the inn at Monteith, and after dining there took the road to the Port of Monteith station, where we took the train to Stirling; on our way to the rail we found the *Vaccinium Myrtillus* and *V. Vitis-Idæa*, *Geranium columbinum*, etc. Late at night we arrived in Stirling, very tired, and very well pleased with our excursion and its results.

THE GENUS LUZULA.

Remarks on the Genus Luzula. *By* John Sim.

Several of our larger genera, as *Salix*, *Rubus*, and *Hieracium*, contain an inconvenient number of species, or mere varieties depending on soil and situation, though they are by the compilers of our British floras considered as distinct species; this statement may easily be proved by any one who possesses an herbarium containing these genera, the so-called species insensibly merging into each other in a majority of cases. Mr. Bentham, in his 'British Flora,' has (I consider) wisely abridged the *quasi*-species of these genera.

The genus *Luzula* is at present in a very different condition; instead of having too many species it has in my opinion too few. On referring to the British floras of Hooker, Babington, etc., I find that there is a species (for such I consider it) which is very unsatisfactorily accounted for; Hooker appears to notice the plant in question under *Luzula campestris*, but passes unnoticed its most distinctive character. *Babington* notices it under *L. multiflora*, but only as a variety. In the 'Handbook of the British Plants' it is placed in the species *multiflora* under *α*, a variety with stalked clusters, and there is a second also, a var. *β*, with clusters sessile. Now this is quite correct that two plants exist possessing these two characters, but this is not all: these two forms of *Luzula* I hold to be two distinct and independent species, and not varieties at all; I cannot divine for what reason they were ever considered to be only different forms of one and the same plant, but this I know from observation, that no two species of *Luzula* are more unlike than the assumed varieties *α* and *β*. Let us examine them both.

Var. *α* (see 'Handbook of British Plants,' p. 274) is a much

smaller and slenderer plant than var. *β*, seldom exceeding one foot in height, has the clusters stalked, and the inflorescence looks like a little umbel; it moreover prefers grassy places in a gravelly soil, var. *β* growing in a peaty soil.

Var. *β* is a far more robust plant than *a*, and has the flowers and seeds in a compact congested capitulum, or head, and is a taller plant than *a*, often being two feet in length. Both these forms occur on the margin of Methven Bog, *a* occupying the drier ground, where the soil is gravelly, *β* the moist, where the soil is peaty. I would suggest the abolition of *L. multiflora* altogether, and make *a* and *β* two distinct species, calling var. *a Luzula pedicellata* and var. *β L. congesta* or *aggregata*; the latter specific name I would prefer. This is not a new discovery of mine; I have observed the two plants in question years since, and from close observation am perfectly satisfied in my own mind that they are two different species, and no more related to each other than *L. campestris* and *L. sylvatica*. I should like that botanists will just be at the trouble to examine for themselves, and not take for granted what others bring forward, but ever bear in mind that the greatest and wisest and most observant of men are sometimes in error, and liable to go astray as well as others of less extensive information. I should like extremely well to have the views of some of my botanical brethren upon the *Luzula* in question, in a future number of this Journal.

[Our excellent correspondent may be satisfied that his appeal to the readers of the 'Phytologist' will not be unproductive of results.]

BOTANY OF NORMAN'S LAW.

An Afternoon's Botanizing on Norman's Law, parish of Abdie, Fifeshire, in June, 1862. *By* C. Howie.

We drove along the Newburgh road, from Cupar, the county town, to a smithy, opposite to a branch road winding upwards to Norman's Law, the scene of our journey. The smith welcomed us, as all Scotch smiths do, to the hospitalities of his smithy and his kind attention. The young botanists of the company, accustomed to the smile of their "ain fireside," were not awed by the

stiff, reserved conventionalism which we generally hear complained of, when the elongated physiognomy of auld Scotia's rural population meet with parties of wandering herbalists. It appears incomprehensible to the uninitiated in botanical lore, why persons of sane minds give themselves so much trouble, and incur so much expense, to gather or simply to look at weeds. The gathering of something to eat or infuse, or if their vasculums possessed the charm of emitting sweet music, like the hum of a bagpipe, men in botanical costume might have easier run the blockade of titled lairds, and have escaped threats of incarceration for the crime of indulging in their wandering mission as field botanists, and the field rustic would have expanded at the sound of the pipe or by some such disclosure, through which he could understand the mysterious appearance of the company. Our host however, like ourselves, was regardless of appearances, and readily furnished us with the necessary directions.

We took the road by the farmhouse of Glenduckie. While sheltering from the rain we were satisfied as to the name of the place being suitable to the occasion, and while climbing the crags of Craiglogie we were again reminded of the suitableness of the terminology. On passing the two farms, along by the walls and hedges grow strong plants of *Scrophularia vernalis* and *Sisymbrium Alliaria*. The *Scrophularia* is by no means rare in the county, although we have found it, like a few other plants, associated with the abodes of former generations. Among the college grounds of St. Andrew's it was prevalent previous to modern improvement, and also among old gardens. It occurs frequently by the ruins of Craighall, Ceres and Balcarris Den; in several other places it has been found by other parties.

The *Sisymbrium* is rare on the east of Fife; we have only found it previously by the sides of the hedges at Largo.

Ascending the Law, we found *Saxifraga granulata* in dense flower, interrupted by the rock occasionally cropping out. This plant is not rare all over the county, where it generally is distributed in isolated patches.

Our object was to search among the Cryptogams, had weather permitted; and although we found nothing new to the county, one or two stations are worth recording. *Grimmia leucophæa*, found sparingly, but too late in the season; *Bryum crudum* in fruit. This plant, as at Drumcarro Crag, near to Magus Muir, oc-

cupies a similar position here in the shaded crevices of rocks, associated with the common *Bartramia ithyphylla*.

Bryum alpinum, with its bright-tinted foliage in dense patches covering the margins of rocky surfaces, in partial fruit. *Cynodontium Bruntonii*, in fruit, covers the face of a rock in isolated patches; this Moss is found in various other stations over the county in similar situations.

Ferns, Hepaticæ, and Lichens presented nothing new or rare through the course of our hurried search. The Scotch mist was passing under a rapid high development when we left off our explorations and stood for the summit of the Law. Among the foliage of *Polytrichum formosum*, where the tempest howled as Boreas blew his blast, we obtained a shaded view to the west of the junction of the Earn with the Tay, which rolled down before us; stretching out towards the east until it was lost in the ocean; the flat expanse of the Carse of Gowrie lay before us. Extending to the east were clustered together the town and shipping of Dundee, the mart of trade and population, enclosed with the hills of Sidlaw and the Grampians. Norman's Law is a district highly interesting to the archæologist, upon which I will not enter, simply referring to the term 'Law' given to so many of the lofty eminences of this county, as referring to a spot where lies all that remains to us of Fife's early inhabitants to unravel the past ages of an undescribed history. Norman's Law forms a turret on the range of the Ochils (?) which extends by the north side of the river, and is still interesting to the poet, the painter, and the philosopher, as it was to Fife's early inhabitants when living, and sacred by the ashes of the ancient tomb and the urn, when dead.

CASTANEA VULGARIS.

The Common Chestnut Tree.

In a recent number of the 'Phytologist,' S. B. asks if he should place a specimen of the above in his herbarium of British plants. He is hereby informed that he may safely do so.

Mr. Babington, our greatest living authority on such subjects, enters it in his 'Manual,' with the remark, that it "is a doubtful native;" therefore it should have, as jurists will say, the benefit of

the doubt; and for this reason, and for its many excellent qualities it should not be denied a place among the spontaneous productions of England.

Ray, the greatest of all our botanists previous to the present age, does not hesitate to place it among the natives. It may be said that he places wheat and barley also among English plants. His remark on the locality of the Chestnut is, "in some woods near Sittingbourn, Kent, and Woburn, Beds; but whether spontaneous or anciently sown there I cannot determine." Is there anybody can? The tree has been in this island ever since the Romans had dominion in these isles, probably before. Little weight should be attached to Cæsar's relation, "that all the trees which grow in Gaul are common to Britain, except the Beech and Pine." We know that this is not true—all the trees of Gaul, or France, are not to be found here; and there may have been trees in Britain which the great Roman conqueror did not see. Besides, it is the Beech, and not the Chestnut, which Cæsar tells us was not in Britain; but, as some erroneously fancy that the great Roman wrote 'Beech' where he should have written 'Chestnut,' it has been deemed expedient to make the above remark. Sir James E. Smith, one of the greatest modern botanists, informs us that "it appears to be wild in the south and west of England, and its timber has been employed in some of our oldest buildings." He further tells us "that it rivals if it does not exceed the British Oak in size and duration" (vol. iv. p. 151). Withering states (vol. ii. p. 445, ed. 1796), that "some of the oldest buildings in London are said to be constructed with this wood; at Tartworth, in Gloucestershire, there is a tree fifty-two feet round. It is proved to have stood there ever since the year 1150, and was then so remarkable as to be called 'the great Chestnut of Tartworth.'"

In the 'Gentleman's Magazine' for 1766, p. 321, there is both a figure and a history of this tree by the famous Peter Collinson, who had no doubt of the Chestnut being a native of England; and he assigns as the reason why these trees are rarely found of large size in woods, that the profit from cutting and selling them for hop-poles is very much greater than that derivable from their timber and lop. Another reason may be assigned for the non-exclusion of this fine tree from our herbaria of native plants is, that if we discard this species we must disown the Tilias, our valuable

Maple, several of our Plum-trees, Medlar, Sorb, etc. And, besides these, how can we with any degree of consistency retain our poplars? *Populus alba, P. tremula, P. nigra,* and a multitude of Willows and Osiers, must be discarded. But again, where are we to place our *Elms?* Are we certain of their nativity? Or was there ever a time since this island emerged from the surrounding ocean when the Elm-tree was absent from our farmhouses, our hedges, our meadows, and our fields?

There is no historical record of the importation of any one of the above-mentioned trees. Is *Carpinus Betulus* a native? Is *Betula Alnus* a native? Is the Ash a native? Is *Fagus sylvatica* a native? Cæsar says it is not. What are the native trees of Britain or of the British Isles, the Oak of the south and the Pine of the north, and the Birch, and the Mountain Ash? The Pine is not a true native of the south of Britain, nor, probably, is the Oak of the north. There are several counties where the Mountain Ash is only a planted tree. The following are all in the same predicament, viz. the Willows, the Poplars, the Ash, the Elm, the Beech, the Maple, the Lime, the Hornbeam, and the Chestnut. There is no historic evidence of their ever having been introduced into this country; and the ocular proof we have and the historical accounts of many of them are presumptive evidence of their nativity.

But if any or many botanists choose to be hypercritical on this subject, the history of the trees,—if they will still resist the testimony of past ages and the results of experience and observation,—we cannot help them; nobody can convince them; but it may be said, without offence, that their objections and their arguments have no great weight. Some excellent people have prejudices and untenable conceits about the nativity of many other plants; and it would be only labour lost to refute their pet arguments, and try to upset their visionary speculative theories.

SCOLOPENDRIUM VULGARE, ETC.

By JOHN SIM.

This comparatively rare Fern (rare in Scotland only, I mean) was brought to me on the 2nd of July, from rocks in the Den of Murrayshall, near Perth, by Mr. Soutar, of New Scone village,

who says it grows in that locality in tolerable profusion. This locality is about three miles east of Perth, and upwards of twenty miles from the sea. This fine Fern, I am informed by Mr. Lamb, of Perth (a lover and cultivator of Ferns), was collected this summer by him in the rocky Den of Auchmedden, about three miles west of the village of Aberdour, in Aberdeenshire, close to the sea-side; some of its fronds, he said, were most luxuriant, and exceeded two feet in length; the var. *polyschides* was also found there. From the same locality he gathered specimens of *Asplenium marinum*, a living plant of which from that place he gave to me; I potted it, and it is a thriving plant in my room window. From the Den of Murrayshall, my friend Mr. Soutar also brought examples of *Cystopteris fragilis*, and a form of *Lastrea Filix-mas* having its pinnæ furcate at the extremities. In the same Den, under the trees, he collected a fine example of *Hieracium aurantiacum*. This rare plant is one of the disputed or doubtful natives. I do not mean to enter the field of contest or controversy about it, but I think, from the many unsuspicious-looking localities in which it is and has been so long found in different parts of Great Britain, I cannot see much consistency in excluding it from the list of native plants, and admitting others of far less frequent and recent occurrence. In the days of Don, it was found in "several woods in Banffshire, and at Craigston, near Turriff, Coalston Woods, East Lothian, and woods to the east of Kenmore." (See Hooker's Fl. Scotica, p. 229.)

I may remark that this is pre-eminently the age of Ferns. Ferns engross the attention of both the horticulturist and the botanist,—the former for gain, the latter for information; the former by his skill and endeavours to produce numberless deviations from a state of nature, the latter to determine, by his examinations and observations, what of the many varied forms can be considered a species, and what not.

Most of our smaller British Ferns succeed very well in pots placed on the window-sill. The larger species, in general, if planted at the foot of a wall (north side) will endure the rigour of our severest winter; yet some few succumb. A plant of *Scolopendrium vulgare* which I had growing unprotected, perished during the intense frost of 1860, when the thermometer on several successive nights sank to zero.

ENFIELD CHASE, AND SOME REMARKS ON ITS RARE PLANTS.

This ancient forest lies on the north of the metropolis, and in the eastern part of the county, stretching from Finchley, or rather from Finchley Common,—a common only in name, like Enfield Chase,—to the borders of Essex or to the river Lea, which separates this ancient tract of woodland from Epping Forest. This last named district is destined, at no distant date, to share the fate of Hainault Forest, on the eastern side of the river Roding —a tract now under the woodman's axe, *i. e.* undergoing the process of disforestment.

The Chase extends several miles northward, and ends in Hertfordshire.

Here several edifices bear testimony to the former grandeur of this regal park, viz. South Lodge, West Lodge, North Lodge, Southgate, Potter's Bar, etc.; and there are still remnants of kingly residences both at Enfield and Cheshunt.

This hunting demesne, once abounding in deer and other beasts of chase, was disforested by Act of Parliament in 1779. It had, like Epping Forest, been long forsaken by royalty, and probably, from its vicinity to London, was becoming a nuisance in the neighbourhood.

What has become of Epping hunt, and when was the last royal stag exhibited to give cockney equestrians an opportunity of displaying their skill in horsemanship, and of wearing their leather unmentionables? What changes have Norwood and its ancient denizens, the gipsies, seen in our days!

Dulwich Wood and the charming braes of Norwood are now in the process of conversion into suburban villas; gipsies are now as rare in Surrey as parks and woods will soon be near the metropolis.

What would the British Solomon, James I., have said if he could have foreseen this change, and the conversion of the noble parks in London's vicinity into villas for its citizens? Let the ghost of Isaac D'Israeli answer this question if it can, and has nothing better to do.

One comfort remains. Enfield Chase, though now enclosed, and of course cultivated, is not densely populated; and it will

probably be some years ere the new colony of Colney Hatch reach far on its way to meet Enfield.

The soil of the Chase is quite as unpromising, unproductive, and uniform as that of the whole county in general, excepting that part where the chalk crops out, as at Harefield. It is a lean, cold, adhesive, gravelly clay; and though in the vicinity of the metropolis, and consequently well manured, yields no superabundant produce either of cereals or of hay.

Its general aspect, for Middlesex, is picturesque; its surface is undulating; it has elevations and slopes, ridges crowned with ancient woods, and deep valleys, abounding in rich pasture and well shaded ponds. The air is excellent, and the population healthy.

A catalogue of its botanical productions cannot be given, for the best of all reasons, viz. they are unknown to the historian of the few plants hereinafter enumerated.

Above twelve months since, one of our fair and obliging correspondents observed a strange Orchid which unexpectedly appeared in the shrubberies about her residence, Chase Cottage, a mile from Enfield, on the road to Southgate; and she, the owner, obligingly sent a note concerning it to the 'Phytologist,' and this notice appeared in our periodical. There was something mysterious about its appearance here, for the plant in question had never been recorded as a Middlesex species, neither is it known in the Epping district of Essex adjoining.

The lawn and appendages of Chase Cottage had been laid out, planted, and kept in trim condition for between thirty and forty years, yet this strange vegetable visitant had never been observed till within the last year or so. It is now extending over the plantations, and is encroaching upon the flower-beds. Recently a few plants of it have been detected in a meadow on the opposite side of the road.

As above said, the appearance of this plant is mysterious—one of the inexplicable marvels of the vegetable kingdom. How was it brought to its present locality? With the trees planted there? But they have been in their present situation nearly forty years; and would it have remained dormant, and retained its vitality for so long a period? Probably not.

If this plantation had been made with young trees from the tracts of Surrey and Kent, where this Orchid abounds, such an

hypothesis would not be altogether inadmissible. But this is not the case. The shrubbery, which possesses nothing unusual about it, was probably planted by Messrs. Loddiges, of Hackney; or the young plants were supplied from some of the numerous nurseries near London.

Another interesting problem about this *Epipactis*—for such it is, either *E. purpurata* or *E. latifolia* or *E. media*—remaining to be solved, is its parasitical habit. Mr. Wollaston asserts (see 'Phytologist,' N.S. vol. vi., Feb. 1862, p. 63), that it grows only on the roots of Beech and Hazel. At Chase Cottage, Enfield, it certainly is not confined to these roots, and here it does not appear to be parasitical, or, if it be, it has a general attachment to all sylvan beauties; it does not confine its favours to two trees. Parasites usually fix on individuals of one species, unlike the parasitic species of the human race, who prey on all mankind indifferently; hence it may be inferred that this is no parasite. The next question to be answered will be, is this *Epipactis E. latifolia* or *E. purpurata?* *E. latifolia* has a stouter, taller, straighter stem, and more numerous, broader, shorter, and thicker leaves than the Chase Cottage plant has. The inflorescence is also much laxer in the present than it is in the other species. *E. latifolia* is not an uncommon species, *E. purpurata* is.

Whatever it be, whether one or other of the two forms or species named above, or *one* distinct from both, it is part of the vegetation of the ancient forest. That it should have remained dormant for so long a period and again re-appeared, is one of the wonders of vegetation, but it is not quite singular. (See 'Phytologist,' N.S. vol. ii., May, 1857, p. 114, for an analogous case.)

Mr. Masters's remarks, or rather Mr. Oxendon's, are to the following purport:—A field that had once been pasture, and subsequently in tillage for a space of forty years, when again "it was laid down for grass, and the third year after it was thus laid down, there appeared in it at least a hundred Bee Orchises; more, in fact, than existed in a circuit of five miles round."

Respecting the present subject, the Enfield *Epipactis*,—as it may be called till we get an approved name for it, guaranteed by a respectable sponsor,—the most probable hypothesis is that it is as original as the oldest plants of the forest; and that, like the Bee Orchis near Broome Park, Kent, it re-appeared after being in abeyance for nearly forty years.

There are several very interesting plants in this part of the Chase, viz. between Chase Cottage and South Lodge—a mansion and park once occupied by the celebrated Earl of Chatham, the father of the equally celebrated Mr. Pitt. This eminent statesman resided here before the Chase was disforested.

These two residences are about a mile or a mile and a half apart, and are situated on a ridge which extends all the way to Southgate. To the south or south-east there is a considerable depression or valley, where there are large ponds—fish-ponds anciently, but now nearly filled up with mud and vegetation. On these both the white and yellow Water Lilies grow abundantly; and on the bank of the middle pond, shaded by Alders and other moisture-loving trees, there was gathered by one of our fair companions a fine specimen of *Inula Helenium*. There were several roots of this fine plant here.

That this famous plant is a genuine native of this place, deponent will not venture to affirm; but he can say with assurance that, to his knowledge, it does not grow in any station between our four seas where it has so fair claims to be recognized as a wild plant. It is far from any garden, and it is far from the site of the gardens of the noble occupant of South Lodge. This place is so solitary as to be haunted by herons, very shy birds.

The vegetation there is just what is common to such places, viz. Figworts, Loosestrife, Forget-me-Not, Water Veronicas, Bur-reeds, Pondweeds, the usual tall Water Grasses, etc.

The only other plant which by courtesy might be called rare, is the pretty blue Periwinkle, *Vinca minor*. This carpeted almost every wood or coppice near Enfield, and it was equally plentiful about Southgate.

Another rare plant observed during this walk, but on a more elevated part of the Chase, viz. on the ridge not far from the road, was *Sambucus Ebulus*, a species which it has become fashionable in some quarters to stigmatize as a suspected ALIEN. In the 'Cybele' it is called a *denizen*, which is indeed the highest honour that by the laws of botanical distribution can be conferred on a stranger or wayfarer. The term implies inferiority to the ancient *noblesse*.

Vinca minor, on the same indisputable authority, is ranked with *Sambucus Ebulus*, viz. it is a denizen. The last and scarcest of the three, *Inula Helenium*, Elecampane, is privileged to enjoy

the high honour of full and undisputed citizenship. It is as much a native as the *Daisy*, although not so common!!

This will appear most capricious and inconsistent to all who are well acquainted with the distribution of our British plants, and especially to those who know the botany of the metropolitan counties.

Elecampane is probably wild in the Isle of Wight, and it may be quite right to call it a native; but, on the other hand, it is quite wrong to say that the other two are not equally so. For one plant or one locality seen for *Inula Helenium*, at least twenty have been seen for *Sambucus Ebulus*, and thousands for *Vinca minor*. No plant is more common in Enfield Chase than the latter. It is nearly as common about Totteridge and Epping Forest. Every wood and copse near Enfield and Southgate are, so to say, carpeted thickly with this pretty plant. The creeping Bugle plant, *Ajuga reptans*, is not so common, nor the Wood Crowfoot, *Ranunculus auricomus*, nor the Primrose. It is plentiful in Surrey, about East and West Clandon, and in other parts of that county. It also abounds in Essex, and about Theydon Bois; and in many other parts of this district it is seen with variegated leaves and particoloured flowers.

I have never seen *Sambucus Ebulus* in what might be called justly a suspicious locality but once, viz. at a farm near Llanderfel (Capel Bethel). I never saw *Inula Helenium* in an unsuspected or unsuspicious locality, except in the one above recorded—it is believed for the first time—near Chase Cottage, or near South Lodge, Enfield.

Another plant, which nobody has ever suspected of being anything but native, was seen in the hedge near Chase Cottage, viz. *Tanacetum vulgare;* and here the plant appeared to be, and probably was, an escape. Like the Elecampane, it was formerly cultivated or kept in gardens, and was of some repute in cookery, as its more respectable associate was eminent for its curative and cosmetic qualities, applicable alike to diseases of the body, infirmities of the intellect, and griefs of the heart. Yet this notoriously cultivated plant is called in 'Cybele' a *native*, and the Periwinkle and Danewort *denizens*. "Credat Judæus!"

It is barely even-handed justice to brand some plants as suspected or notorious aliens only because they may happen at some time or other to have been favourites, and therefore taken

under the special protection of man as a reward for their real or imagined virtues. Nobody, however, has branded the Tansy, the humble seasoning of the homely puddings of our ancestors, with the stigma of alienism. Why should anybody suspect the Periwinkle, which has been cultivated for the beauty of its flowers and foliage, to be originally an alien, though it be in many places a thousand times more common than the Tansy is? We saw but one or two plants of Tansy in a hedge near a cottage. We trod over miles of Periwinkle in the coppices about Enfield, and in the woods about Southgate.

About Guildford we only found Tansy near the river. We found Periwinkle everywhere in the woods from Guildford to Leatherhead. There can be no cavil against entering *Inula Helenium* as a true native, but there is a great want of judgment and consistency in excluding *Vinca minor* and Danewort from the same class.

At Southgate, *Senebiera pinnatifida*, or *Coronopus didymus*, is as well established as it is about Parson's Green, Kew Green, and Chelsea. It appears also well established in the lane between Southgate and Colney Hatch. That it has spread from Southgate to this other station in the lane there is no doubt, but it is plentiful in both localities. If this plant once get a good footing, it is not easily eradicated.

This is a very brief list of plants, but it is as long as we can conscientiously make it. There are rumours of other rare plants in this neighbourhood, possibly the remains of cultivation, possibly outcasts; *n'importe, i. e.* it is of no very great importance how they got possession of the soil. "Possession is nine points of the law," or nine-tenths of the battle. What are these plants? Are they likely to grow there provided the locality remains undisturbed? What are they good for? Are they ornamental or useful plants? Their history, relationships, characters, etc., are sufficiently interesting to deserve to be looked for and looked at.

A report has been circulated about *Spiranthes autumnalis*, viz. that it has been detected in a part of the forest recently cleared. How many hundreds or thousands of years were these plants in existence, appearing only when the forest was cleared, and going to sleep while they were sheltered and densely covered by the leafy trees? Let geologists and physiologists answer these interesting questions; our functions are rather historical than phi-

losophical. We aspire not to things above our reach, nor meddle with what is too high for us, nor venture beyond our depth. *Non omnia possumus omnes*—'One man should not know everything.'

FLORA OF ESSEX.

Additional Localities for Essex Plants, and some Observations thereon.

Mentha viridis.—More than one variety of this variable Mint grow plentifully in an old chalk quarry not above a mile from Grays, on the west side of the town. The pit is both large and deep, and the sides are densely covered with a thick growth of shrubs; among these the Spearmint grew luxuriantly in 1857.

Cardamine amara was seen on the wet banks of the Colne, above Colchester, in 1835, and close by the river. *Lamium maculatum* was collected at the same time, in the same locality.

Lathyrus hirsutus.—The late Mr. Salmon used to collect this species in some parts of Essex, especially among the bushes about Hadleigh Castle. Specimens procured by him are in the herbarium of the Linnean Society.

Mr. Salmon also found *Vicia bithynica* in the same locality, or not far from it.

Corydalis lutea grew on a wall at West Ham in 1832.

Erysimum orientale.—In Buddle's Herbarium there is a specimen of this anciently introduced Crucifer. The note, an ancient one, states that it was from Essex.

Lepidium Draba, which is plentiful about Barking, as it is in many parts of the valley of the Thames, is stated in the 'Flora of Essex' to be "an escape," or "supposed to be an escape from cultivation." Where was it supposed to have been cultivated, and for what purpose? Are there any traditionary accounts of botanical gardens about Rochford and Fambridge?

Frankenia lævis.—Is there any living authority for the present existence of this plant in Essex? It has disappeared on the coasts of Suffolk and Norfolk (?).

Saponaria officinalis abounded in 1835 in a banky, grassy waste between some cultivated lands, or ridges, or fields, between

that part of the London road and Lexden, but nearer to Colchester than to the latter place.

The situation of this place was on the west side of the road, several hundred yards from the highway, and about as far from any house or garden. It was not far from the Quakers' Free School, which then was on the right side of the Colchester and Lexden road.

Hypericum Androsæmum.—In 1827 and 1828, this fine species grew on the very verge or outside of Hainault Forest, now in process of demolition.

The road from Abridge to Romford passes through the forest, having Lambourn on the left, and Chigwell Row on the right. On this road there used to be a gate, to hinder the cattle, etc., from straying beyond the limits. On the left of this gate, up the hill or declivity for a long way, this *Hypericum* grew on the stiff clay bank above the ditch, and protected by the hedge. I never observed it so plentiful nor so large in any other situation. It is extremely common between Lingfield and Edenbridge, on the confines of the two counties Kent and Surrey; but here the plants grow straggling. In Hainault Forest they grow as close to each other as the plants of a thorn hedge.

Erodium moschatum.—For what do the cottagers of Dedham cultivate this plant—for ornament or use?

Melilotus arvensis and *M. officinalis.*—The latter of these two species is the rarer one in the south of England. The former, viz. *M. arvensis*, long before it bore this name, was universally known as *M. officinalis* or as *Trifolium officinale.* Hundreds of specimens in existing herbaria will establish this point. *M. officinalis* was known in England a century before *M. arvensis* was so much as heard of amongst us. Why modern phytographers have assigned to the rare species the name so long borne by the common one, possibly the admirers of Cosson and Germain may be able to tell.

Trifolium elegans, Savi.—"Clews" have been obtained leading to the origin of the above plant in fields about Perth and Nottingham (see 'Phytologist,' *sub voce T. hybridum*); and probably similar threads or packthreads might have been discovered to enlighten the Essex —— (we will not write the word) on the subject of the history of this fine species in this county.

Mr. Hudson made no wonderment of its occurrence about

London a century ago, and there is no reason why his successors should be in the dark about its appearance in its old haunts.

Myrrhis odorata.—I am not so sceptical about this plant as the author of the 'Flora of Essex,' and believe that Blackstone or his annotator found the plant then and there.

This fine species has long been cultivated in cottage gardens; and the name attached to it, viz. "Sweet Fern," is some corroborative evidence that the entry in Blackstone is correct.

Artemisia Absinthium.—A broad-leaved variety of this plant is plentiful in the marshes near Purfleet; and there is not far from it a large-flowered variety of *Salvia verbenaca*—a form that about Cobham Park, on the other side of the river, might pass for *S. pratensis.*

Antennaria margaritacea.—Does this plant still grow in moist meadows in Essex, and particularly in a meadow near Bocking?

Inula Helenium.—It would be desirable to hear how many of the Essex stations for this fine plant still produce it. In the 'Cybele' it is called a native. The author of the 'Flora of Essex' ignores its claims as a native of his county. Is it a genuine, unsuspected native of any of the neighbouring counties?

Crepis biennis.—Mr. E. Forster, in 'Phytologist,' vol. ii. p. 610, states most decidedly that this *Crepis* did not then, 1846, grow at Purfleet; but that *C. taraxacifolia* had been mistaken for the rarer species. How is it that *C. biennis* is entered, on Mr. E. Forster's authority, as a plant of the marshes of Purfleet? He says, "Having searched many times since (1805?) and found no trace of this species, I am well convinced that there is only *Barkhausia taraxacifolia* to be found there."

According to the 'Essex Flora,' this *C. biennis* is the commoner species, being found in seven districts.

According to Mr. E. Forster, *C. taraxacifolia*, recorded as the growth of only two districts is the most widely distributed.

The doctors differ. Who can decide?

Senecio viscosus is registered in the 'Flora of Essex' as an Epping plant. It might possibly grow near Woodford. It is found on the other side of the river, viz. in Kent.

Vinca minor, a doubtful native in 'Cybele,' passes muster in the 'Flora of Essex' as a genuine species. I have seen it at Theydon Bois with variegated flowers, part white and part pink. Varieties with variegated leaves are not uncommon.

Villarsia nymphæoides was planted in its present Essex locality (?) by Mr. Warner. (See Mr. E. Forster's interleaved copy of Pl. Woodfordienses.) *Query*—in what other sluggish rivers of Essex does this ornamental plant grow?

Anacharis Alsinastrum.—The note on p. 300 is obscure: "Supposed to be introduced from America," etc. What has the identity or non-identity of our plant with the supposed American original to do with its generic name? If the species came from America, it is but just that the son or daughter should bear the family name of the sire. If any members of the family live in America, the presumed British connection may legitimately bear the same name? What have the rules of botanical nomenclature to do with the question? What is the name of the new British-born vegetable babe?

If it cannot by its qualifications prove its relationship to some already known progenitor or relative, its sponsor has a right to name it after himself, or after some of his friends, or after some of its own prominent qualities, or from the place of its presumed inroad, or from some fancied resemblance it may bear to something else, either manifested in the animal, vegetable, or mineral kingdom.

What is the meaning of the dependence of *this* plant specially on the rules of nomenclature? All inventions and formations depend on some rule. Poets and painters, and it is presumed botanists also, have established artistic or æsthetic rules whereby they are guided in naming their novelties and discoveries. What is there in this American water-weed to hinder its quietly appearing under one of the several names it already bears? Is the English name *Water Thyme* dependent on the rules of botanical nomenclature, or on the nature, structure, and length of the stem, or on the smell of the plant, or on its habit and habitat? If this name "Water Thyme" depend on the laws of botanical nomenclature, some will venture to question their justice and authority. Water Chickweed would be a more descriptive vernacular title, for we have numerous examples and authorities to rely upon. Where have we an example of Water Thyme either in books or in nature?

Zannichellia palustris, var. *pedicellata.*—The variety is more common than the type in Norfolk and Suffolk.

Schœnus nigricans.—Whereabout in the fens at Tilbury Fort does this Rush grow?

The above is a charitable attempt to supply some of "the deficiencies" of which the author says that he "is well aware." Something more on the same subject is in hand, and will be offered another time. *Ne quid nimis.*

EAST AND WEST INDIAN FIBRES.

A pamphlet was lately sent by a friend on the subject of vegetable fibres; it is a privately circulated tract, named, 'Vegetable Silk and Wool is now being produced from East and West Indian Fibres, namely, Rheea, Plantain, Aloe, Pine-apple, Neilgherry Nettle, Pita Yercum, and similar plants, by J. Hill Dickson's patents, at the East and West Indian Fibre, Flax, and Hemp Works, Lower Tooting, London.'

It appears that, from a small capital of less than £4000 (£3490) and a weekly payment of £29 for working the machinery, a net weekly profit of nearly £600 may be realized (£595), see page 9. Our moneyed classes, who are looking ahead for safe investments in Turkey, Russia, and Egyptian bonds or stocks, who patronize underground railways and other undertakings which barely pay one or two pounds per cent.,—it is fondly anticipated, will be obliged to us for this information. The sceptical will say it is too good to be true. A revenue of above £30,000 per annum yielded by an investment of less than £4000, does at the first glimpse appear incredible.

The botanical name of Rheea-fibre, which heads the list, we have ascertained to be *Bœhmeria nivea*, or *Urtica nivea*, or *U. tenacissima*; for these are synonyms, distinct names for the same plant. It is not in Major Drury's 'Useful Plants of India,' and probably it is not an Indian plant. It is delineated among Jacquin's 'Figures of Rare Plants,' and also in Rumpf's 'Plants of Amboyna,' Herb. Amboinense.

This new material for spinning and textile purposes, which the patentee professes to have introduced, and, what is still more important, has invented machinery for separating the fibre from the stalk without *retting* (steeping),—is also named China-grass (because it grows in China?)—appears to be of national importance.

Even *Jute*, the fibre of a species of *Corchorus*, would be much more valuable if it could be separated from the bark without its

undergoing the retting process (steeping), whereby much of the finer fibres are rotted and the tenacity and strength of the staple much diminished.

Much valuable matter on this subject may be seen in the late Dr. Forbes Royle's excellent work on the fibrous plants of India.

Mr. Dickson's pet material, Rhœa-fibre, appears, from his statement, which has the external evidences of veracity stamped on it, to be superior to jute and to all other fibres hitherto employed in manufactorial establishments. The profits estimated on the use of his machinery and patent liquid are excessive and incredible, but that he has either discovered or introduced a valuable textile material, there is no reasonable doubt. We know that the fibre of many plants of the Nettle family can be, and is, manufactured into cloth, ropes, etc.; and not long ago, in this magazine, the heaps of hopbine were suggested as a fit subject for the experiment. These immense stacks are both unsightly and dangerous. The conversion of their fibre into ropes, sails, paper, etc., would be praiseworthy—probably profitable.

Review.

Notes sur quelques Plantes rares ou critiques de la Belgique. Par François Crepin, de Rochfort. Deuxième Fascicle. Bruxelles: Libraire de Gustave Myolez, etc. 1862.

The admirable author of this *brochure* on Belgian botany is deservedly esteemed as one of the most observant, careful, conscientious, impartial, and energetic students of the science. The prefaces to his several works which have been submitted to the notice of our readers, are remarkable for the excellence of their matter, and for the temperate, generous, and manly style in which they are delivered. The following remarks on *species* are quoted as a sample, and as a proof that the high encomiums bestowed on M. Crepin's labours are not exaggerated. Species, our author admits, is a provoking subject, "un sujet irritant;" it has often been a bad or unproductive subject; it has angered, fretted, and burnt the fingers of some who have meddled with it, and whose knowledge and philosophy and temper were "incompetent to the matter."

The brief reflections here submitted are offered only to beginners and amateurs, "who study botany with zeal, but only as a relaxation from labour; who have only the intervals snatched, as it were, from duty and business, to devote to this pursuit. Descriptive botany is like a mark that everybody may throw his bolt at, and in this respect it has the advantage of other sciences; but, on the other side, it lies under the disadvantage of being sometimes attempted by juveniles, or inadequately enlightened authors, who judge and criticize, without judgment and discretion, the works of men who have made this science the sole object of their studies, and who have spent their lives in observing and investigating the works of nature.

"At all times prudence and moderation are commendable, especially in beginners and amateurs; but they are *necessary*, at the present period in the history of the science, when there are two sects or schools of phytographers entertaining opposite views on vital points; both well sustained by men whose merit and knowledge are incontestable. Young writers and tyros should be extremely circumspect, and beware of reckless, sweeping assertions. They ought to apprehend this truth, viz. that in the works of descriptive botany the species are *badly described* (*grossièrement décrites*), not because the authors had not in general a perfect acquaintance with them, but because it is so difficult exactly to select and express the characters called specific, or to seize those aspects under which natural objects present themselves to our observation.

"When an author, after deep study, has succeeded in comprehending a *new* or a dubious species, it is very often impossible by a simple description to convey to others his apprehensions and conceptions."

The author proceeds with his reflections, and concludes that in some species, quite distinct, the characters are unhappily not very decisive in the *diagnoses* (distinctive marks).

"Beginners," he proceeds, "should not rely implicitly on descriptions, which are necessarily always imperfect. . . . They should examine the objects themselves. By comparing individuals of the same species, and species of the same genus, they will discover that the species are better distinguished by nature than by books, and they will end in perceiving that the descriptions which they thought faulty are better than they appeared

on a first trial, when they barely knew what the author intended to describe."

M. Crepin adds, "Occasionally adversaries of the new school, or the progressionists—or *progresistos*, as a Spaniard might term them—both write to me and tell me *vivâ voce* that they have sent obscure and critical species to several phytographers, celebrated for the specific creations they have inaugurated, and that these have returned the specimens undetermined. My correspondents infer that these *savants* did not recognize their own offspring, and consequently that their learned labour was entirely lost. These conclusions are quite contemptible; the examples sent are always dried, and sometimes (often?) imperfect, and a prudent man would not commit his reputation to such inquirers. Besides, in some genera there are disputed forms and imperfectly known species, which cannot be positively determined without the aid of numerous living specimens."

M. Crepin, with much good feeling, alludes to the loss botanical science generally, and Belgian botany especially, suffered by the assassination and death of Count Limminghe, who consecrated both his fortune and his personal exertions to aid the progress of botany.

The important additions to the Belgian flora, for which all botanists are indebted to our author, are the following:—*Sagina depressa, Cerastium tetrandrum, Glaucium flavum, Arabis muralis, Thlaspi neglectum, Viola mirabilis, Trifolium maritimum, T. filiforme (T. micranthum), Sedum aureum, Rosa coronata, R. ardennensis, Epilobium lanceolatum, E. Lamyi, Cynoglossum montanum, Senecio jacquinianus, Artemisia camphorata, Crepis nicæensis, Hieracium mosanum, Potamogeton planiagineus, Zostera nana, Carex divisa, Bromus patulus.*

Sagina depressa is not a very recent creation. It was distinguished about forty years ago by K. F. Schultz, author of 'Prodromus Floræ Stargardiensis.' As it is just possible that *all* our readers may not be deeply read in the political geography of Germany, for the benefit of the very few be it understood that Stargard is on the right bank of the river Oder, about seventy or eighty miles north of Berlin. (*Note.*—This is not the same *savant* to whom the readers of the 'Phytologist' are indebted for the Flora of Pfalz, and for the emendations and corrections which have been submitted to their notice.) *Sagina depressa* is the

scientific offspring of an older branch of this eminent family. This species or variety is said to be distinguished from *S. procumbens* and *S. apetala* by the close application of the sepals on the capsular valves, after the dissemination of the seed, *i.e.* not spreading out horizontally in a cross-form position, as in the other two previously named species; it is worth looking for. Most of the Belgian plants are also British plants; and there is consequently a greater probability of its presence than of the certainty of its absence in these our islands.

Oxalis stricta is one of the rejected species of England, and one of the indigenous plants of Belgium. On the other hand, *O. corniculata* is rejected in Belgium as an introduced subspontaneous straggler, while in our country it generally passes muster as an unchallenged native.

The Belgian native has in our experience a wider range in England than the genuine English one; but we have never seen it in an unsuspicious locality. This may be the case with many of our unsuspected natives, viz. all that are confined to cultivated places, wastes, rubbish heaps, and similar localities.

On pages 42, 43, and 44, there is an important note on *Epilobium lanceolatum*, a species recently detected at Plymouth by our indefatigable and observant correspondent, Mr. Briggs. We have carefully compared the ample supply of living plants kindly sent from Devon, with M. Crepin's description, and they accord generally pretty well. Some of the Plymouth specimens are rather bushy, but the characters derived from the stem, the leaves, and the flowers are constant in all the specimens examined, and are amply sufficient to distinguish this species from *E. montanum*.

Several years ago (fourteen or fifteen) a form of *E. montanum*, supposed to be *E. lanceolatum*, was sent through the Botanical Society of London to the Natural History Society of Guildford. This form had, indeed, long and lanceolate leaves, and was at least a yard high. It was found at Stapleton, near Bristol, and probably grows there still. Will some Bristol reader be so obliging as to look for this form of *E. montanum*, and send an example of it to the office of the 'Phytologist,' or to A. I., 28, Upper Manor Street, Chelsea, S.W., near London.

Here, with reluctance, we are compelled to stop. Our space will not admit of any more extracts from this publication, which

is one of the most valuable contributions to descriptive botanical literature which it has been our good fortune to notice.

These notes evince that the greatest care has been taken to secure accuracy and perspicuity; and where the author conscientiously differs, as he occasionally does, from eminent living authorities, his views are advanced with singular moderation, and with becoming deference to the opinions of those who have gone over the same course. There is not the slightest trace of egotistic conceit, nor flippancy, nor depreciation of other men's labours, nor an exaggerated over-estimate of his own, in this slim tractate. With a complete mastery of his subject, he excels in the *curiosa felicitas* of style, neither affectedly learned nor deplorably mean; neither too copious nor too concise. The *brochure* is confidently recommended to all our readers; and if they will take our advice, and read it carefully, and ponder its contents, they will both thank the giver of this counsel and probably be better, if not wiser, after the perusal.

Our readers will again, at another time, be edified by more extracts from these judicious notes.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers to Correspondents, and Remarks on Communications received since the 27th of August.

Information has just arrived from an unknown correspondent, that an "Expedition to Vancouver's Island and British Columbia" has been organized in the northern capital. The object of this Oregon association is the collection "of seeds of hardy trees and plants, and the seeds and roots of flowers."

Mr. Robert Brown, a naturalist well known in Edinburgh, has been appointed to proceed to Columbia in the capacity of collector, to carry out the intentions of the association.

Such of our readers as desire to aid in realizing the objects of this society should apply to James M'Nab, Esq., Superintendent of the Royal Botanic Garden, Edinburgh, *Treasurer* to the Society.

Mr. Briggs, of 10, Torrington Place, Plymouth, informed us, August 27th, that the *Epilobium* announced in the August number, p. 286, is not rare about Crabtree, a village two or three miles from Plymouth, adjoining the *Laira*, a large inlet from the sea into which the river Plym flows.

"The plant abounds on a wall in the village, by the side of the Plymouth and Exeter road, intermixed with plants of *Epilobium montanum*,

which is, even when only a few inches high, always distinguished from the former by its broader and not so decidedly stalked leaves."

Mr. Briggs has sent us an abundant supply of living specimens, and it is evident from a comparison of them with *E. montanum* that it is quite distinct from this well-known species.

It appears to agree very well with some published descriptions of *E. lanceolatum* in every character except the size. The plants from Plymouth are all dwarfish compared with examples from the Channel Islands.

A fair correspondent, "H. B.," sent on the 24th of July a specimen of *Spiræa Filipendula*, collected near Henley-on-Thames. Is this a new or unrecorded locality for the said plant?

From "H. H. C.," High Street, Tunbridge Wells, a lively, graphic, and detailed description of a botanical tour of three days between Ostend and Nieuport has been received. Our earliest consideration will be bestowed on this excellent narrative.

Our old friend Mr. Charles Howie, of St. Andrew's, has very obligingly communicated reflections on a botanical stroll along the coast of Fife, from St. Andrew's to Crail, the *eastmost* nook of Fife:

> "Now frae east nook o' Fife the dawn
> Speeled westlines up the left,
> Carles, wha heard the cock had crawn,
> Begoud to rax and rift;
> An' greedy wives, wi' girning thrawn,
> Cry'd lasses up to thrift;" etc.

We have to thank our correspondent in Scotia's ecclesiastical metropolis for another contribution to the botany of the "Kingdom of Fife," for which it is hoped that room will be found in the next month's number.

Our excellent friend "C. J. A.," of Preston, has been botanizing in Norfolk, and appears to have made a successful *raid* on the rarities of Lopham Fen, Burgate, etc. A narrative of his explorations in this rich county will be a treat to our readers.

"W. P.," of 45, Frith Street, Soho Square, has sent materials for a rider to the article on the Oak-leaved Honeysuckle, which has been in hand several weeks.

Our esteemed correspondent "J. S. M." in his homeward journey saw much of *Verbascum thapsiforme* between Vienna and Switzerland, in "the Austrian Highlands, where, like many other plants, it grows much more luxuriantly than in the North." Some good examples of this species have been seen in the Chelsea Botanic Garden.

To "J. B.," of 18, Shawfield Street, Chelsea, the thanks of the editor of the 'London Flora' are hereby tendered for a list of rare plants seen about Chelsea, Mortlake, Wandsworth Common, etc.

We hope our kind patient friend "J. S.," of Perth, will bear with us a little, and the long score against the editor of the 'Phytologist' may be blotted out, or part of the liabilities discharged. For the present be it understood that the new locality for *Aremonia agrimonioides* is not forgotten.

The botany of the southern shores of the Moray Frith, about Portsoy, Banff, and up the strath to Dufftown, will be a treat to those who know the 'Northern Flora' of our early and lamented friend Dr. Murray, whose premature death was a heavy blow to the lovers of Scottish botany.

Also, though the plants of Ben Lawers are now about as well known as the botany of Llandudno or Great Orme's Head, the observations of a fresh investigator will either add to our previous knowledge or exhibit the known facts under a new aspect.

The Rev. F. T. R.'s "Gleanings on Braunton Burrows" are in hand, and will be printed as soon as room can be found. Our practice is "First come, first served," or first in hand, first printed. If any contributor avers that this rule is but partially carried out, the impeachment will not be denied. Lately our materials have accumulated far beyond our means of using them; consequently selection was necessary, and hence the delay in completing the "Comparative List," which has now been long in hand. We hope to find room for it before Christmastide.

Let not our Norfolk and Oxfordshire correspondents fancy that they need not redeem their promises after what has been said about a plethora of news; room will be made for their contributions.

Our Yarmouth correspondent obligingly informs us that he has never seen *Œnanthe peucedanifolia* near Ormsby, although in the new 'Botanist's Guide' there is a notice to the effect that it has been found near Runcton, Holme, and Busham; but the author queries the statement. In the same communication it is stated that *Stellaria nemorum* has never been (to the writer's knowledge) found in this part of Norfolk, *i.e.* the south-east, east of Norwich and south of Cromer. Item, that *Glaux maritima* has been mistaken for *Frankenia lævis*. Probably *Lepidium ruderale* has been a slip, and our excellent correspondent W. Winter may have meant *L. ruderale* and written instead *L. latifolium*. There is a suspicion lurking in some minds that *Lepidium Draba* has been made the substitute for *L. latifolium* in the 'Flora of Essex.' *Lepidium Draba* abounds in the valley of the Thames; *L. latifolium* has long disappeared in this district.

Our obliging correspondent "H. G. G." is informed that there is a notice of the rare white variety of *Lamium purpureum*, observed by Mr. Sim near Perth, and recorded in the 'Phytologist.'

The variety *alba* of *Prunella vulgaris* is common in some parts. We have seen it abundant at New Brighton, and it is not very rare on heaths near London.

Mr. Sim's notice of *Campanula Trachelium*, var. *alba* or *album*, shows that this variety, like the common form, is widely distributed. It has been observed in Surrey. Probably it is as frequent or as scarce as the white variety of the commonest *Campanula*, or Harebell.

We do not know if *Centaurea solstitialis* is known as a Kentish plant; a record of its appearance there is unknown to us. "S. B.," of Sydenham, sent the plant from a Clover-field at Bickley, near Bromley, in Kent, only a few days ago.

Before concluding these notes on the general subjects gleaned from letters received since the copy of the September number was sent to press, it may be added that our observant Henley correspondent has detected *Tulipa sylvestris* and *Campanula patula* both in his neighbourhood. Are these plants new to the flora of Oxford? A more detailed notice of his discoveries will appear in another part of this Journal.

Finally, the Editor hereby gives notice that some doubts have arisen in certain quarters about the nomenclature and history of the two yellow Melilots, *Melilotus officinalis* and *M. arvensis*.

There is no doubt about the specific distinctness of the two plants, for they differ in altitude of stem, denticulation of leaflets, length of flowering cluster, colour of flowers, and above all in the form of the legume and in the number of the seeds.

The species now called *M. arvensis* is a taller plant than *M. officinalis*, not quite so bushy, or having the branches less divergent; also the denticulations, or teeth, are longer and broader in *M. arvensis* than in *M. officinalis*. The spike, or cluster, is very much longer and laxer in the former than in the latter, and the legume is not hairy, but blunt, and many-seeded (?) in *M. arvensis:* this organ is elliptical, tapering, and two-seeded in *M. officinalis*.

Melilotus germanica of Lobel (see 'Observationes,' p. 501) appears to be what is now called *M. arvensis;* and *M. italica* of the same author, figured in the same page, is more like the figure in 'English Botany' than the other on the right-hand side of the page. Gerard and Parkinson's figures are probably from the same original as Lobel's.

Professor Martyn's figure in 'Flora Rustica' has more resemblance to *M. arvensis* of modern botany than to *M. officinalis*.

In Gerard's time, the latter was so plentiful in Essex that it was become a serious nuisance. "There cannot be a worse weed," wrote Professor Martyn, 1792, "among bread-corn, for a few of the seeds ground with it spoil the flour by communicating their peculiarly strong taste" (vol. ii. p. 72).

The figure of *M. officinalis*, 1340, in 'English Botany,' although good enough so far as it goes, is not quite satisfactory, being from an immature example; and consequently the legume and seeds are not represented. The figure in the Supplement is better, having the fruit represented; notwithstanding this, we are not quite satisfied that what is called *M. arvensis* is the plant which has been recently discovered; but, on the contrary, our impression is that in the south of England *M. arvensis* has been generally collected, and believed to be *M. officinalis;* and this is the belief of other collectors who have been sounded on this subject.

It is surmised that nearly all the examples of the yellow Melilot now existing in the various herbaria of British plants collected during the present and preceding centuries, are what is now called *M. arvensis*. To clear up this question, it is particularly requested that botanists will transmit loose, spare specimens of their yellow Melilots either to A. I., 28, Upper Manor Street, Chelsea, or to 45, Frith Street, Soho, London. It would be desirable to have the localities, and the time of their collection, on a ticket accompanying each specimen.

We are pretty certain that *M. officinalis* appeared only recently, within ten or twelve years, in Surrey or near London. *M. arvensis*, on the other hand, has been familiar to all the older botanists for many years.

Also all the figures in the old herbals agree better with *M. arvensis* than with *M. officinalis;* and in some modern works, for example in 'John's Flowers of the Field,' the figure agrees better with *M. arvensis* than with its relative.

Our worthy friend and correspondent W. Ashley, of Sheffield, is requested, when quite convenient, to send us the stations for *Erodium maritimum* and *E. moschatum* in Wales, and those for *Achillea decolorans*, *Geranium pyrenaicum*, and *Campanula rapunculoides* in Yorkshire.

Geranium sylvaticum.

Geranium sylvaticum has this day been brought in to me from what I believe to be an entirely unrecorded station, viz. near Llanwddyn, about fourteen miles from this village; it is a very out-of-the-way place just within Montgomeryshire, and in a secluded recess on the south-eastern slope of the Berwyn ridge. I do not at all know the species as a Merionethshire plant, and, so far as I can find, we had no nearer locality for it than Shropshire; and the few habitats given in Leighton's 'Flora' are all from a part of that county furthest removed from the Welsh border. It may be looked upon as a good find, and a very interesting addition to our North Wales flora. I am indebted to our kind friend John Jones, parish clerk of Llandderfel, for this Geranium.

July 12th, 1862. William Pamplin.

Oak-leaved or Sinuated-leaved variety of the Common Honeysuckle.

I send you a curious instance of variation from the ordinary form of leaf in a wild Honeysuckle growing here. The plant is growing at the root of an Oak, and in the last four or five seasons has had all the leaves of the usual texture of the Honeysuckle leaf, but a large proportion of them, sometime a whole branch, with the sinuated margin of those of the Oak. Some of the numerous readers of the 'Phytologist' may perhaps be able to adduce a similar instance of two distinct plants growing close by, and one partaking in some way or other of the nature of the other, and explain how in the present case the variation is to be accounted for. The plant this summer has lost its leaves, but should it recover another season, is it probable that the plant is sufficiently impregnated with quercine juice to raise a permanent Oak-leaved plant from an Oak-leaved cutting?

Southgate, August 13th. F. Walker.

A Rider to the above.

Periclymenum foliis quercinis, Merrett's 'Pinax,' p. 92.—"Non procul Oxonio," Mr. Jenner. Found first near Oxford, by Mr. Jenner (see Mer. Pin. as above), and afterwards by Mr. Knowlton on the way from Hitchin to Wembly. (Raii Synops. Dill. Ed. 458, 459.)

Periclymenum fol. quercinis, Mer. p. 92.—"Caprifolii non perfoliatum, foliis sinuosis" (Inst. Rei Herb. Tourn. 108). Honeysuckle with sinuated leaves. In white heathwood near Harefield, plentifully. (Blackstone, 'Plantæ circa Harefield,' p. 75.)

Baxter (honest and modest man) tells us he *himself* has found it in (1) Berks., (2) Oxon., (3) Warwick; it is also recorded by Baxter as from (4) Norfolk. (Baxter, Brit. Bot. vol. iv. p. 287.)

Aiton gives this variety (*P. quercifolium*, δ) a prominent place, referring to Merrett. (Hort. Kewensis, vol. i. p. 378.)

Loudon also gives this variety a paragraph, and even notices another, or a *sub*variety of it. (Encyclop. Trees and Shrubs, p. 528.)

Milne and Gordon enumerate no fewer than six places where this variety grows; the first between Ilford and Barking, in Essex. (*Nota bene*: this has been overlooked by the authors of the 'Flora of Essex.')

Meteorology of Montreal.

Mean temperature for the year 1861, 41·72° Fahr.; lowest, 8th February, 37·1° below zero, or 69° below freezing; and the highest, 99·7 : giving a yearly range or climatic difference of 136·8°.

The warmest day in the year was the 10th of June, viz. 81·1° mean temperature; at 10 P.M. it was 76·7°, at 4 P.M. 95·8°, and at 3 P.M. 96°; at night it fell to 60°.

The coldest day of the year 1861 was the 8th of February, mean temperature 23·5° below zero, and 53·50° below freezing.

Vegetation.—Currants and Gooseberries were in leaf on the 16th of May; wild Strawberries in flower the 24th; Dandelion in flower the 23rd; Currants and Gooseberries in flower the 24th; Lilac in blossom on the 3rd of June; Apple-tree on the 4th; Choke-cherries in blossom on the 6th of June.

Varieties of the common Foxglove.

We have observed here (Llandderfel, Merioneth) some unusual varieties, as regards colour of the flowers, of *Digitalis purpurea;* the pure white is occasionally met with in many places, but in hedgebanks a little off the road leading to Bethel a very curious individual was collected and removed into this garden; I was puzzled for my own part how to designate its colour, and should call it a sort of pale salmon colour, but on appealing to our neighbours the ladies at the rectory, I am told that light fawn colour is the proper description of its hue. Our excellent and observant friend John Jones, clerk, has brought in several distinct varieties. We have also some with lacerated (but not by injury), monstrous, or otherwise irregularly formed corollas. W. P.

July, 1862.

St. Patrick and the Shamrock.

With reference to the note which appeared in the 'Phytologist' for February, I cannot say that St. Patrick did not select the *Oxalis corniculata* to illustrate the Trinity, but it appears to me more probable that he took one of the Trefoils, or Clover, as I have stated in a previous number of the 'Phytologist.' However this may be, would Mr. W. be kind enough to read the following, taken from Dr. W. Bulleyn's 'Book of Simples,' and consider whether the saint might not have gathered the *Viola tricolor*, or Herb Trinity, to signify his doctrine:—"This herbe is called *Herba Trinitatis;* but I read in an old, monkish-written Herball, wherein the author writeth that this herbe did signify the holy Trinity, and therefore was called the herbe of the Trinity; and thus he made his allegorie:—This flower is but one, in which, said he, are three sundry colours, and yet but one sweet savour. So God is three distinct persones, in one undivided Trinity, united together in one eternall glory and divine majesty as well; although the three distinct persons be even so, whose glory is indefinable, yet this glory may not bee comprehended of mortall men nor angels." S. B.

Since writing the above, I have referred to Spenser's 'View of the State of Ireland,' and find the following:—Speaking of the late wars of Munster,

before a most rich and plentiful country, full of corn and cattle, he says "The inhabitants were reduced to such distress, that if they found a plot of Watercresses or Shamrocks, there they flocked, as to a feast, for the time." From this it appears to me that the plant referred to by Fynes Moryson as "having a sharp taste, called Schamrock," is the same as the Shamrock noticed by Spenser, and therefore it is the Watercress, and not the *Oxalis Acetosella*.

Whether the Watercress can be determined to be the true Shamrock of St. Patrick, must be left to heads wiser than mine to decide; all I can say is, it might have been.

The following is in Wyther's 'Abuses Stript and Whipt,' 1613:—

> "And for my cloathing in a mantle goe,
> And feed on Shamroots (Shamrocks?) as the Irish doe."

Winter Garden at Kew.

Great progress has been made in the construction of this edifice. The two 50-feet octagons were completed last year. Next autumn is to see the completion of the grand centre, 212 feet in length by 137 feet in breadth; and votes are now to be taken in the House of Commons, of £3300 for heating apparatus and £1200 for walls for the arrangement of earth beds. When the two wings are also built, the several portions communicating with each other by a long central vista, the total length (including the vestibules) will be 533 feet, and the superficies 48,392 feet, or about an acre and three-quarters. This temperate-house makes the vote for Kew Gardens and grounds again large this year. The estimated expenditure for the financial year now just expiring was £37,398, and for the year about to commence it is £22,283.

Variety of Habenaria bifolia.

I have found here a variety of *Habenaria bifolia* in which all the three anthers are developed; the flowers being of one substance and form, resembling *Goodyera*, and without spurs. G. E. S.

Harrogate, June, 1862.

Malachium aquaticum, *Fries*. (Cerastium aquaticum, *Linn*.)

This plant grows on the bank of the Mersey, near Warrington, along with the closely allied *Stellaria nemorum*, L. The soil and situation appear to be favourable to it, for it is luxuriant. It varies considerably in the number of its styles. Out of 40 specimens examined I found 22 with 6, 12 with 5, 5 with 7, and 1 with 8 styles. Stamens ten, alternate, filaments seated on glandular protuberances. Colour of the anthers greenish-blue. The calyx and upper portion of the stem is closely beset with stalked glands, which secrete a viscid matter and retain small insects, as gnats, aphides, etc. Stem above distinctly two-edged. John Peers.

To the Editor of the 'Phytologist.'

Sir,—I would beg, through your Journal, to inquire the meaning of the following English names of plants:—Fat Hen; Lamb's Quarters, *Atriplex patula*, L.; March Parsley, in Stanmarch, etc.; Mercury's Moist Blood, *Verbena;* Raspberry; Seggrum, *Senecio Jacobæa*, L.; Tentwort, *Asplenium Ruta-muraria*, L.; Hollyhock; Haresbeard, *Verbascum Thapsus*, L.; Hay-

maids, *Glechoma;* Hindheal, *Ambrosia;* Hare-burr, *Arctium Lappa*, L.; Prattling Parnell, London Pride, None so Pretty, Nancy Pretty, referring apparently to the heroine of some popular song or farce, and not very old names, *Saxifraga umbrosa*, L.; Wake-robin; Darnel; Dock; Cowslip; Herb Bennet, as applied to Hemlock and to *Geum;* Herb Christopher, as applied to *Actæa*, *Osmunda*, and *Pulicaria;* Sauce-alone; Chadlock, Chedlock, or Kedlock; Charlock, Carlock—Harlock, in 'King Lear;' Cheet, *Camelina;* Close Sciences, *Hesperis matronalis*, L.; Daffadowndilly; Honeysuckle—the meaning of suckle?—Mazzard, the Bird-cherry; Orach; Paigle; Rampe, *Arum maculatum* L.; Love-lies-Bleeding,—the tale to which it alluded?

48, *York Terrace, N.W.* R. C. A. P.

CLAYTONIA PERFOLIATA.

(See 'Phytologist' for July, 1862, pp. 223, 224.) The precise locality reported as above is a lane, on a bank opposite to a house called "Shrubland," at Gorleston, Suffolk, near Great Yarmouth. I have found it there every spring for the last five or six years. H. G. G.

QUERIES.

Has *Ranunculus Lingua* been observed recently between Rotherhithe and Deptford?

Does *Galeopsis villosa* still grow plentifully among the corn about Sheffield, Darfield, and Wakefield?

Is *Melampyrum arvense* now found at Horsley Bath, near Beeston Castle, Cheshire?

Can any reader verify Grays, Essex, as a locality for *Lepidium latifolium?*

Who has recently seen *Geranium phæum* at Towel, near Maidstone?

Is *Arnoseris pusilla* still found at Petersham, Surrey, and in Tuddington (Teddington) Field, near Hampton Court?

Epilobium angustifolium.—Is the aforesaid plant still growing on Maize Hill, beyond Greenwich? (See Hudson's Fl. Aug. 1st ed. p. 140.)—GALLUS. [Can any correspondent tell "Gallus" if the above topological account is still correct?]

Peucedanum officinale.—Can any Sussex botanist tell the undersigned, if *Peucedanum officinale* has been recently found near Shoreham, in Sussex, and by whom seen?—MENALCAS.

Narcissus Pseudo-Narcissus.—Does the above named plant still grow copiously in woods near Erith, Kent, as it did during the last century?—MŒRIS.

Communications have been received from

T. R. A. Briggs; Sidney Beisly; H. H. Cripps; C. Howie; C. J. Ashfield; W. Pamplin; J. S. M.; T. Moore; J. Britten; John Sim; Rev. T. F. Ravenshaw; Hampden G. Glasspoole; W. G. F. Phillimore; Dr. Macalister; M. A. Walker; Mrs. Merrifield; M. F. Crepin; H. C.; W. P.

RECEIVED FOR REVIEW.

Notes on Books.
The Banffshire Journal, Sept. 2nd and 9th.
The Scotsman, Sept. 13th.
Flora of Preston, Part III.

NORFOLK AND SUFFOLK BOTANY.

Plants of Lopham Fen and the Neighbourhood.

By C. J. Ashfield.

On the 1st of September, 1862, I paid another visit to Lopham Fen. This being nearly a fortnight earlier in the season than the time of my excursion thither in 1861 (see 'Phytologist' for November last, p. 321), I hoped to be able, not only to clear up some doubts as to two or three of the plants found on the previous occasion, but also to add some fresh plants to the list of those then found. This hope was fulfilled to a considerable extent, and the following is a report of the results of my recent investigation. The most important of the doubtful plants found last year was that exceedingly scarce one, *Liparis Loeselii*. I am happy to say that it can no longer be considered a *doubtful* inhabitant of Lopham Fen, I having, on the first of the present month, and also on a subsequent day, found several specimens of the plant, with the flowering stem still existing and the seed-vessels attached thereto, and not at all too far advanced for the complete identification of the plant. On the occasion of my second visit this year, I was accompanied by a botanist from Edinburgh, who was on a botanical tour, and whose chief object in visiting this particular district was the hope of seeing the above-named rarity in one of its few native British abodes. I had the great satisfaction of pointing out several specimens of the plant to him, the greater portion of which we left for the benefit of future botanical investigators. The plant grows on the south side of the river, and belongs therefore to the county of Suffolk, and must be described as *scarce* even there. It is however not likely to be eradicated, as, from its low stature, green appearance, and habit of growing close to the stems of rushes, etc., it is very difficult to find—so much so, that even upon my second visit this year I had a long search before I could find a single specimen for my Edinburgh friend. Another plant about which I was doubtful last year, I found in great plenty upon my two recent visits, viz. *Drosera anglica;* it was growing plentifully in many places, mixed with the other two species, *D. rotundifolia* and *D. longifolia*. I pointed out to my companion the plant resembling the Michaelmas Daisy ('Phytologist' for November last, p. 323),

which was a puzzle to him, as it had been and still is to myself and others. We found most, if not all, of the marsh plants enumerated in my previous list, several of which were new to my brother-botanist. We had some difficulty in finding specimens of *Utricularia minor*, which was plentiful last year. This I conceive to be owing to the scarcity of water in some of the shallow pools in which the plant grows. Shortly after finding the *Liparis*, we crossed the river and entered the county of Norfolk. We continued along the bank of the stream in an easterly direction towards Diss, where my friend was to take the train for Norwich. Among the rushes, etc., on the left we soon espied that handsome plant *Ranunculus Lingua* in considerable quantities. Further on, in the river itself, we met with *Sium latifolium* and *Rumex Hydrolapathum*. After a time we emerged into the high road from Lopham to Bressingham and Diss, and on the hedge-bank to the left, shortly before reaching Bressingham, we saw *Mentha sylvestris* growing in the greatest abundance. At Bressingham my companion and myself parted company, he pursuing his way to Diss, and I proceeding on my return to the place of my temporary sojourn in Suffolk. In woods at Bressingham, *Angelica sylvestris* and *Lythrum Salicaria* were growing most luxuriantly, and *Rhamnus Frangula* and *R. catharticus* were abundant. *Lysimachia vulgaris* was also occasionally to be met with.

Arrived upon Wortham Ling, I soon espied *Cnicus acaulis*, which was plentiful there. In one spot on the Ling, near the bridge over the Waveney to Roydon, there was a considerable quantity of *Spiranthes autumnalis;* and a little further on, in a rather damp place from which the surface had been pared, I observed a number of specimens of *Radiola Millegrana*, which was the last of my recent botanical discoveries in East Anglia.

The above is not a very extensive list of plants, but it is a fair supplement to the article on Norfolk and Suffolk Botany, which was printed in the 'Phytologist' for November, 1861. The species, though few, are of great rarity and interest.

Preston, September, 1862.

BOTANY OF THE CHILTERNS.

Further Remarks on the Botany of the Chilterns.

By C. J. Ashfield.

During a visit of a couple of days to Aylesbury, in September, 1862, I determined to devote the afternoon of one of them to a ramble on the Chiltern Hills, near Wendover, partly for the enjoyment of the invigorating breezes and beautiful views which there abound, but chiefly of course for the purpose of searching for the floral productions of the same hills. I met with considerable success, considering the shortness of the time at my disposal and the lateness of the season, and found many plants not mentioned in the short article published in the 'Phytologist' in April last, p. 118.

I took advantage of a "lift" to Wendover, and, after walking about a couple of miles along the Amersham road, turned to the right at Wendover Dean, and soon began to ascend the hills. I soon met with *Conyza squarrosa* and *Origanum vulgare* by the side of the lane. On arriving about two-thirds of the way up the ascent, I got on the hedgebank to look over into the adjoining field, and saw a very conspicuous-looking shrub in a hedge a little distance off. On reaching it I found it to be *Pyrus Aria,* and I afterwards met with it plentifully in woods and hedges during the day's walk, and in a few places growing with *Viburnum Lantana.* In a hedge nearly at the top of the hill, I met with a quantity of *Euphorbia amygdaloides,* and afterwards saw it growing most plentifully in a beech-wood at the summit. In the same wood grew *Hieracium sabaudum* and some others of that difficult tribe, as well as *Humulus Lupulus, Euonymus europæus,* and the before-mentioned *Pyrus Aria* and *Viburnum Lantana.* About the edges of the wood I found an abundance of *Poterium Sanguisorba, Galium Mollugo, Centaurea scabiosa,* and *Origanum vulgare.* I particularly examined several cornfields on my route, and found numerous plants peculiar to such localities. The most abundant of them, and also the rarest generally, was *Iberis amara.* This plant appears to have a wide range upon the Chilterns, for in July, 1850, I found it growing abundantly near Whiteleaf Cross, several miles distant from the *locale* of my late ramble ('Phytologist,' April, 1861, p. 118). *Linaria minor, Veronica*

Buxbaumii, Fedia olitoria, Scandix Pecten-Veneris, Trifolium procumbens, Galeopsis Ladanum, Agrostemma Githago, Ononis arvensis, and several other species, were plentiful in some of the fields, and in one field I found *Centaurea Cyanus.* I think this plant is becoming much more uncommon than it used to be. In the neighbourhood of Preston, in Lancashire, it is nearly, if not quite, extirpated. Among the short grass on the brow of the hill, overlooking the vale of Aylesbury, grew plentifully *Cnicus acaulis, Gentiana Amarella, Helianthemum vulgare,* and *Thymus Serpyllum;* and in the same locality I observed numerous specimens of *Juniperus communis.* My time was now getting limited, as I had to walk to Aylesbury; so, after duly admiring the view over the celebrated vale of that name, I began to descend the hill. I did not find this quite so arduous an undertaking as I had found the descent of Pendle Hill, in Lancashire, some weeks before, but it was very steep and slippery for some distance. The descent of a steep hill is not so long an operation as the ascent of it, but I am not at all sure that it is not as laborious a one. Arrived at the bottom of the hills, I struck across the fields towards my destination, continuing to botanize in all the likely spots I passed. At the edge of one of the cornfields I observed *Cichorium Intybus* in some quantity, and in a pasture-field *Pimpinella magna* and *P. Saxifraga. Sison Amomum* and *Dipsacus sylvestris* grew plentifully in many of the ditches, and *Clematis Vitalba* and *Humulus Lupulus* profusely adorned many of the hedges. In a ditch on the right-hand side of the road, just before reaching the outskirts of Aylesbury, I found a considerable quantity of *Helminthia echioides.*

During my walk, I bore in mind the plants inquired for in the 'Phytologist,' vol. i. p. 108, viz. *Habenaria chlorantha, Bupleurum rotundifolium, Ajuga Chamæpitys,* and *Spiranthes autumnalis,* but did not find any of them. It was probably too late in the season for some of them.

BOTANY OF THE KINGDOM OF FIFE.

A Walk along the Seashore from St. Andrew's to Craig, or what is locally known as the "East Nook of Fife," in the Summer of 1862.

Early in the morning of the 7th of July we examined the baro-

scope, where the mercury was still retaining its lofty position, and the horoscope we found at 5.30 A.M.; we loaded the corners of our vasculums with our *viaticum*, or the necessaries for the day, and betook ourselves through the still quiet, slumbering loneliness of the streets of the ancient city. Passing along by the ruined walls which enclose the lands once the site of the monastery of the Augustinian order of friars, we found the usual associate of old walls, viz. *Parietaria officinalis*. On this wall, which is in good preservation, twenty feet in height and four in breadth, among the green foliage of common plants, were readily observed the tall stems and globular umbels of *Allium vineale*, playing wanton gambols with the sea-breeze.

Among more common plants, were abundance of *Malva rotundifolia*, *Hordeum murinum*, and a few patches of *Poa rigida*.

Passing over the bridge that spans the Kimp Burn, and searching the sandy grounds south of the harbour, locally known as the "East Bents," we found among plants of more general distribution, *Poa loliacea* (*Festuca loliacea?*), *Elymus arenarius*, and *Triticum junceum*, in abundance.

Ononis arvensis was in profusion, with lighter and darker shades of colour. *Centaurea scabiosa*, blue, pink, and pure white, overtopping the short, growing corn, presented a very striking appearance along the margin of the field. (We never saw *C. scabiosa* with blue flowers, but have seen *Scabiosa arvensis*, or *Knautia arvensis*, with many-coloured flowers.)

Silene noctiflora was also in abundance. We visited again the station of *Cnicus arvensis*, var. *setosus*, where we found it at a separate place, sixty yards distant; this variety still retains its distinctive appearance in the two stations, among the East Bents. We have also found this variety on the Tent Muirs several years ago. *Thalictrum flavum* was also abundant, associated with *Tragopogon pratensis*.

Passing along the rugged cliffs of Kingkell, where, from the grassy banks above the Maiden Rock (a naked rock, covered with the grey Lichen *Ramalina*, and enlivened with the twining stems of the Honeysuckle, *Lonicera Periclymenum*), we arranged our plants collected from the cliffs, noticing *Solidago Virga-aurea*, *Gymnadenia conopsea*, *Habenaria viridis*, and *Helianthemum vulgare*, with plants of more general distribution. The view of St. Andrew's from this point, embracing the ruins of its castle and cathedral,

is considered one of its best views under the impress of the morning sun. The lovers of geology, while our kettle was boiling our coffee, did not fail to take drawings of various rocks, illustrative of upheavings and strata (*problematical?*) of that science. It being low water, they were thus accurately deciphered from the cliffs.

Having regaled ourselves with the cup of peace made from mineral water, which tastes much of iron, we pursued our course along the beach, passing Kingkell Cave, a natural chasm extending thirty-five feet. Further onward we suddenly turned into view several singularly formed rocks, two of which are termed the "Rock and Spindle;" when these rocks are viewed in a certain position, they certainly bear a resemblance to a monster representation of the old domestic spinning-wheel.

Passing onward, we found the Buddo Rock, so named, being a huge mass of isolated rock, with an accessible cleft up the centre. After crossing the Kenty, and searching the cliffs and rocks, we arrived at Fife Ness, where we gathered some pieces of wreck from the coast, slung our plaids round for a tent, kindled our fire, hung our coffee-kettle on the right-angled gipsy triangle, and lay down close together sheltered from the cool sea-breeze, conversing about the associations of the locality, when Danish invasions in the ninth and tenth centuries were something to dread, in 882, when Constantine, king of Scotland, is said to have been put to death here in a cave.

We found the remains of what appears to have been a rampart, known still by the name of the "Danes' Dyke." We, as simple herborizers, were happy that our political connections with the Danes were now of a more pleasant character. In 1538, the bride of James V. landed here, and was met by the king, and conveyed to St. Andrew's. This princess was the mother of Mary, Queen of Scots.

We thus graced our cooking operations with a sermon on stones and flowers, as illustrative of past ages when fewer earthly comforts were the lot of our forefathers. It becomes us to render thanks for the land we live in, and for those that bear rule.

With sharpened appetites, ample justice was done to the good things enjoyed on the rock, and, as the host is generally noted for his providing and supplying, our hosts will be long cherished in our memories.

On this occasion we collected the following plants :—*Geranium sanguineum, Rumex* with long, undulated or crisped leaves, *Ligusticum scoticum,* abundant among the rocks; by the margin of the sea, *Artemisia Absinthium* sparingly, *Catabrosa aquatica,* etc.

By Pitmilly Links, growing by the sea, margin of cultivated fields, *Cynoglossum officinale* with its downy foliage and small dark wine-coloured flowers, *Blysmus compressus* and *rufus.*

A single specimen of *Hyoscyamus niger* was all that represented the many gigantic specimens which we have formerly observed in this locality, also *Asplenium marinum,* Fife Ness, that had escaped from the fangs of the merciless fern-fanciers.

Passing on towards Craig, as we rounded the north side of the entrance to the Firth of Forth, we came upon a fine-spread lot of the prince of British plants, *Lithospermum maritimum,* growing by high-water mark, in a gravelly lake. We have found it formerly north of Fife Ness, but failed this time in finding it except in this spot.

By the cliffs at Craig we found the common Wormwood, *Beta maritima,* and what has been registered as the native Cabbage. This we found in a rough state, with Parsley, Parsnips, and various other plants, tributaries from the gardens of Craig, where such plants will readily be found where rubbish from gardens is cast out, and circumstances favour their development.

E. H.

EAST ANGLIAN BOTANY.

(*From a Correspondent: to the Editor.*)

Sir,—Induced by a strong desire to investigate the vegetable productions of our native land, and allured by the notices of Norfolk botany which have recently appeared in the 'Phytologist,' we decided last July to visit this, the most eastern part of the kingdom.

The Great Eastern Railway supplies a cheap and expeditious conveyance to Norwich, Lynn, Yarmouth, Lowestoft, etc., by two routes; one by Bishop's Stortford, Cambridge, Ely, and Downham, and the other by a somewhat shorter route, through Romford, Colchester, Ipswich, etc.

The former was selected, because it affords a greater variety of soils, scenery, etc., and also because it passes through about seventy miles of the county of Norfolk, from Downham to Yarmouth, by Thetford, Wymondham, and Norwich.

The valley, or basin of the Lea, as geologists delight to call these alluvial tracts, probably because there is no resemblance between the utensil called a basin and a river-vale, is very picturesque, especially on the Epping Forest side. The elevation is far from considerable, not much higher than the ball and cross on St. Paul's, not nearly so high as Shooters' Hill in Kent; but its slopes are so green, its meadows so fertile, and it is so gracefully feathered, fringed, and intermixed with rows, plantations, and detached groves of trees, and its eminences are so densely covered and crowned with woodlands, that it constitutes a very admirable English landscape.

Its fertility is a source of great wealth to the owners and occupiers, and its gentle domestic beauties are sources of much enjoyment to the traveller who has any taste for rural scenery, and any enjoyment of the quiet unostentatious beauties of nature.

From Bishop's Stortford, as far as Saffron Walden, the scene is varied, the soil is chalky or marly, and the country is less pastoral and more agricultural; but it, viz. this tract, has its beauties as well as its utilities.

About Audley End, as every one knows who has travelled from London to Cambridge *viâ* Epping, the aspects of nature, heightened by art, are very agreeable. Much of this pleasure is lost in these times of utilitarianism, for the rail does not pass through this noble park as the road did and still does.

Cambridge is not a very picturesque county, but, happily for the traveller northwards, he enters it on its most attractive side, between Royston and Linton. Here he will observe the celebrated Granta, whose banks both the Muses and Minerva have selected for their habitation, where their temples are frequented by devoted worshippers. Gogmagog Hills are on the right; and by rail and travelling by express the exquisite chapel of King's College is speedily in view. This architectural celebrity is not a very striking object from the railway; to be seen and appreciated, the interior should be inspected. But our object was the natural produce of the vegetable kingdom, not architecture, even its admired examples, of which this is one of the most eminent.

From Cambridge to Ely, and far beyond it, the country is quite flat, consisting of a part of what is called the Eastern Lowlands; the soil is uniformly peaty, and the surface is intersected by ditches and huge drains, the former filled with stagnant water, and the latter, which receive the contents of the former, flow as sluggishly as the Arar, which Cæsar describes as moving with incredible smoothness, *incredibili lenitate*.

Ely cathedral is a very noble pile, and the view from the station, viz. part of the choir and the south aisles, nave, and transept, is sufficiently imposing to satisfy persons who have seen and admired the chief ecclesiastical structures of England. The west front of Ely cathedral is sublime. The breadth, the elevation, the towers, the entire façade, the whole and the individual parts are extremely grand. The examples of the Norman style, in all their vastness, massive strength, and admirable proportions, are to be seen in the western front. As aforesaid, we were not, like Dr. Syntax, travelling in search of the picturesque, and therefore were content to admire this majestic specimen of medieval architecture from the window of the carriage in which we sat. Many years ago, a couple of days were spent by the writer of this paper in admiration of this cathedral. He then travelled all the way on foot from Peterborough, about thirty miles, solely to see it. The verger of Peterborough cathedral, from one of the towers, showed him the twin towers of Ely, and he presently started, about midday, across the fens, and reached Chatteris late in the evening. The next day reached Ely; and that and the following he spent in surveying and admiring this ancient pile.

The cathedral is well situated, better than most: this in England is the exception, and not the rule. Lincoln is also another very remarkable exception. Winchester and York are extreme examples of the rule, viz. built in hollows overlooked by mean erections. Ely cathedral forms a striking and singular contrast to the meanness of most of the civic buildings here; about thirty or forty years ago these were little superior to the clay- or mud-walled thatched houses of Potton, in Bedfordshire.

After crossing the North or Little Ouse, the railway enters Norfolk, at or near Brandon station, on the old way of the pilgrims to Walsingham. Brandon however is not in Norfolk, but in Suffolk, which wedges itself in between Cambridge and Nor-

folk at this point. Between this station and Thetford, the ancient capital of East Anglia, the railway passes almost parallel to the river, over a bare, sandy, and mostly barren country, only here and there spotted with trees and cultivation.

From Thetford, an ancient place which exhibits many remains of its former greatness as a political and ecclesiastical capital, now much decayed, the railroad passes through a very extensive heath to Harling Road, Eccles, and Wymondham, a town notorious in modern times for its vicinity to Stanfield Hall and Potash Farm, the respective residences of the miscreant Rush and his landlord, who was cruelly murdered by one of his tenants, Rush aforesaid. The residence of Jeremy, the squire, is an Elizabethan hall of some architectural celebrity.

From Wymondham to Norwich the country improves both in fertility and picturesque appearance.

On another occasion the great expanse of flat, mostly marsh land, between Norwich and Yarmouth, will be described.

We reached Yarmouth, 146 miles from London, by Cambridge, about half-past seven, our journey occupying seven hours and a half; but as there were long stoppages at Cambridge, Ely, and Norwich, and shorter ones at Bishop's Stortford, Wymondham, and Reedham, the time spent in motion did not occupy above six hours.

From our experience of this route, the Great Eastern Railway is entitled to the praise of being a comfortable line to travel by. There was no overpacking of the carriages, nor did any disorderly crowds rush in upon the London passengers, as sometimes occurs on lines of railway which pass through more populous parts of the country.

On the 14th of July our botanizing commenced in this, to us, hitherto unknown part of England, and between Yarmouth and Lowestoft was the locality selected for the first onset.

After crossing the river by the ferry adjoining the Nelson monument, our attention was attracted by the vegetation about Gorleston, which yielded no exotic stray plants. It was rather early in the season for this kind of botanizing.

Carduus Marianus (Silybum), *Petroselinum sativum*, *Onopordon Acanthium*, *Artemisia Absinthium*, and some other half-naturalized or quasi-British species were all that met our notice.

When the point was rounded at the confluence of the river

and the ocean, on a very steep grassy bank, but not near a garden, *Saponaria officinalis* was well established. While looking at this well-naturalized British species, some children on the cliff shouted to us that it was poisonous. This we had never heard before. Many plants have the vulgar and unenviable reputation of being dangerous, but this was the first time that deleterious qualities were popularly attributed to this species. *Salvia verbenaca* grows commonly on dry banks here, and in many other parts of our perambulations.

The village of Gorleston is built on the cliff on the south side of the river Yare, which separates it from Yarmouth; and this cliff extends along the shore all the way to Lowestoft, which is about eight or nine miles distant.

Our walk was sometimes on the sandy shore under the cliff, and sometimes on the verge of the cliff, where there is a good path, from which good sea and land views are obtainable, and also good botanizing is afforded in the adjoining fields. The weather was all that could be wished, not too warm, for the day was cloudy, but there was a brisk wind from the east or south-east, the usual sea-breeze.

The crops were wheat, barley, and oats, with here and there a field in turnips not far advanced, and a few fields where the hay crops had been carried off. In one of these, among the Clover, abundance of *Orobanche minor* grew. *Apera (Agrostis) Spica-Venti*, or else its near relation *A. interrupta*, was a rather common cornfield plant; and *Silene anglica* was far from uncommon. Here however it attained to a height and luxuriousness which it rarely reaches in Surrey. *Silene noctiflora* grew beside it here, a species which has rarely or ever appeared with *S. anglica* in Surrey, except in places where both grew accidentally but not naturally. Their seeds were probably conveyed to their place of growth by accident.

Lychnis Githago and *L. vespertina* were concomitant species.

Papaver hybridum and *P. somniferum* were not quite so plentiful as *P. Rhœas*, but far more so than *P. Argemone*.

Valerianella dentata? is another common cornfield plant of this district. *Euphorbia exigua* and *Fumaria officinalis*, *Knautia arvensis*, *Lycopsis arvensis*, *Anagallis arvensis*, and still commoner species, bring up the rear of the above rather brief list of agrarials.

The cliff plants were very scanty, and of the humblest order, considered as objects of rarity, though *per se* (intrinsically) tall and showy. *Linaria vulgaris* was just coming into flower, and *Echium vulgare* was in the perfection of beauty and dignity; *Daucus Carota* was also plentiful and luxuriant. *Reseda Luteola* helped to cover the bare, sandy clay on this part of the coast.

About a mile from Corton, on the Yarmouth side, there is a long, narrow slip of heathy and furzy ground, where several not rare plants grew, viz. *Hieracium umbellatum, Hypericum humifusum, Polygala vulgaris,* of all its colours, white, red, and blue; also *Silaus pratensis, Solidago Virga-aurea, Orchis maculata,* etc.

The seashore plants were far from numerous. *Note.*—There is no saltwater marsh on all the coast between Gorleston and Lowestoft; for some miles beyond the former, the sea, when the tide is at the highest, washes the base of the cliff. Beyond Corton there is a considerable extent of sand-hills, Dunes or Denes, with some grassy flats between the sand-hills and the cliff.

On the wet sand, or on sand wetted with the tidal water, between Gorleston and Lowestoft, about midway, plenty of fine specimens of *Cakile maritima* were procured.

Most collectors know to their sorrow that this plant does not dry very readily, and good examples in this state are not very common. *Salsola Kali* was seen at or near the same part of the shore, and myriads of *Honckeneja peploides. Sedum anglicum* was nearly as plentiful as it is on the Welsh mountains in Merionethshire. *Elymus arenarius,* mostly in flower, was also abundant on the dry sand-hills on the shore between Corton and Lowestoft. The Trefoils and Medicks were of the very commonest kinds.

About Corton *Sinapis nigra* grew on the cliff, with *Carduus tenuiflorus* and *Chenopodium Bonus-Henricus* in grassy parts about the village.

On a single spot by the roadside, not more than a quarter of a mile from Corton, on the Lowestoft side of the village, and on a heath which is doomed to enclosure and the encumbrances of villas, there was a fine patch of *Tillæa muscosa* discovered. We have heard that it is to be seen in every bare part of the many heaths in Norfolk and Suffolk, but, though we were on several heaths, we only observed this rarity here, barely half a mile from Corton. This was the only spot where it was seen by us.

Under the cliff, and not far from the lighthouse, *Cynoglossum officinale* and *Anagallis tenella* were detected.

The soil of the narrow slip between the sea and the marshes is a sandy clay, and, as usual when the cliff is either cretaceous or argillaceous, the slope is landwards, and the sea is impinging on the land. The cliff ends or is interrupted by the river and the new town of Lowestoft, which is built on the beach; the old town is on the cliff. The botany of this part of the coast did not turn out so productive as was expected.

Reports reached our ears from more than one quarter that all the exotic species seen at Wandsworth steamboat pier during the last ten years were to be seen at Lowestoft. This may be quite true, though we did not see one of them; and we pored into many odd nooks, waste places, and looked at several rubbish-heaps, without having the good hap to see anything but the common shore, and harbour plants, and not many of them.

Gorleston is a far more likely locality than Lowestoft, because it is a place of much trade, and has intercourse with several parts of the world; but here at Lowestoft we saw nothing uncommon.

After we had been to Lowestoft, a kind correspondent told us that there was good botanizing inland, from this town especially, on one of the "broads" which abound in this eastern nook of England.

About five o'clock we turned our heads to the north, and reached Yarmouth in a very small fraction of the time spent in coming here. The rail is a speedier mode of transit than the marrowbone stage, but it is not so suitable for botanical operations.

On Tuesday, the 15th, St. Swithin's day, we travelled in the same direction as on the previous journey, only through the marshes, and not by the seashore nor on the cliff. Our course was along the right, or Suffolk, side of the Yare, which, above Yarmouth harbour, forms one of the broads so common in the two eastern counties, and appears when it is high water rather more like a lake than a river.

This was by far the most important district of both the counties which we had the pleasure of searching during our late visit. Much could not be done in a few days, but our experience convinces us that it is a rich tract. St. Swithin's day, the 15th of July, also the 19th and 21st of the same month, were spent in

this valley of the Yare and Waveney, the results of which are now to be communicated to our readers.

On the 15th our walk was along the right bank of the Yare as aforesaid. All the rivers here are navigable, and are all enclosed by a high bank to prevent the tidal waters and land-floods from overflowing the adjoining marshes; these are mostly meadow or pasture, but there are here and there some cultivated fields.

The broad on the Yare, named Braden, was almost full of *Zostera marina*,* not yet in flower nor fruit. *Fucus vesiculosus* and a few other marine plants were attached to the stone-lined water wall; also here and there grew *Artemisia maritima* and *Apium graveolens*, both on the earthen mound and at its base; *Hordeum maritimum* was about equally common; *Glaux maritima* and *Lepidium ruderale* were seen everywhere, the latter on the top or sides of the bulwark, the other on the moist ditch-sides below.

Note. Our conviction about the reported growth of *Lepidium latifolium* and *Frankenia lævis* in this neighbourhood, *i. e.* near Yarmouth, is that these two plants are equally uncommon or scarce everywhere on the eastern coast; and furthermore, that *Glaux maritima* and *Lepidium ruderale*, through some oversight of the reporter, were elevated into the place of the very much rarer plants reported. We do not insinuate that the *Frankenia* and the rare *Lepidium* are not there because we did not see them; only an error is suspected when two plants are omitted usually incorporated in such lists, and which are moreover so abundant that they could not have been unobserved.

In the ditches we saw plenty of *Potamogeton pectinatus*, *P. gramineus*, and other still undetermined species; also *Juncus cœnosus*, *J. obtusiflorus*, *J. acutiflorus*, and probably *J. maritimus*. *Scirpus maritimus* was seen everywhere, and *Althæa officinalis* was far from scarce, but at this period, 15th July, not yet in flower. *Rumex maritimus* or *R. palustris*, possibly both, were

* We did not know when we saw thousands of acres (square miles?) covered with the long, narrow, floating leaves of this plant, that it was destined to be a successor to the far-famed Sea-Island Cotton of the Southern States of America. We do not know what amount of fibre it yields, nor are there as yet any reliable accounts published about the fineness and tenacity of its tissues, but plenty of the plant is attainable, and at no great cost.

among the rarities observed by the river's brink. Of course *R. Hydrolapathum* abounded everywhere, both in the river and in the ditches.

Ranunculus hirsutus was seen on the banks and bare places of the meadows, equally plentiful as *Trifolium fragiferum*.

(*To be continued.*)

EXTINCT SPECIES.

Remarks on the 'Flora of Essex.'

In preface, E. Fl., p. xvii., it is recorded that "The plants supposed to have become extinct are not numerous," less than a dozen species altogether. (See list, p. 423.) The table of which p. 423 forms a part, begins on p. 417 and ends on p. 427, and consists of three columns, headed respectively—COMMON; RATHER LOCAL; VERY LOCAL. The first column contains the generally distributed plants, the second those more local, and the third those very local; the extinct plants appear in italics, without any mark prefixed. They are the following:—*Crambe maritima, Diotis maritima, Vaccinium Oxycoccus, V. Vitis-Idæa, Statice occidentalis, Sonchus palustris, Ophrys aranifera, Herminium Monorchis, Botrychium Lunaria.* All these are in the very local class.

It would not be worth the ink with which it is written to discuss the question about the nativity or non-nativity of the two species, *Brassica oleracea* and *Crambe maritima*, both of which are said to be "now lost in Essex."

It may be assumed that the Sea Cabbage is the same specifically as the domestic or cultivated esculent, which most botanists take for a fact well or ill founded, for it would not be easy to prove the fact; for centuries would probably elapse ere the wild, open, bitter Cabbage of our coasts changed into the close, sweet, esculent vegetable of our gardens.

There are many distinct varieties or races of the Cabbage, *Brassica oleracea*. There are open Cabbages and close Cabbages. Again, some of the open sorts have crisp, curled leaves, while the leaves of other kinds are flat at the margin. Some of the close or genuine Cabbages are white, others grey, and others of a beautiful dark purple. The instructive part of this history

follows; the cultivator sows seeds of the red, white, or grey Cabbage, of the Savoy, of the curly Scotch Kale, or of Brussels Sprouts, or even of Brocoli and Cauliflower, and his seeds produce, in ninety-nine cases out of a hundred, plants which possess the qualities of their parents.

The cereals are quite as permanent as the *Brassica* tribes.

Scientific systematists call all these permanent varieties 'races,' and expect that the unscientific observer should be content with a name without a definition and a history. If races reproduce themselves without variety, what, it may humbly be asked, is the essential distinction between a race and a species? A variety, we are taught, has a tendency to return to the original type or state; and this is one of the means on which botanists rely to test the validity of species. Why are not races called species, as they possess distinctive characters whereby their owners and cultivators distinguish them, and they are permanent or quite as constant as species are? Is there nothing to be learned from this fact?

Has the *Crambe* any higher claims to the title of spontaneous and native than the *Brassica* has? They are both maritime species, and require the sea air and the salt spray or dew to produce them naturally. The Jersey Cabbage, which attains a height of several yards in the moist climate of the Channel Islands, becomes a humble plant of a foot or two high in inland situations.

Diotis maritima, one of the presumed extinct Essex plants, is not increasing on our shores. It loves the more brilliant coasts of Southern Europe, Greece, Italy, Spain, and the Mediterranean. It is one of the children of the South, and probably got a settlement on the borders of our misty isles before the establishment of the coastguard, the preventive service of the author of the 'Cybele.' This very rare southern species is to be deemed very lucky in escaping that limbo of British plants, the expurgatorial lists appended to the 'London Catalogue.'

The two Epping Forest Vacciniums may be rediscovered. Has the forest been the residence of any observant local botanist since Mr. E. Forster's decease?

The same hope may rationally be entertained about the two missing Orchids. The authors will see in the 'Phytologist' notices about the reappearance of these plants in other places after having been missing above half a century.

The rare *Sonchus* is likely to reappear in its old haunts near Blackwall. The marshes about West Ham, Plaistow, and Barking, where it was seen not above twenty years ago, may grow it again. The ditches are of necessity cleared out now and then, and the locality consequently must be utterly or temporarily destroyed, but some roots, or young plants, or seeds, might lurk for years in the *débris* of the rank vegetation, and in course of time surmount all the obstacles to their development.

Statice occidentalis is on the coast of Kent associated with the Sea Cabbage, *Brassica oleracea;* and as there are no chalk rocks on the Essex coast, where both these associates find a congenial home, they may be equally stragglers, and never were true natives of Essex. The only real natives lost may be but two, *Crambe* and *Diotis*.

In the table of adjacent distribution, or lists of plants found in the contiguous counties but not in Essex, why is not Middlesex entered? As much is known about its native plants as about those of Kent. The following remarks are most respectfully submitted to the learned authors:—

1st. *Sonchus palustris, Senecio paludosus,* and *S. palustris,* are enumerated in the recent 'Cambridge Flora' as among the plants that are probably lost in the county of Cambridge; also *Lythrum hyssopifolium, Scleranthus perennis, Cicuta virosa, Œnanthe silaifolia, Pyrola rotundifolia,* etc., are problematical Kentish plants: hence the botany of Essex, when compared with its northern and southern neighbours, has no cause to be disconsolate on account of her loss, nor to be ashamed of the small number of her vegetable offspring.

2nd. Why is *Salvia pratensis* called a native in Kent, and an alien in Suffolk? Again, where is the natural Kentish locality of *Buxus sempervirens?* Boxley, in Kent?

There is a fallacy in the syllogism which proves, or attempts to prove, the growth of the Box about Boxley, in Kent, which reminds the readers of Shakespeare of Captain Fluellin's famous argument about Henry V. and Alexander. There is a hill at Dorking, in Surrey, and a hill at Boxley, in Kent, and there is a river near both, and there are Box-trees near Dorking; but alas! here the argument breaks down; the syllogism wants a loop: there are no Box-trees on Boxley Hill, in Kent.

Where do *Primula farinosa* and *Orchis hircina* grow in Suf-

folk? Where do *Malaxis paludosa* and *Cyperus longus* grow in Kent?

Again, *Linum perenne*, *Wahlenbergia*, and *Carex extensa*, are found in Kent, *testibus* modern authorities. (Note to p. 438.)

Linum perenne has been seen in Kent, if we may trust Mr. Cowell's work on the botany of South and East Kent.

Symphytum tuberosum is, in Hertfordshire, probably in as genuine a locality as that of the Essex plant of the same genus.

Stratiotes aloides has long been known as a Surrey plant; it appears in Professor T. Martyn's list, compiled a century ago. This plant of the eastern lowlands still exists in Surrey.

Lastly. The four species presumed to be peculiar to Essex have all been found south of the Thames within less than ten years.

Lathyrus tuberosus is growing now at Chelsea; the original is from a suspicious station, but the Essex plant is not quite free from this imputation.

L. hirsutus has been seen in other counties, and may be seen again.

Galium Vaillantii is usually called a variety of *G. Aparine*, and a variety which has often been collected at Wandsworth steamboat pier. It is believed that *Bupleurum falcatum* is another of the Wandsworth novelties.

What do the editors mean by the following note on pp. 275, 276:—"*Euphorbia Esula* was found by Mr. Dale in Essex, if Buddle's Herb. is sufficient authority for considering this the rough-fruited Spurge of Ray's 'Synopsis,' p. 312"? Smith states without hesitation, not *doubtfully*, as the authors of the 'Essex Flora' maintain, that the plant found by Mr. Dale in Essex and by Dr. Robinson in Yorkshire is var. β of *E. stricta*; and Mr. Babington will tell them that *E. stricta*, Sm., is equivalent to *E. platyphylla*, Koch, an annual plant which is widely distributed in cornfields in the south of England.

E. Esula is a perennial and somewhat woody species, with a very long root, and with leaves not much wider than those of *E. Cyparissias*, but of a different shape and colour.

The plant found by Mr. Dale and Dr. Robinson is correctly enough described by Hudson as having a five-divided umbel, and also by Parkinson, p. 187, No. 9, as having a small root. *E. Esula* has an umbel of numerous branches, and a very long, perennial, milky root.

It would oblige at least one reader of both the 'Flora of Essex' and of the 'Phytologist' if the authors would tell him what Buddle's 'Herbarium' has to do with the question? Did the ancient owner or any owner of this celebrated collection write near the specimen, assumed without any evidence to be *E. Esula*, the name *Esula minor*, or *Tithymalus pinus*, or *T. Pinea*, or *T. Pithyusa?*, the ancient names of this Spurge, which is not in Ray's 'Synopsis,' though he knew the plant, and describes it in Hist. Plant. p. 867. It was not recognized as English till about a hundred years ago.

We are indebted, I suspect, to E. B. for this novelty, which now passes muster as a doubtful native, even by the critical author of the 'Cybele.' A very slight study of the history of the species would have satisfied any one even less sceptical than he, that it is still without any sponsor for its ever having been found truly wild.

Smith very prudently quotes Lightfoot, who merely relates that *E. Esula* is "said to have been found growing plentifully on a bank to the south of Lord Abercorn's house, about a mile from Edinburgh, by Mr. Charlesworth; but as we have seen no specimens, we can determine nothing concerning it." ('Flora Scotica,' vol. xi. p. 113?.) Smith's locality is thus described:—"In a wood near a rivulet at Abercorn, thirteen miles from Edinburgh; Mr. B. Charlesworth." This will remind the readers of Shakespeare, of Falstaff's twelve rogues in buckram. (Comp. E. B., vol. xx. p. 1399.)

There cannot be much doubt about the Essex plant collected by Dale, and called *Tithymalus verrucosus* by Parkinson, Ray, and Hudson; but whatever it be, it is not *E. Esula*, which differs *toto cœlo* from all the descriptions we have of *T. verrucosus*. No two Euphorbias can be more unlike in external appearance, duration, and locality. It is hoped that the learned editors will explain their own meaning.

About *Bupleurum falcatum* the authors of the 'Essex Flora,' p. 134, appear to be at issue with Mr. E. Forster. The latter gentleman believes it was discovered previously by "Gerard and others." Gerard indeed states that he found *Bupleurum angustifolium*, Monspel., growing "among the bushes about Bieston Castle, Cheshire;" not an unlikely place. Parkinson affirms that both *B. angustifolium*, presumed to be *B. falcatum* of modern authors,

and *B. latifolium,* are found in divers places in our land. (Park p. 578.) Neither of these ancient authors name Essex as one of its localities.

The description in Ray's 'Historia Rei Herb.' agrees sufficiently with the Essex plant; and the figure in Gerard, which has not the root-leaves, is characteristic enough, about as good a representation as could be expected.

Absolute perfection is unattainable even by the best artists; they sometimes fail in their attempts to represent the natural objects portrayed in their works; and it is not altogether inconceivable that Mr. E. Forster might have, unknown to himself, allowed his kind feelings to have been shaded, and his sound judgment warped, by a very slight tinge of jealousy, when he understood that a younger member of the brotherhood had made a discovery which would entitle him to a share of the botanical honours hitherto paid to the family of the Forsters, and to himself as its now sole remaining representative. His nice sense of honour might have been blunted, and the wish that there had been a previous discoverer, may have caused a search in Gerard and other ancient authors.

Again, the excellent author of the 'Flora of Essex' may have felt for the honour of his compatriot, etc.; and this, the very slightest shade of partiality, may have been the thin film or mist through which he was unable to see the resemblance of Gerard's figure to the plant of his county, discovered by his friend. If the cut be like that of some other species, as he says it is, that other species should have been forthcoming. Alas, for poor frail human nature! it is easy to give honest and disinterested counsel; but those who know the many crooked ways in which humanity often wanders, can sympathize with those who turn aside from the straight and narrow path.

One of the most curious of the omissions of the authors of the 'Essex Flora' is that of the Colchester locality for *Muscari racemosum,* or whatever the sages learned in the laws of botanical nomenclature may please to name it.

The locality is "the ruins of the old town wall, not far from St. Mary's Church." They should not have been frightened at this fact as an impossibility or absurdity, for though it grows *here* on the ruins of the wall, it is not a mural plant like the Wallflower. The wall of Colchester, like most Roman walls, is

very wide; here it occupies a larger breadth than usual, and the pretty Grape Hyacinth is clustered or cosily nestled on small grassy spots surrounded with fragments of the ancient Roman masonry.

Another curious reason is given, p. 399, relative to the nativity of *Cystopteris regia* or *C. alpina*—or, if you please, learned reader, consult 'Index Filicum.' After informing the lovers of Ferns, and all else whom it may concern, that the plant was observed there nearly a century ago (not quite, only about eighty-five years), Mr. T. Moore says, "The plant is at the present time, unfortunately, nearly destroyed by repairs, though it exists in more than one station in the neighbourhood." Under these circumstances (*inter alia*), the destruction of its habitation by repairs, and its finding several other stations, it cannot be considered a native British plant! Generous critics!

Polystichum lobatum used to be the commonest of all the British Ferns in the lanes about Abridge, Lamborn, Chigwell Row, and other parts of the Forest near the Roding. Some of the ancient members of the fraternity will thank the authors for giving a name and a locality to a species which was received without suspicion half a century ago, long ere *P. angulare* came into prominence as a genuine species; but recently it has been discarded.

Query, is not *Lolium tenue* a native of Essex?

Page 226. *Note* on the two forms of *Bartsia Odontites*, one with a fastigiate (erect, bushy habit), the other with widely spreading branches (spreading horizontally); the former found, but not exclusively, in cornfields, the latter by waysides. This is presumed to be the typical plant.

It would be very edifying to some non-critical readers to learn what are the characters of a typical species! The one has erect, close branches, and grows in cornfields; the other has spreading branches, and grows by waysides. How do these learned men know that this is the typical species? Why is not the other one a typical species? Why is not each a typical species? How have the authors learned that there are not two typical species, one with divaricate, and the other with fastigiate branches; one having its home in cornfields, where the situation might cause it to assume a closer habit, and the other by waysides and wastes, where it has more room to expand? One is said to be a spring

or early summer plant, and conjectured to be *B. verna* of Reichenbach. Query: Is *Adonis autumnalis*, which flowers in early spring, in the corn-fields in Kent, and also rarely during summer, and which ripens and scatters seeds which flower in the autumnal stubblefields, to be split into two, and the mothers of the early flowering plants named *A. verna*, and the daughters, or descendants, which sometimes flower in autumn, but the most of them in spring, to retain the original name? Which will be the typical species?

Review.

The Canadian Naturalist and Geologist, etc. Vol. VII. Part 2, April 19th, 1862, and Part 3, July 17th, 1862.

The first article in No. 2 of this useful periodical is called "Notes on the Flora of the White Mountains, in its Geographical and Geological Relations," by J. N. Dawson, LL.D., F.G.S.

These mountains, which culminate both in their southern and northern extremities, are part of the great Appalachian chain, which extends from the north-east to the south-west of the United States, and is the loftiest mountain-range in North-Eastern America.

Their elevation is estimated at upwards of 6000 feet above the coast-line. They form the great ridge, separating the sources of the rivers which flow down the valley of the Mississippi into the Gulf of Mexico, from those which flow eastward into the Atlantic.

That part of the ridge or chain, viz. the White Mountains, (their name is given them from their covering of snow, which is not perpetual, but invests them during three-fourths of the year,) is in the State of New Hampshire.

The following plants were collected during this excursion:—

Oxalis Acetosella, a species of Nova Scotia, a British plant, associated here with *Aster acuminatus*, *Solidago thyrsoidea*, and another interesting denizen of the British Isles, *Listera cordata*, the pretty Mountain Twayblade.

Close to the snow-line the botanizing party observed *Cornus canadensis* and *Linnæa borealis*. The latter is reported to have a vertical range of 4000 feet in this region.

"Conspicuous," the author remarks, "among the hardy climbers are two coarse and poisonous weeds of the river valleys, that look like intruders into the company of the more dwarfish alpine plants; the Cow Parsnip (*Heracleum lanatum*) and the White Hellebore (*Veratrum viride*). Both of these plants were seen struggling up through the ground at the margin of the snow and climbing up moist hollows almost to the top of the precipices. . . . Less conspicuous and better suited to the surrounding vegetation were the Bluets (*Oldenlandia cærulea*),—now in blossom here, as they had been months before in the low country,—the dwarf Cornel (*Cornus canadensis*), and the Twin-flower, *Linnæa borealis*. . . . One of the most interesting was the Northern Painted Cup (*Castilleia septentrionalis*), a plant which abounds on the coast of Labrador and extends thence through all Arctic North America to the Rocky Mountains, and is perhaps identical with the *C. sibirica* of Northern Asia, and the *C. pallida* of Northern Europe."

Several passages about the origin or geographical relations of the plants on the White Mountains, separated so far from what some would call the centres of vegetation, have been marked for extraction; but, on second thoughts, it was determined that the space they would occupy might be filled with matter more readable, and more intelligible to our readers, than hypotheses on the origin and distribution of species.

After stating that difference of altitude produces no sensible change in the species, except that of shortening the stem, the author remarks that the tendency of the "struggle for existence" is to confirm rather than to modify the characters of the species. See page 97.

Another brief extract will show that Dr. Dawson, the author of the "Flora of the White Mountains," is not an implicit believer in the Darwinian theory, which professes to explain all the mutations or variabilities of plants on the hypothesis of a necessary struggle for life; for example, page 99, he says that *Epilobium alsinifolium*—which varies in foliage, and according to some botanists presents two typical forms, viz. one with nearly entire and the other with toothed leaves—has obtained the unenviable notoriety of ambiguity. "Thus," our author remarks, "we find that this little plant has been induced to assume a suspicious degree of variability; yet it is strange that both species or varieties

are found growing together, as if the little peculiarities in the form of the leaves were matters of indifference, and not induced by any dire necessities in the struggle for life."

Every philosophic naturalist will admit with our author the great difficulties that confessedly exist on the question about the distribution of plants, and some would not be sorry if these *difficulties* were more generally admitted to be palpable impossibilities.

Some of the readers of this interesting essay on the Flora of the White Mountains, one at the least, might wish to have the following quotation made less difficult (both logic and grammar are obscure), viz. "These questions," the author continues, "are to be worked out, not merely by the patient collection of facts, but by a style of scientific thought, very much above those [persons?] which on the one hand escape such problems by the supposition of multiplied centres of creation, or, on the other, renders their solution worthless by confounding races due to disturbing causes with species originally distinct." What does the doctor mean? Does the pronoun 'which' refer to facts or to persons? Is the style of scientific thought above the reach of the comprehension of either of the two classes? The grammatical difficulty would be removed by substituting *who* for *which* after 'those,' if his meaning be that a higher order of intellect is necessary for the solution of these problems than is enjoyed by those who suppose that there have been multiplied centres and successive periods of creation, or, on the other hand, etc. *Those which* and *their* refer either to persons or to things, to 'facts' or 'style of scientific thought,' 'problems,' etc. Would the author condescend to enlighten our darkness? We would not hesitate to confess, as part of our scientific creed, that we are *not* believers in multiplied centres of vegetation, nor in simple nor single centres either; and again, we do not believe that the glacial theory, as it is called, will satisfactorily account for the distribution of plants. There are several plants common to the Scottish, the Scandinavian, and the Swiss Alps; on which of these now elevated stations did these plants originate? A Scotchman would, if only out of sheer patriotism, aver that they all had their origin on the Grampians, or on Ben Lawers, or on Ben Cruachan. A Norwegian, like a Swede, would maintain that his country was first created, and consequently first planted with

trees and covered with vegetation; that it was indisputably the site of the ancient Paradise, before the world was turned topsy-turvy, as some learned men say, by the Deluge; and that the Dovrefeldt was the cradle of all alpine species in the world.

Who can answer a question involved in such obscurity as the origin of all things confessedly is? There are similar difficulties besetting facts which our daily experience presents to our observation. Several plants have recently been observed on Wandsworth Common, plants that have never been suspected of vagabondizing or migratory propensities: for example, *Equisetum Drummondi, Osmunda regalis, Lycopodium inundatum, Drosera rotundifolia,* etc. These have migrated within the last twenty years, and neither the *unde,* 'whence,' nor the *quomodo,* 'how,' has been satisfactorily ascertained. Their case is inexplicable by the glacial theory. Even this famous theory may be as palpable a myth as an indefinite number of centres of creation, or a successive multiplication of new species believed by some.

There in this number of the 'Canadian Naturalist' an article on the failure of the apple-tree in the neighbourhood of Montreal —a fact bewailed as a domestic calamity and a commercial misfortune.

The author closes his essay on this important subject with the question, "Shall we ever see Montreal producing the fine fruits that it did twenty-five years ago? The markets were then filled with the finest varieties of the Plum and the Pear, and a considerable quantity of the Peach and Apricot produced on the open walls. Now there is no such fruit to be seen as a Bon Chrétien pear, an autumn Bergamot, or a Burmese spruce; nor a luscious Bolman's Washington plum, nor a greengage, nor even a coarse magnum-bonum."

It may be said, to the credit of the orchardmen of Britain, that the pear has lately been marvellously improved, both in flesh and flavour. Pears are now eatable; they are both meat and drink, and well supply the place of wine after dinner; they cool the system while they quench the thirst. The apple has been suffered to degenerate; it may be productive in the cider-mill and very useful in the kitchen, but its reputation as a meritorious dessert-fruit is lost; it is hardly equal in quality to a good turnip.

From the annual report of the Natural History Society of

Montreal, the following gratifying extract is made:—"A committee of the members is now deliberating on the 'disease of the apple-trees in the island of Montreal,' a subject of great practical importance." It is earnestly to be wished that the Royal Horticultural Society of London would condescend to patronize the improvement of this most useful fruit.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers and Notices to Correspondents, with Remarks, Notes, Queries, etc.

1. Warrington Field Naturalists' Society.—The rules of this Association, formerly announced in the 'Phytologist,' and now before us, are here reproduced for the benefit of our readers in general, believing, as we do, that the example of Warrington may be followed in many other districts of the kingdom, and that there will be similar societies organized wherever two or three naturalists are found who are willing to co-operate on as easy terms as our zealous friends of Lancashire.

Special attention is directed to the first rule, which defines the operations of the Society, and shows its comprehensive character.

The means whereby great results are attainable may be very humble, but the objects to be realized are great and lofty; a few earnest, liberal-minded men will, by their energy, stir up the emulative activities of many, and their movement may conceal the germs of great and permanent benefit to their contemporaries and to posterity.

The efforts of zealous men to close the gin-shops should not be ridiculed; their object is a good one, though the means by which they seek to reach it are not universally approved. But there cannot be two opinions about the prudence and desirability of such institutions as that above mentioned, the result of which will be the removal of the causes which tempt men to resort to these haunts, and to travel willingly on the road to ruin.

The rules themselves will sufficiently evince the good sense, liberality, and benevolent objects of the Society, and they are now submitted to our readers without any further preamble.

Rules of the Warrington Field Naturalists' Society.

"1. That this Society be called the 'Warrington Field Naturalists' Society,' its object being, by social meetings, by the examination and interchange of specimens, by discussions on subjects of Natural History, and by excursions into the country, to encourage the practical study of Natural History in all its branches.

"2. That the officers of the Society be a President, a Treasurer, and a Secretary, who shall be elected by ballot at the annual meeting.

"3. That every candidate for membership shall be elected by ballot at a

meeting of the Society, and, on paying the entrance fee, shall become a member.

"4. That in the event of any expense having to be incurred which the entrance fees may not cover, it shall be defrayed by (voluntary) contributions from the members.

"5. That the entrance fee be sixpence.

"6. That a class of honorary members be admissible, in which shall be included any persons distinguished by their attainments in Natural History, or who have rendered valuable services to the Society; and that such honorary members be elected by a majority at a general meeting, and have all the privileges of ordinary members.

"7. That the members of the Society shall hold Field Meetings at convenient seasons, in the most interesting localities, for investigating the natural history of the district. The place of meeting to be fixed by the members, and notice of each excursion to be posted in the Society's meeting room.

"8. That the ordinary meetings of the Society be held at the Mechanics' Institution, on Saturday evenings, at eight o'clock.

"9. That the annual meeting be held during the month of April, when the report for the past year shall be received, and officers elected.

"10. That at the annual meeting the President be requested to favour the Society with an address."

2. The doings of another Association will soon be published in these pages. Thanks to our worthy correspondent Mr. "W. G.," another number of the manuscript magazine of the Glasgow Naturalists' Society has just reached us. The two societies of Glasgow and Warrington are as alike each other as twin-sisters; although each society has its own appropriate features, and its modes of operation (*modus operandi*), they are not copies of each other.

The fourth volume or number of the manuscript magazine is announced. "Our fourth volume, we anticipate, shall contain the first of a series of papers on the Flora of Glasgow and vale of Clyde, land and freshwater shells, ornithology, Coleoptera, etc., the materials for which are being busily collected at present, which I shall gladly send you, if spared, early in the spring."

From the Glasgow Naturalists' Manuscript Magazine.

"WELWITSCHIA MIRABILIS.—A new plant, called in honour of its discoverer *Welwitschia mirabilis*, has been described by Dr. Hooker. Its place of growth was near Cape Town, South Africa. In appearance it is said to be a stunted trunk, two feet in height, with two leaves, which, though the cotyledons, are persistent during the life of the plant.

"A paper read before the Society of Arts by E. C. C. Stanford, enumerates a number of substances which may be extracted from seaweed, chiefly the large *Laminariæ*. He has procured ammonia, naphtha, colouring matter, an essential oil, iodine, potash, etc. The utility of his discoveries in an economic point of view is probably small.

"THE POTATO DISEASE.—Dr. De Bary, of Frieberg, has recently published a pamphlet containing an epitome of all that is known regarding the potato disease, and gives the result of his own observations. He

finds that the theory of its being due to parasitical growth is correct. A seed of the parasite when placed on the leaf, he finds, will penetrate the tissue in twelve hours, and in sixteen hours it bursts through the leaf, and is ready to reproduce itself at the rate of 19,620 zoospores for every square line of its surface."

Our northern friends need not be told that we shall give their magazine a cordial reception, for they know this; but their good example may be earnestly commended to the imitation of their southern brethren.

3. ENTEROMORPHA HOPKIRKII.—Our fair and obliging correspondent, of Dorset Gardens, Brighton, sent the following note on *Enteromorpha Hopkirkii*.

Our Huddersfield correspondent, "C. C. P. H.," is hereby informed that the specific name of the above Algal was "bestowed as a tribute of grateful respect to Mr. Thomas Hopkirk, author of 'Flora Glottiana,' from whom Mr. M'Alla had received kindness while resident in the neighbourhood of Belfast."

4. THE LONDON FLORA.—Many kind offers of help in compiling a list of species in the metropolitan counties have arrived from time to time, and the following have been sent since our last issue:—

"18, Shawfield Street, Chelsea, Sept. 4, 1862.

"Sir,—Allow me to offer you the following habitats of the rarer plants, which I have met with in this neighbourhood during the last two or three years. A note from 'J. W. C.' in your last led me to suppose that such hints would not be unacceptable.

"1. *Impatiens fulva*. Banks of Thames (Surrey side) between Putney and Hammersmith Bridges. Sept., Oct., 1861.

"2. *Mercurialis annua*. Gravel-pit near south entrance of Battersea Park. Aug., Sept., 1862.

"3. *Teesdalia nudicaulis*. Wimbledon Common. May, 1862.

"4. *Butomus umbellatus*. Paddington Canal, near Kensal Green Cemetery. July, 1862.

"5. *Scutellaria galericulata*, with *Butomus umbellatus*, as above. July, 1862.

"6. *Scutellaria minor*. Sparingly in damp places on Wimbledon, Wandsworth, and Clapham Commons, and on Hampstead Heath. June, July, 1862.

"7. *Linaria Cymbalaria*. Very general on walls in Battersea and Chelsea. June, August, 1862.

"8. *Thalictrum flavum*. Ditch by Thames (Surrey side) near Hammersmith Bridge. July, 1862.

"9. *Genista anglica*. Wimbledon Common. June, 1862.

"10. *Oxalis corniculata*. In waste ground about Chelsea College and West Brompton. June, July, 1862.

"11. *Melilotus leucantha*. Wandsworth Common, by railway. July, 1862.

"12. *Trifolium subterraneum*. Wandsworth Common. June, 1862.

"13. *Orobus tuberosus*. Wimbledon Common. May, 1862.

"14. *Malva rotundifolia*. Waste ground, by walls near Putney Heath, Chelsea College. July, 1862.

"15. *Antirrhinum Orontium.* Waste ground near Chelsea College. July, 1861.

"16. *Veronica Buxbaumii.* Wimbledon and other Commons, waste ground. July, 1862.

"17. *Silene noctiflora.* Waste ground in Chelsea College. 1861.

"18 *Achillea Ptarmica.* Wimbledon Common. July, 1862.

"I will not trespass further on your valuable space this month except to ask one or two questions:—

"Is the *Drosera rotundifolia* still found on Wimbledon Common and Hampstead Heath?

"Can any one inform me of any habitat of the *Villarsia nymphæoides* in the neighbourhood of London?

"I would just mention that I have found *Epilobium angustifolium* this year in considerable abundance near Scarborough, Yorkshire, and about Caistor, in the North Wolds of Lincolnshire; I have also seen it in woods in the neighbourhood of High Wycombe, Bucks.; so that it need not be considered a rare plant. About High Wycombe I have found the following rare plants in profusion:—*Linaria minor*, *L. Elatine*, and *L. spuria*; *Epipactis latifolia*; *Iberis amara*; *Anagallis cærulea*; and *Gentiana Amarella*. The *Daphne Laureola* grows abundantly in the woods about Little Marlow, but I have never seen *D. Mezereum* there. "J. BRITTEN."

"When you were here you said something about publishing a list of the metropolitan species. Should you ever do so, some of our Southgate localities may be worth insertion, as of *Crocus vernus*, *Convallaria majalis*, *Vaccinium Myrtillus*, *Adoxa Moschatellina*, etc., of which I can give you more particular descriptions should you wish. "F. W.

"*Arnos Grove, Southgate.*"

5. EUPHORBIA ESULA.—Several weeks ago, our friend and correspondent "W. P." informed us that he had seen the above-named Spurge, *E. Esula*, on the north bank of the North London Railway, at the station near Kilburn, about two miles beyond Hyde Park Corner, on the Edgware Road. The plant is there still, and likely to remain, for, like *E. Cyparissias*, when it gets a good hold of the ground it is not very easily extirpated.

It is recorded here, not because it has any claim to be regarded as a British plant,—though, like many other unsuspected *aliens*, it has got a footing in the floras of our native land,—but with the object of asking the many botanists who read the 'Phytologist,' if they or any of them know any genuine locality for this interesting stranger. *Note.* Monastic ruins, abbey walls, and railway banks are not generally accepted as reliable habitats, but all such will be recorded; the plant may be and is doubtless of spontaneous growth, though its *nativity* be justly questioned.

Both Gerard and Parkinson describe and figure this species:—"12. *Esula major germanica*, Great Marsh Spurge, Park. 188, fig., p. 189. The twelfth groweth in many places of Germany, and as Lobel saith in his Observations, in a wood nigh unto Bath, very plentifully."

Smith's description of *E. Esula* is very fair, only he describes the root as being "woody." The fruit is slightly rough, and with four lobes.

In Dr. Johnson's 'Flora of Berwick,' vol. ii. p. 289, *E. Esula* is briefly

described and localized thus:—"Birgham Haugh, Mr. R. D. Thomson; *E. Cyparissias*, found on the walls of Hulne Abbey, but doubts are entertained of its being indigenous." (Thompson's 'Flora of Berwick,' p. 5, note.)

Gerard's figure (see Johnson's Ger. p. 499) is good:—"6. *Tithymalus pineus*, Pine Spurge. The sixth is like the former, *Cyprus Tithymale* (*E. Cyparissias*), in flowres, stalks, coats, and seeds, and differeth in that this kinde hath leaves narrower and much smaller, growing after the fashion of those of the Pine-tree, otherwise it like." (So in Ger. Em.)

Park. 192, *Tithymalus Pinea*, Pine Spurge.

See 'Phytologist,' vol. v. p. 194, where the plant is described as naturalized on the walls of Hulne Abbey, Northumberland.

6. CONVOLVULUS SEPIUM, *flore carneo*.—"You shall have a full, true, and particular account of the Pink Convolvulus, which I believe Mrs. B. pointed out to you five years ago, some time before it was reported from Lancashire. I hope you will give the lady's history and description of this interesting novelty a prominent place in the 'Phytologist.'"

Query, has not a notice of this variety appeared already in our pages? See vol. ii. p. 252, N.S.

7. Our obliging friend "H. T.," who sends a list of Hants. species not in Dr. Bromfield's list, is hereby requested to accept our thanks for what has been received and for what is promised. The list in hand will be printed as soon as there is room for it, possibly before Christmas.

8. ZOSTERA MARINA, the recently discovered substitute for Cotton.—The readers of the daily and weekly press, and especially such as are interested in textile fabrics, have been kept for some time on the tenter-hooks of expectation. Several weeks ago a new material was submitted to an eminent cotton-broker, and obtained his approbation. Some probably were a little startled when they were told that the fibre was to be obtained from a plant common enough on our seashores, viz. *Zostera marina*, Grass-Wrack. Several years ago, probably four or five, when material for paper was in nearly as great request as Sea-Island Cotton, a notice appeared in this journal of a successful application of the fibrous part of Grass-Wrack to the paper manufacture. We have never heard what progress was made, and probably the economical element was not present—or, in simple terms, it did not pay. We will not venture to affirm that, as its practical employment for paper-making was a failure, its substitution for the cotton fibre will also be unsuccessful; but it is to be hoped that the good men and fair women of Lancashire will not have to starve till the spinning-jenny and steam-looms be set to work on the fibre got from *Zostera marina*, "Sea Grass-Wrack."

TRIFOLIUM REPENS. (*White Clover; Dutch Clover.*)

Please to inform me whether the seed of this plant was originally brought from Holland, and, if so, when was it first sown in *Ireland* or England? We have the *broad Clover*, or Meadow Trefoil (*Trifolium pratense*), and the *Hop Clover*, all common in our fields, as well as the *Dutch Clover;* but I am at a loss to find which of these was the earliest noticed by our writers on plants. In referring to Miller's Dictionary, by Martyn, I

find the following upon *Trifolium repens* (called *Dutch Clover*):—"It does not seem to be ascertained when this white Trefoil came first into cultivation here, but it seems to be of *late date*, for it is not mentioned by Gerard, Parkinson, or Ray, as an agricultural plant in this country, nor by any of the writers on husbandry of the seventeenth century." I agree with "Hibernicus" in believing that St. Patrick did not gather a leaf of this plant to illustrate his doctrine of the Trinity, but it must have been some other Trefoil. As the *Watercress* was, according to Moryson and Spenser, called *Shamrock* early in the sixteenth century, what is there to show that St. Patrick might not have taken a leaf of this plant and referred to the *three terminal* leaves to illustrate his doctrine?

In Phillips's Dictionary I find "Dew-grass, a sort of herb." What is this? HARRIET BEISLY.

PULMONARIA OFFICINALIS.

The following precise description of the locality, etc., of the above plant is extracted from a letter, dated May 14th, 1862:—"*Pulmonaria officinalis* grows in Burgate Wood, in the parish of Burgate, in the county of Suffolk. I think there can be no doubt about its being a genuine wild locality; for the plant is plentiful, it grows far in the interior of an extensive wood, and has as much the appearance of being truly wild as any of the plants near it. It is now more luxuriant than usual, in consequence of the underwood having been recently cut—a fact which I noticed last September when I was in the wood. The specimen I sent to you was, I believe, one of the smallest that could be found. "CHARLES JOSEPH ASHFIELD."

"*Knowsley Street, Preston.*"

FLEUR-DE-LIS.

I have often thought that the figure we find in old paintings and in sculptures of this flower is somewhat like the head of our ancient spear, and also somewhat like a Trefoil (representing the Trinity); and I have sometimes doubted whether the figure was originally intended for a *fleur-de-lis*, as it is not very similar to the Iris. In the 'Etymological Compendium' by William Pulleyn, he has the following:—"Fleur-de-lis on the Mariner's Compass. Those who have seen the mariner's compass, or indeed a drawing of it, must have observed the fleur-de-lis at the point of the needle. From this circumstance the French have laid claim to the discovery; but it is much more probable that the figure is an ornamental cross, which originated in the devotion of an ignorant and a superstitious age to the mere symbol." It appears that the fleur-de-lis was introduced into the arms of France in the reign of Clodoveus; previous to that period they had three toads on a yellow field. Topsell says, that Clodoveus changed them into the fleurs-de-luce as arms sent to him from heaven. I think the question—What was the true fleur-de-lis? and whether the first figure called a fleur-de-lis was a flower or not,—is worth an answer; and I hope some of the contributors to the 'Phytologist' will satisfy us on this subject. S. B.

PLANTS NOTICED BY EARLY WRITERS.

In Richard Carew's 'Survey of Cornwall,' a very interesting work written in the beginning of the sixteenth century, he notices some of the

plants which were found in that country as follows:—"Of herbes and rootes for the pot and medicine, Cornishmen enjoy a like portion, in proportion with other shires, which somewhere also receiveth an increase by the sowing and planting of such as are brought thither from beyond the seas. The like may bee sayd of rootes and sallets for the table, save that (I suppose) Cornewall naturally bringeth forth greater store of *Seaholm* and *Sampire* then is found in any other county of this realme. The *Seaholm* roote, preserveth either in syrrup or by canding, is accepted for a great restorative. Some of the gaully grounds doe also yield plenty of *Rosa solis*. Moreover, Nature's liberall hand decketh many of the sea-cliffes with wilde *Hissop, Sage, Pelamontayne, Maiorum, Rosemary*, and other such like well-sounding herbes.

"The women and children in the west part of Cornwall doe use to make mats of a small and fine kinde of bents there growing, which, for their warme and well wearing, are carried by sea to London and other parts of the realme, and serve to cover floores and wals. These bents grow in sandy fields, and are knit from ouer the head in narrow bredths after a strange fashion."

He also of course speaks of metals, which, although not properly within the scope of the 'Phytologist,' is so interesting that I give the following passage to enable your readers to draw a contrast between *now* and *then; now* showing a copper mine which yields for £1 paid a return of £420, *then* as follows:—"'Touching metals, copper is found in sundrie places, but with what gaine to the searchers I have not beene curious to enquire, nor they in haste to reveale. For at one mine (of which I tooke view) the owre was shipped to bee refined in Wales, either to save cost in the fewell, or to conceal the profit." H. B.

Lathræa squamaria.

Gerard says of *Lathræa squamaria*, "It groweth likewise neere Harwood, in Lancashire, a mile from Whanley, in a wood called Talbot Banke." Mr. George Ward, an aged botanist, residing near Blackburn, informed me last summer that he had found this plant about thirty-five years since, between Whalley and Harwood, about a mile from the former place, and near to the river Calder. I am happy to be able to add my testimony to that of the above-named botanists of the seventeenth and nineteenth centuries as to the existence of the *Lathræa* in the localities referred to by them. In April of the present year I found the plant growing abundantly.
C. J. A.

Communications have been received from

C. J. Ashfield; M. A. Walker; John Peers; Walter Galt; F. Walker; H. Trimen; T. Moore; W. Pamplin; Dr. Prior; Sidney Beisly; H. Beisly; John Sim; J. Britten; W. Ashley; James Lothian; T. R. A. Briggs; Walter W. Reeves; W. P.; L. C. Miall.

RECEIVED FOR REVIEW.

Manuscript Magazine of the Glasgow Naturalists' Society.
James Lothian's List of Dutch Flower-Roots, 1862.

DEVON PLANTS.

Botany of Dartmoor, Roborough Down, etc.

By T. R. Archer Briggs.

As I have had, during the past season, some botanizing excursions on Dartmoor, and also on Roborough Down, an extensive common lying between Plymouth and Tavistock, to the south-west of the moor, I send a few notes respecting some of the plants I have met with in these rambles, and hope they will be considered worth insertion in the 'Phytologist.' On the 9th of last September I visited Clacywell or Classenwell Pool, a large pond of water a few miles from Princetown, a village now well known on account of its being close to Dartmoor prison, a large building first erected for French prisoners of war, but now used for the reception of convicts, who are employed in cultivating the surrounding moor. The pool is thought quite a curiosity, on account of its being so deep as to have been long considered unfathomable, and its being said to be subject to periodical falls and rises. Being a large sheet of water (305 yards in circumference at the water's edge, according to a note in Carrington's 'Dartmoor'), and lying high in a truly moorland situation, I had hoped to find some rare plants around it: in this, however, I was disappointed, as the vegetation about it was as little diversified and uninteresting as that of the surrounding moor. On continuing my walk for a mile or two in the direction of Walkhampton village, I met with a promising-looking bog below Lethitor, and soon found there *Pinguicula lusitanica* in plenty, *Hypericum Elodes*, *Epilobium palustre*, *Rhynchospora alba*, *Eleocharis multicaulis*, and of course *Drosera rotundifolia*. As I had previously collected specimens of *Polypodium Phegopteris* and *Lastrea Fœnisecii* in a lane near Nosworthy Bridge, not very far from the grand-looking mass of rock called Sheepstor, and had found a magnificent plant of the latter species, with fronds from nine to ten inches long, in a hedgebank near the beautiful semi-moorland village of Meavy, my vasculum was pretty well filled. *Ceterach officinarum*, a Fern by no means rare in this neighbourhood, grows on a wall near Meavy churchyard, and *Eleogiton fluitans* was seen in the river near Sheepstor Bridge. *Teesdalia nudicaulis* was found near Rithypit, but not in such abundance

as I have seen it on sand-heaps by the river Meavy, between the village and Hoo Meavy. On examining my specimens of *Rhynchospora* I was struck with the peculiar way in which this plant perpetuates itself and increases by forming almost semibulbous shoots within the sheaths at the base of the stalk, which shoots when quite rootless; a touch is in some cases sufficient to detach it from the parent stem. This plant also grows in a bog near the Virtuous Lady Mine. *Eleocharis multicaulis* seems to be more plentiful than *E. palustris* in this neighbourhood, as I have also found it near Whistman's Wood, Dartmoor, in a bog near the Virtuous Lady Mine, and at "The Combe," a small bog in the parish of Egg Buckland, about four miles from Plymouth.

On the 18th of September I collected some fine specimens of *Lycopodium Selago* from a mighty tor, called, I believe, Lydford, between the West Dart and Cowsic rivers, and also saw it, more sparingly however, at another tor in the same neighbourhood. It was only found in earth in crevices between the stones that form the grand masses always called tors in the neighbourhood, and was not seen on the ground around. I once, however, and once only, found a small plant on one of the leat-banks on Roborough Down. From a damp pasture almost on the borders of Dartmoor, and near Walkhampton, I, on the 30th of August, collected some fine specimens of *Alchemilla vulgaris*, which species I have never seen anywhere else in this neighbourhood. A few years ago I found a patch of another subalpine plant, *Antennaria dioica*, on Roborough Down, but have not subsequently been able to find it; on the 15th of last September, however, when crossing part of the Down, I was delighted to meet with another patch of this pretty plant. *Centunculus minimus* occurs in so many spots on this large common that it may be said to be not rare there. It frequently grows in company with the elegant little *Radiola Millegrana*, and, like it, affects damp spots where the herbage is scanty. Besides these two plants a botanist may find on this down *Drosera rotundifolia*, *Sagina subulata*, *Ulex nanus* (very abundant), *Lathyrus macrorhizus* var. *tenuifolius*, *Ornithopus perpusillus*, *Peplis Portula*, *Epilobium palustre*, *Carlina vulgaris*, *Wahlenbergia hederacea*, *Erica Tetralix* with white flowers (very sparingly), *Gentiana campestris*, *Pedicularis palustris*, *Veronica scutellata*, *Scutellaria*

minor, Anagallis tenella, Gymnadenia conopsea, Habenaria bifolia, Isolepis setaceus, and *Lastrea Oreopteris.*

10, *Torrington Place, Plymouth, October* 10*th.*

PLANTS OF BRAUNTON BURROWS.

A Few Gatherings on Braunton Burrows, North Devon.

By the Rev. T. F. Ravenshaw, M.A.

Some years having elapsed since I had visited this sandy paradise of botanists, I gladly availed myself of an offered seat in the carriage of some kind friends who were intending an excursion in that direction. Our party consisted of four ladies, my old friend and late fellow-curate (an enthusiastic naturalist), and an elderly gentleman, uncle to the ladies, who, having worked botanically most of the northern districts of England, was anxious to investigate the riches of the sandy tract he had long known by name.

The road from Ilfracombe to Braunton is sufficiently well known that I need not describe it; enough to say, it is a long pull against collar nearly all the twelve miles, but the sides of the valley are richly wooded, with picturesque masses of rock at intervals, quaint farmhouses, and a nice little trout-stream rippling at the bottom, so that though one's progress is rather slow, the eye has plenty of pleasant occupation, and the excursion is exceedingly enjoyable. About a mile and a half from "'Cowhe," a road branches off on the right to Mutchoe, and another on the the left to—I forget where; but on the loose stone wall grows an abundance of *Lastrea Fœnisecii* in its most recurved form, dwarf, stiff and curly as the feathers of a Friesland fowl, scarcely to be recognized for the same plant which one finds luxuriant in Clovelly Wood. Several other dwarf forms of Ferns are also to be found here, *e.g.* of *L. Filix-mas, L. multiflora,* and *Asplenium Filix-fœmina.* However, our business lay further on. Braunton itself is a large and rather untidy village, lying in a richly-wooded hollow, and possesses a curious dilapidated church which is remarkable for a very broad nave without aisles, richly-covered seats, wonderfully good for their date, A.D. 1500, and the remains of a large stained-glass window. To get to the Burrows, you have to go through the village and away to the right. We noticed, in passing, several cottages almost covered

by the most luxuriant plants of *Leycesteria formosa* I ever saw, and the old walls are richly besprinkled with *Cheiranthus* and *Centranthus*. I may mention here that *Leycesteria* and *Centranthus* seem to have taken up a permanent position on the rocks and walls about Torquay.

On emerging from the village the road runs alongside the river Taw, past coal-stores and lime-kilns, and its edges are enlivened by the blue flowers of *Cichorium Intybus*. We now turn to the left, and come to a gate up a wild lane, and are met by a demand for sixpence for permission to go on to the Burrows, whose great sand-hills and lighthouse we see dimly in the distance. The road now gets very rough, and lies between a high bank on the left, which divides it from the river, and deep dykes on the right in which grow a multitude of marsh plants, the Hill-rush, whose great brown maces were waving lazily in the hedge, *Sparganium ramosum*, and Sedges innumerable. We go on and on, and the road gets worse and the gates perpetual, till a sharp turn to the right brings us to the beginning of the Burrows. Here we alighted, and began to inspect our ground, and were not long before we discovered a profusion of *Viola Curtisii*, Forst., which Mr. Gosse and many others have described as *Viola lutea*, which it is not. *Erodium cicutarium α maritimum* were also abundant, and *Anagallis tenella*, mingled with occasional plants of *A. arvensis* and *Lithospermum officinale*. A peculiar and sickening odour soon betrayed the presence of *Hyoscyamus*, which, though not in flower, seemed determined we should not pass it by unnoticed. We had now got fairly among the sand-hills, and lost sight of all view, and, with the exception of *Juncus acutus* and *maritimus?*, found but few plants. Presently we came on patches of turf which afforded us *Lepigonum rubrum*, *Sagina procumbens*, *Chlora perfoliata*, *Erythræa pulchella*, *Cynoglossum officinale*, *Reseda Luteola*, *Galium verum*, *Samolus Valerandi*, *Solanum Dulcamara β lignosum*, *Marrubium vulgare*, and *Hypericum humifusum*. On ascending the sand-hills, a lovely view burst on our sight, taking in Bideford and Appledore, and the coast out to Hartland Point, on the left; and the long reach of Burrows stretching away to Saunton rocks, and Baggy Point, on the extreme right; the lighthouse, familiar to many from Hullah's beautiful setting of Charles Kingsley's "Three Fishers," making a central point, while the "harbour bar was

moaning" in the distance. The lighthouse is rather uglier than most structures of its kind, but we were glad enough of its vicinity, for a drenching mist came in suddenly from the sea, and made us hasten our steps as well as the loose sand would allow. Here a new difficulty met us: the lighthouse-keeper's wife refused us admittance, which, knowing that parties are constantly in the habit of eating their luncheon within the walls, we thought rather odd, and got hold of the assistant-keeper, who seemed inclined to admit us to *his* portion of the building, when out came the master and accused us of tampering with his servant: "the Government orders were strict," etc. However, after some blustering, his official wrath subsided, and he shut his eyes to the iniquitous fact that his assistant allowed us the use of an unoccupied room in his dwelling, where we might get out of the rain and refresh ourselves. In about half an hour the mist cleared off and we emerged from our shelter, and recommenced our search. Not far from the lighthouse we found *Ligustrum vulgare*, which is frequent all round the skirts of the Burrows, *Urtica pilulifera*, *Echium vulgare*, *Lecopsis*, *Cakile maritima*, and *Illecebrum verticillatum*. After this we were ambitious of discovering *the* plant of the locality, *Scirpus Holoschœnus*, but our friend the assistant-keeper would not allow us the pleasure of doing so for ourselves, and insisted on guiding our steps in the proper direction. "Ladies and gentlemen from Ilfracombe, and London, and Yorkshire, come every year to find the big Rush," he informed us. However, there is enough of it, though only in a few spots, and consequently no fear of its extirpation, so we had little scruple in supplying ourselves with specimens. Hitherto we had kept together, but now agreed to divide our party, and to meet again at the gate where we had first entered. I and my friend went down to the sea to try to get a view with a small camera I had with me; but the scenery was not adapted for our purpose, so we betook ourselves to the common objects of the seashore, among which latter we found a "Portuguese man-of-war," but he was unfortunately deceased and stinking, and swarming with sand-hoppers. A few days before, we had secured a live one in a rock-post at Mutchoe. The dew was now shining brightly on the wet sand, and barefooted fisher-boys with golden hair and deep blue eyes, such as Hook loves to paint, were running merrily and noisily on the shore. Rain however warned

us that we must be getting back, and we wandered slowly towards our place of meeting by another route to that by which we came, finding however little to add to our vasculum. A dyke near the entrance gate, which we had overlooked previously, afforded magnificent plants of *Lythrum Salicaria*, also *Scutellaria galericulata*, *Sparganium ramosum*, *Alisma Plantago*, *Myosotis palustris*, *Melampyrum pratense*, and plenty of very large *Pulicaria dysenterica*. Our northern friend was delighted with his treasures, but greatly puzzled by the alarming change in nomenclature since "his day," he being of the good old school of "Smith," etc. Indeed, I suppose there are few spots in the country where so many of the less common plants may be collected in a short time as on these celebrated Braunton Burrows. Had we had time to get to Saunton End, we might have added many more to our box, *e.g.* *Matthiola sinuata*, *Atropa Belladonna*, *Anchusa sempervirens*, *Convolvulus Soldanella*, *cum multis aliis*. The *Anchusa*, by the way, I had found near Woollocombe sands a few days before, and the Vicar of Ilfracombe has found *Œnothera biennis* both there and at Braunton Burrows. It is much to be wished that some competent local botanist would work up a complete list of the Burrow plants, including the dykes and Saunton rocks; I expect the number would be astonishing. As a beginning, I append a list of some of the *rariores*.

Ranunculus sceleratus.
Ranunculus Flammula, and β reptans.
Glaucium luteum.
Matthiola sinuata.
Brassica oleracea.
Cochlearia officinalis.
Cochlearia danica.
Cakile maritima.
Crambe maritima.
Reseda Luteola.
Reseda lutea.
Viola Curtisii (Forst.).
Saponaria officinalis.
Silene maritima.
Sagina procumbens.
Sagina maritima.
Hypericum humifusum.
Erodium cicutarium.
Erodium maritimum.
Trifolium fragiferum.
Geum rivale.
Rosa spinosissima.
Peplis Portula.
Tamarix anglica.
Œnothera biennis.
Montia fontana.
Illecebrum verticillatum.
Lepigonum rubrum.
Eryngium maritimum.
Apium graveolens.
Œnanthe Lachenalii.
Erigeron acris.
Artemisia maritima.
Ligustrum vulgare.
Chlora perfoliata.
Erythræa pulchella.
Convolvulus Soldanella.
Cynoglossum officinale.
Lycopsis arvensis.
Echium vulgare.
Lithospermum officinale.
Myosotis palustris.
Solanum Dulcamara, β marinum (Bab.).
Atropa Belladonna.
Hyoscyamus niger.
Orobanche minor.
Verbascum Thapsus.
Eufragia viscosa.
Veronica Anagallis.
Salvia Verbenaca.
Scutellaria galericulata.
Marrubium vulgare.
Teucrium Scorodonia.
Teucrium Scordium.
Anagallis arvensis.
Anagallis tenella.
Glaux maritima.
Samolus Valerandi.
Statice Limonium.
Statice spathulata.
Armeria maritima.

Plantago Coronopus.
Plantago maritima.
Salsola Kali.
Chenopodium rubrum.
Euphorbia Paralias.
Euphorbia portlandica.
Urtica pilulifera.
Salix fusca.
Listera ovata.
Epipactis palustris.
Iris fœtidissima.
Juncus maritimus.
Juncus acutus.
Alisma Plantago.
Triglochin maritimum.
Sparganium ramosum.
Ruppia maritima.
Zannichellia palustris.
Scirpus maritimus.
Scirpus Holoschœnus.
Carex extensa.
Carex divulsa.
Sclerochloa maritima.
Sclerochloa distans.
Festuca rubra.

Ilfracombe, August, 1862.

EAST ANGLIAN BOTANY.

(*Continued from page* 335.)

On Tuesday, the 15th (St. Swithin's day), our walk was by the Waveney, on the Suffolk side, and we sauntered or loitered about its banks till we heard almost accidentally that Burgh Castle was in that direction, and toward this ancient ruin we now proceeded.

While on our way thither for the first time, for we went again on the 21st, the ditches and opposite arable land about the village of Burgh, by their alluring aspect, tempted us to deviate from the river bank, which by this time had become wearisome. Botanists never lose their way, or, in other words, they improvise a way, and all ways are conducive to their pursuits, especially if accompanied by change of situation and soil. This divergence from the river-side added at least a long mile to our walk, for, at the place where we turned to the left to go through the meadows to Burgh Castle, we were not more than half a mile from the object of our search, if we had kept by the bank of the stream, but, by going through the village, we both increased the distance and added several interesting plants to our diurnal list.

Nothing was met with in the marshes which had not previously been observed, but in the lane from thence, leading up to the street or road, some strange forms of *Mentha aquatica* were collected. In and about this village *Sisymbrium Sophia* abounded, as indeed it did near villages in all this part of Suffolk. *Chelidonium majus* and *Smyrnium Olusatrum* made their appearance, but so sparingly, and under such suspicious circumstances, as the purists say, that if we had not known something of their history

and distribution previously, they would have been entered in our list of the acquisitions of this day as evident or probable escapes.

There was one plant, *Lycium barbarum*, which, judging from its abundance and thriving appearance in a decidedly spontaneous or wild state, would have figured here as a genuine native had we never seen it but in Suffolk, and never read of it but in the 'Cybele.' About Burgh, and in several other parts of Suffolk and the adjoining county, there cannot be the slightest doubt of its complete naturalization. How long it may have been here history does not reveal, but the plant tells its own story and reveals its perfect adaptability to our soil and clime, *i. e.* to the climate and soil of Suffolk and Norfolk, where it grows abundantly, and is quite at home. How long it has been in these parts the present historian cannot determine, but whether it has been here since the building of Burgh Castle, where we did not see it, or only since the discovery of America, which some authors say is the place of its nativity, (others say it is African,) it is likely to grow here till doomsday.

Saponaria officinalis is another of the naturalized species about Burgh.

In our way to the castle, we passed to the left of the church; for, instead of going right through to the little haven or landing-place, whence there is a path under the cliff to the ruins, we went by the Bolton Road till we came within sight of the ancient walls on the other side of a turnip field.

The view of this noble remnant of bygone times burst upon us unexpectedly on our right. This we counted a piece of good luck, for we both enjoyed the pleasing surprise, and the view on this side is far more imposing than when it is seen from the river bank, although anciently this was the grandest part of the building. The front to the river being built on a cliff, and though flanked by two prominent portions of the fortress, is now so overgrown with rank vegetation that the wall is, in summer, quite concealed, and appears as a more elevated portion of the inconsiderable acclivity on which it is built.

On the north, or Yarmouth side, the wall is naked, and exhibited in all its extent, elevation, and massive thickness.

Those who have seen Richborough Castle, near Sandwich, Kent, will need no description of Burgh Castle, in Suffolk. These two ancient castles may be called counterparts of each

other. The exterior walls alone remain, constructed of Roman tiles or thin brick, in layers, and between these layers masses of concrete, hard as a rock; not solid masonry, but equally strong and more durable.

The area enclosed by the walls of Burgh Castle appears to be smaller than that of Richborough; only the east wall of the latter is wanting, long since swallowed up in the sea of Pegwell Bay. Here the wall is complete, or nearly so. The ground inside was cropped with wheat.

We went round the interior, and surveyed the unmouldering remains, built, one might say, not for 99 years, nor for 999 years,—it has lasted longer than this last period,—but, like the Cyclopean and Pelasgic monuments, for ever, or until the great cataclysm which is destined to overthrow all the works of the most eminent architects and builders of all times.

The plants on the wall, at least those visible to us, were of the very commonest kinds; except *Potentilla argentina*, we did not observe one worth mentioning; none celebrated either for rarity or beauty adorn this ancient castle.

Towards the river, on the south and west sides as aforesaid, the ruins were overgrown with Ivy and other arborescent forms of vegetation, and the slope below produced plenty of Fennel, like its Kentish contemporary. We did not see *Smyrnium*, though it probably grows here as well as at Richborough, but we saw unknown Verbascums, a genus of plants which we never saw near Richborough.

At the base of the cliff between the castle and the river, (we wish to indicate the spot with as much definiteness as possible, because it might seem pedantic, or an affectation of fear for the extirpation of a rare plant, to conceal its locality, especially of a plant so difficult to extirpate as *Sonchus palustris*,) in the ditch surrounded by reeds and Water Figwort, there is a small colony of the Marsh Sow-thistle. It was not in flower when we were there, but we brought a bit of the plant in our tin case, by way of sample, like the Greek scholar who carried a brick in his pocket to show the quality of the house which he wanted to sell.

This, in our simplicity, was at first believed to be a discovery, but it turned out to be none at all. However, it was a pleasure by us unexpected in this part of the country, for the station is not in Turner and Dillwyn's 'Botanist's Guide.'

Opposite to this ditch, under the castle cliff, and between it and the river, there is a sort of water meadow, but the grass produced on it was of the coarsest and commonest description. In this marsh, near the river, a few examples of *Œnanthe Lachenalii* were seen, and it was scattered throughout the meadow; but this plant, which occurs here and there, was nowhere, in this part of the country, so common as it is in the salt-marshes of Kent. But there was a rarer plant in this quarter, and one not yet detected in Kent, nor in Essex either.

A sharp outlook was kept for *Lathyrus palustris*, and some other rarities which grow here, or used to grow. The Marsh-pea certainly grows here, not in very great plenty, but he would be a very greedy collector who took away all, or even materially diminished the number of plants. It is perennial, as most of our readers are aware, and increases by the roots as readily as by seed. *Valeriana officinalis*, the genuine variety, was also seen here.

Lathyrus palustris is one of the plants that must be looked for by those who wish to get it. It does not, like the *Sonchus*, obtrude itself on the notice of the passer-by, and like the

> "Buttercups will be seen
> Whether you will or not."

This beauty lurks behind the tall Sedges, like Damœtas,—"Tu post carecta latebas,"—and presents little to distinguish it from *Lathyrus pratensis*, but its modest iron-bluish small blossoms, which never exhibit a fine truss like *Vicia Cracca*, only here and there a stray blossom or two with some half-developed pods on the lower part of the stem.

Lepturus filiformis appeared close by the river, opposite Burgh Castle, and this was the only station wherein we observed it.

Samolus Valerandi was pretty abundant here, as in most of the ditches in the Fens.

The *Sonchus* and *Lathyrus* were the crowning feats of this walk, and we were contented to turn our faces northwards to Yarmouth, for the shadows were now lengthening, and our uneasy appetites reminded us that we had not yet dined, and we had a two hours' walk between our present locality and that which was to be the scene of our prandial recreations.

While walking homewards by the fields,—for there is a walk all the way to Gorleston, and not one stile to climb over,—kiss-

ing-gates, as they are called here and in Middlesex also, (turnstiles,) are liberally provided. In returning to Yarmouth through the village of Burgh, more of *Lycium barbarum* was seen, and also a few plants of *Sambucus Ebulus*, *Cichorium Intybus*, and *Fumaria capreolata*.

On the bank of a large field nearer Burgh than Gorleston, *Rosa spinosissima* grows in tolerable abundance; also a plant or two of *Arabis Thaliana*. This plant was not nearly so common here as *Sisymbrium Sophia*.

Erodium cicutarium was very common on the sandy ground here (all the ground here is sandy or peat), and it was singularly luxuriant, and usually bore white flowers.

On our way through Gorleston marshes *Carex Pseudo-cyperus* was booked as one of the rarities, and this was the finale to our second day's botanizing about Yarmouth.

We returned to this part of our hunting-ground on the 19th, retracing much of the route formerly walked over, with this difference,—instead of going to Burgh and Burgh Castle, we diverged to the left to Belton and Fritton.

The Decoy, or "'Coy," as they call it here, decoyed us not much to our advantage, or, as the sententious Roman said, *parum rebus*. Notwithstanding this, we had a very successful day, but not in the Belton bogs nor in the Fritton decoy.

There is a productive bog about half a mile before reaching Belton village in coming from Burgh by the road; perhaps it is two miles from Burgh by the road, but by the river it is barely one mile from Burgh Castle to Belton. They say it is no distance from Burgh, for the two villages are contiguous; but country people are liberal in their estimates of distance. The bog above mentioned was on the left of the road, and very accessible; and as St. Swithin blew strong blasts of wind, mingled with dust and small pebbles, and did not pour out rain by the hogshead, we were fain to take shelter in the marshes, where the strong breezes did not hurl the sand and gravel on our faces, to the great injury and discomfort of our eyes.

Ranunculus Lingua and *Hydrocharis Morsus-ranæ* were plentiful enough in most of the swampy ditches, but here we first observed the latter in flower. *Menyanthes trifoliata* also abounded, but almost all of the plants in seed. The herbage was most luxuriant.

Stratiotes aloides was also in great plenty, and we were fortunate enough to find a few plants still in flower.

After amusing ourselves in looking for *Epipactis palustris,* we left this bog and went into a bit of heath terminating in another swampy bottom, for most of the heaths hereabout have a marshy fringe, and these quaking bogs are the most productive localities in this district.

Here we quickly perceived *Carduus pratensis, Orchis latifolia,* several Carices which for the present must be nameless, and the pretty *Anagallis tenella. Lastrea Thelypteris* was common, *Osmunda regalis* not very rare; and among these the rare *Lathyrus palustris.*

In another part of the same bog, but on the opposite side of the road, and a hundred yards nearer the village, large plants of *Cicuta virosa* were seen, and collected also, though at the expense of wetting both the small and great ends of both our *moggans.*

In the same bog, which was mere water covered with a thin film of matted roots of Carices and other aquatics, and which, being elastic, gave way below the feet like a water-bed, the vegetation was chiefly such plants as root in water: *Carex ampullacea, Menyanthes,* and the precious *Cicuta virosa,* which fringed the deep ditch between the road and the marsh.

Elated with this capture, we went ashore, sat down, and emptied the water from our shoes, wrung or twisted it out of our *tibialia,* and hung them up to dry on our collecting-apparatus, and then trudged on to the village of Belton.

On the roadside, close to the railway, viz. where the latter crosses the road on an arch, and on the right side of the way going from the marshes to the church, there was plenty of *Borago officinalis, Erysimum cheiranthoides,* some *Camelina sativa?,* and the never-absent *Sisymbrium Sophia.*

In the churchyard through which we passed there grew *Smyrnium Olusatrum* in great abundance.

Our route was Fritton, and we were directed to take the Decoy as a halfway locality. Here we were promised *Lastrea cristata* and a rich collection of good plants, all obtainable through the civilities of the gamekeeper, and the courteousness of a lady who rented a farm at the Decoy, and also kept boats, which were hirable by sportsmen, the followers of Izaak Walton,

and which might be useful to hunters of the picturesque, but superfluous to botanists. Our experience now, as in former times, taught us not to put our trust in game-preservers, nor in fair tenants of preserved premises accessible only by silver passports.

We passed the northern end of the decoy, and crossed the little brook which supplies its flood, wherein we saw Water Lilies both white and yellow, with plenty of *Lastrea Thelypteris*, and several other things which would be called rare in some parts of the country. Our great object was to botanize about the decoy or in the bogs adjoining, and we relied on the civilities of the gamekeeper, and hoped to get permission to enter and search for ourselves; as his cottage was close by, not more than a hundred yards from the road, we reckoned on enjoying this pleasure. But alas! we soon learned that we had reckoned without our host, and that our hopes were delusive. We found the gamekeeper civil enough, but he politely told us that before he could admit us we must produce the authority of Sir Morton Peto,—an impossibility, for Sir M. Peto was in another locality, and it is possible that if he had been at home he might have objected to our going along the edges of the pond, lest we might disturb the fish, and be the innocent cause of miscarriage in the female part of the finny race, which might perchance be in an interesting condition.

This civil official prevailed on us to make an application to Mrs. Guy, the fair and courteous lessee of the Decoy farm, and the owner of the boats, of whom tackle and other contrivances for killing wild birds and for catching fish could be hired.

This arrangement did not suit us exactly, for in the first place we had to retrace our steps at least a mile, and there was another long mile of a very dusty road to be trodden ere we reached Mrs. Guy's; a third reason, more potent than both the others together, forcibly struck us, viz. that the mistress of the fishing-boats and fowling-pieces would think she had but sorry customers in people who were seeking only wild plants. However we were persuaded, went, and, unlike Cæsar, did not conquer, but were vanquished and returned empty-handed. The usual "No admission except on business" was very courteously tendered, and we took our leave, resolving next time to follow our own counsels, consoling ourselves with the reflection that we were not the first who had been vanquished by the fairer portion of humanity.

The Decoy, about which so much has been already advanced, is an extensive though narrow piece of water, two or three miles long and about a furlong in width. It is in the depression between the sandy plain of Belton and that about Lound and Herringfleet.

It is surrounded with a plantation, which is fenced on the road side. This enclosure and plantation are not of long existence, for the trees are all young.

It is a decoy for wild fowl and a preserve for game.

If we ever have the good hap to be at the Decoy again, instead of returning along its western side, through Fritton, to St. Olave's, we would prefer the eastern side, where there is a heath; possibly it is open, and the distance to St. Olave's would not be much enlarged by going on the eastern side of this *broad.*

On our way to the decoy from Belton, and about halfway, we saw *Petroselinum sativum* pretty well established, and on our way from the gamekeeper's cottage to Mrs. Guy's, on the bank under the paling, there were a few specimens of *Veronica montana.*

From the decoy we went through Fritton to St. Olave's station, and while waiting for the train, looked into the ditches between St. Olave's Bridge and the New Cut at Haddisco, which joins the two rivers, Waveney and Yare, several miles ere they unite above Bradden.

Here were seen some Potamogetons not yet determined; one of them was *P. perfoliatus,* and another *P. prælongus.* They abound in the Waveney.

By the roadside, near the station at St. Olave's, a fine white variety of *Carduus nutans* was seen. Here our day's botanizing ended, and we returned to Yarmouth by train.

The 21st of July was the day of our last and most successful inroad into these parts of Suffolk.

On this morning we intended to go to St. Olave's or to Belton by an early train, but as there are two stations at Yarmouth, and trains for Lowestoft and Ipswich leave both, it so happened that we were too early for that from the one station and too late for that from the other, so we decided that it would be better to walk than to wait. The walk to St. Olave's was a rather severe trial of our muscular endurance, but waiting an hour and a half at the station was a greater drain on our temper and patience.

We made several fruitless attempts to cut across the marsh to

the path between Gorleston and Burgh, and at last resigned ourselves to the inevitable necessity of walking along the Suffolk side of Braden,—the *broad*, the enlarged expanse of the Yare above the harbour, where we had been several times before, and did not much like it, and therefore would have gladly had more than "Hobson's choice," if this had been practicable.

This time we confined ourselves to the river bank, and after reaching the confluence of the Waveney with the Yare, we soon saw and reached Burgh Castle, where we found the *Sonchus palustris* just beginning to show blossom; for it is nearly a fortnight later than *S. arvensis*, and its flowers are not nearly so large and showy, fewer appear at once, and its stem is about twice the height of that of the common species.

From Burgh Castle we skirted along the river's brink for a short mile, and then turned off to the left over the marshes, with the intention of reaching a heath or common which we could see across the bogs, and which we had seen while coming by rail from St. Olave's on the 19th.

In the ditches here there was great abundance of *Œnanthe Phellandrium*, a plant not rare in these fens. On the borders of the marsh, *i.e.* between the bog and the common, or what had been recently common, a fine colony of *Stellaria glauca* was observed. This species should be frequent in Norfolk and Suffolk, and probably is so; our visit was rather early, and the season was rather late, consequently we did not see much of this plant.

At the Belton station we learned that there would be no train for Yarmouth till very late in the evening; our only means of getting back in time was by taking the train at St. Olave's.—*Note.* Several trains stop at this station by signal. Few stop at Belton.

From the Belton station we traversed this barren heath and marsh lying between the heath and the river Waveney. The only rarities worth mentioning were *Stratiotes*, *Hottonia*, one or two spikes with a few of the uppermost flowers; many Potamogetons, of which the most abundant was *P. gramineus*, which in this part of Suffolk is as plentiful as *P. pectinatus*. One form with very long leaves and without fruit was thought to be *P. zosterœfolius*, but it is not yet determined. The botanists resident in these parts are requested to observe these aquatics, and to send the result of their observations to the 'Phytologist.'

In a depression at the extremity of the heath, near the fenny parts which bound the river, some plants of *Thalictrum flavum* were growing, a few of them only just showing flowers.

This was the first example of a not uncommon species that we saw during our ten days' excursion; hence we concluded that it was not frequent in this part of the country.

In a ditch by the edge of a meadow, and surrounded by its usual concomitants,—the common Reed (*Sparganium*), Water Figwort, etc.,—our old favourite *Sonchus palustris* again appeared. This station is in the same tract as the Burgh Castle locality, but several miles higher up the stream. The plants here grew very sparingly, only a few stragglers, but some minutes' walk in the same direction brought us to a fine patch of this rare plant, which was growing in a dense, round, lofty mass, on a slightly elevated part of the ditch bank. Here we counted as many as from twenty to twenty-four plants or stems, none of them yet in flower.

In a meadow, inside a gate where there was a cart-road by which the produce (hay) of these marshes was carried away, among a luxuriant growth of rushes there grew, to us, a very unusual state of *Galeopsis* not yet determined. It is quite as tall as *G. Tetrahit*, but differs from this species in the stem and flowers. It comes nearer to what we raised from seeds sent by a Continental correspondent, who gave with them the name *G. villosa*. The flowers were pure white in dense whorls, and the stem was hairy rather than prickly, and *not* swollen above the joints.

While admiring this new acquisition, and hesitating whether we should go to St. Olave's, along the river-bank, which was within less than a couple of hundred yards from the place where we stood, or should go over the heath, the farmer who occupies these lands entered, and we courteously accosted him and asked the way to the station. He rather gruffly rejoined that there was no way, road, nor path here. On our modestly telling him that a loaded waggon had just passed, and reminding him that there was a path by the river, *i.e.* on the bank, he said there was no way except for him and his servants, etc.; he further asked if we were not botanizing gentry. We of course did not deny the soft impeachment, but qualified our propensities by stating that we did indulge them occasionally, but only in *a small way*. He stoutly insisted that he had seen us before; but this we as stiffly

denied. He asked if we had not come from Lowestoft? This we did not admit, but confessed that we had come from Yarmouth, or rather from London, solely desirous of seeing the native productions of *his* beautiful marsh and heath-lands.

The farmer had no sympathy with our admiration of rural beauty, and complained that we, *i. e.* the fraternity, left the gates open or unshut after passing through. This was the burden of his charge against us. To this we pleaded not guilty, and fortunately we could do this with a good conscience, for the only gate we had entered was close by, and through this his own waggon had passed, and it was duly shut when he arrived.

After telling us in not very civil terms that we were trespassers, which we could not deny, though we pleaded the innocency of our pursuits, and appealed to his better feelings, at the same time laying down the laws of kindness and courtesy, whereby a passport is usually granted to the harmless members of our brotherhood,—he told us that he did not understand these laws of civility, and refused to admit their obligations. After offering many humble apologies for our ignorance, both of the geography of the country and the churlishness of some of its inhabitants, we took our leave, not without carrying away with us some disagreeable reminiscences of the ungraciousness of this specimen of the farming portion of the men of Suffolk. It is charitably to be hoped that he is a solitary sample of rustic rudeness, or that he is the representative of a very limited class.

We are well aware that farmers, whose lands are exposed to the ruthless inroads of the thoughtless population of our great towns, have often but too much reason to complain that their gates are left open, and their crops trampled down and wantonly injured. But gentlemen who carry the vasculum are never liable to this charge. They are too often indebted to the courtesy of the owners and occupiers of land to be guilty of acts either of wantonness or carelessness; and this little episode is published as a hint or a caution to the younger members of the confraternity, to beware of leaving gates unshut, and to avoid as much as possible making gaps in hedges, trampling down grass about to be mown, and breaking stalks of growing or ripe corn.

From this fen, where we had seen the *Sonchus* and the *Galeopsis*, we traversed the heath in the direction of St. Olave's station, and in our way encountered a fine *Sphagnum* bog, but failed to

see *Malaxis paludosa;* probably we were too early. We did not see *Narthecium ossifragum;* and what is stranger still, we did not see this not uncommon plant during our many long walks in Suffolk and Norfolk. Were we too early? By this time, the 21st of July, every peaty bog in Surrey was coloured by its bright yellow blossoms.

We had to cross the railway ere we reached the station, and right before us was a wood with a path which led us into a deep depression, very moist, and covered with a rank growth of reeds. Here, however, we had the pleasure of seeing fine specimens of *Peucedanum palustre,* in its native locality; and here also we observed, for the third time this day, several fine examples of *Sonchus palustris.* The only other rare plant which we had time to note was *Lysimachia vulgaris,* not yet in flower. This was the first time that we observed it in these parts.

We indeed got wet feet and a few scratches, but we escaped the fangs of the farmer, forester, gamekeeper, reed-grower, etc. etc. For this we were specially thankful.

From our experience or from the results of this our last day's botanizing about St. Olave's and Belton, it may be inferred that there is a rich harvest of discoveries remaining for a botanist who can afford to spend a week in this district. Haddisco or St. Olave's is almost the centre of a large tract of marsh land; and the distance to the coast, either at Yarmouth or Lowestoft, from this station is inconsiderable.

Our time and other engagements did not admit of doing more than just taking a rapid view of the locality, which is recommended to succeeding visitors; and it may be certainly affirmed that they will not be discontented with either the number or the importance of their acquisitions.

A COMPARATIVE LIST OF BRITISH PLANTS.

Showing the different Names and Species adopted in the four best-known English Works.

The order here followed is that of Babington's 'Manual' (ed. 4), from which the names are in the first instance taken, omitting the species enclosed in brackets.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Salix laurina.	*S. laurina.*	*S. laurina.*	?*S. phylicifolia.*
Salix phylicifolia	S. phylicifolia.	S. phylicifolia.	S. phylicifolia.
Salix rosmarinifolia.	(Excluded).	S. rosmarinifolia.	(Excluded.)

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Salix angustifolia.	*S. angustifolia.*	*S. angustifolia.*	*S. repens.*
Salix doniana.	S. doniana.	S. doniana.	(Excluded.)
Salix repens.	*S. repens.*	*S. fusca.*	*S. repens.*
Salix ambigua.	*S. ambigua.*	*S. ambigua.*	*S. repens.*
Salix arbuscula.	*S. arbuscula.*	*S. arbuscula.*	*S. myrsinites.*
Salix Lapponum.	*S. Lapponum.*	*S. arenaria.*	*S. Lapponum.*
Salix lanata.	S. lanata.	S. lanata.	S. lanata.
Salix Myrsinites.	S. Myrsinites.	S. Myrsinites.	S. myrsinites.
Salix procumbens.	*S. procumbens.*	*S. procumbens.*	*S. myrsinites.*
Salix reticulata.	S. reticulata.	S. reticulata.	S. reticulata.
Salix herbacea.	S. herbacea.	S. herbacea.	S. herbacea.
Populus alba.	P. alba.	P. alba.	P. alba.
Populus canescens.	*P. canescens.*	*P. canescens.*	*P. alba.*
Populus tremula.	P. tremula.	P. tremula.	P. tremula.
Populus nigra.	P. nigra.	P. nigra.	P. nigra.
Myrica Gale.	M. Gale.	M. Gale.	M. Gale.
Betula alba.	B. alba.	B. alba.	B. alba.
Betula glutinosa.	*B. alba.*	*B. alba.*	*B. alba.*
Betula nana.	B. nana.	B. nana.	B. nana.
Alnus glutinosa.	A. glutinosa.	A. glutinosa.	A. glutinosa.
Fagus sylvatica.	F. sylvatica.	F. sylvatica.	F. sylvatica.
Castanea vulgaris.	(" Planted.")	C. vulgaris.	(Planted.)
Quercus Robur.	Q. Robur.	Q. Robur.	Q. Robur.
Corylus Avellana.	C. Avellana.	C. Avellana.	C. Avellana.
Carpinus Betulus.	C. Betulus.	C. Betulus.	C. Betulus.
Taxus baccata.	T. baccata.	T. baccata.	T. baccata.
Juniperus communis.	J. communis.	J. communis.	J. communis.
Juniperus nana.	*J. communis.*	*J. communis.*	*J. communis.*
Pinus sylvestris.	P. sylvestris.	P. sylvestris.	P. sylvestris.
Paris quadrifolia.	P. quadrifolia.	P. quadrifolia.	P. quadrifolia.
Tamus communis.	T. communis.	T. communis.	T. communis.
Hydrocharis Morsus-ranæ.	H. Morsus-ranæ.	H. Morsus-ranæ.	H. Morsus-ranæ.
Stratiotes aloides.	S. aloides.	S. aloides.	S. aloides.
Anacharis Alsinastrum.	*A. Alsinastrum.*	*A. Alsinastrum.*	*Elodea canadensis.*
Orchis Morio.	O. Morio.	O. Morio.	O. Morio.
Orchis mascula.	O. mascula.	O. mascula.	O. mascula.
Orchis purpurea.	*O. fusca.*	*O. fusca.*	*O. militaris.*
Orchis militaris.	O. militaris.	O. militaris.	O. militaris.
Orchis Simia.	*O. tephrosanthos.*	*O. tephrosanthos.*	*O. militaris.*
Orchis ustulata.	O. ustulata.	O. ustulata.	O. ustulata.
Orchis maculata.	O. maculata.	O. maculata.	O. maculata.
Orchis latifolia.	O. latifolia.	O. latifolia.	O. latifolia.
Orchis incarnata.	*O. latifolia ?*	*O. latifolia.*	*O. latifolia.*
Orchis pyramidalis.	O. pyramidalis.	O. pyramidalis.	O. pyramidalis.
Orchis hircina.	O. hircina.	O. hircina.	O. hircina.
Gymnadenia conopsea.	*G. conopsea.*	*G. conopsea.*	*Orchis conopsea.*
Gymnadenia albida.	*Habenaria albida.*	*Habenaria albida.*	*Habenaria albida.*

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Aceras anthropophora.	A. anthropophora.	A. anthropophora.	A. anthropophora.
Habenaria viridis.	H. viridis.	H. viridis.	H. viridis.
Habenaria bifolia.	H. bifolia.	H. bifolia.	H. bifolia.
Habenaria chlorantha.	*H. bifolia.*	*H. chlorantha.*	*H. bifolia.*
Ophrys apifera.	O. apifera.	O. apifera.	O. apifera.
Ophrys arachnites.	*O. apifera.*	*O. arachnites.*	*O. apifera.*
Ophrys aranifera.	O. aranifera.	O. aranifera.	O. aranifera.
Ophrys muscifera.	O. muscifera.	O. muscifera.	O. muscifera.
Herminium Monorchis.	H. Monorchis.	H. Monorchis.	H. Monorchis.
Goodyera repens.	G. repens.	G. repens.	G. repens.
Spiranthes autumnalis.	S. autumnalis.	S. autumnalis.	S. autumnalis.
Spiranthes æstivalis.	S. æstivalis.	S. æstivalis.	S. æstivalis.
Spiranthes cernua.	*S. cernua.*	*S. gemmipara.*	*S. gemmipara.*
Listera ovata.	L. ovata.	L. ovata.	L. ovata.
Listera cordata.	L. cordata.	L. cordata.	L. cordata.
Neottia Nidus-avis.	*N. Nidus-avis.*	*Listera Nidus-avis.*	*N. Nidus-avis.*
Epipactis latifolia.	E. latifolia.	E. latifolia.	E. latifolia.
Epipactis media.	*E. media.*	*E. latifolia.*	*E. latifolia.*
Epipactis ovalis.	*E. atrorubens.*	*E. latifolia.*	*E. latifolia.*
Epipactis palustris.	E. palustris.	E. palustris.	E. palustris.
Cephalanthera grandiflora	*C. grandiflora.*	*Epipactis grandiflora.*	*C. grandiflora.*
Cephalanthera ensifolia.	*C. ensifolia.*	*Epipactis ensifolia.*	*C. ensifolia.*
Cephalanthera rubra.	*C. rubra.*	*Epipactis rubra.*	*C. rubra.*
Epipogium aphyllum.	*E. aphyllum.*	*E. Gmelini.*	*E. aphyllum.*
Corallorhiza innata.	C. innata.	C. innata.	C. innata.
Malaxis paludosa.	M. paludosa.	M. paludosa.	M. paludosa.
Sturmia Lœselii.	*Liparis Lœselii.*	*Liparis Lœselii.*	*Liparis Lœselii.*
Cypripedium Calceolus.	C. Calceolus.	C. Calceolus.	C. Calceolus.
Sisyrinchium anceps.	S. anceps.	(Excluded.)	(Excluded.)
Iris Pseudacorus.	I. Pseudacorus.	I. Pseudacorus.	I. Pseudacorus.
Iris fœtidissima.	I. fœtidissima.	I. fœtidissima.	I. fœtidissima.
Gladiolus imbricatus.		*G. communis.*	*G. communis.*
Trichonema Columnæ.	*T. Columnæ.*	*T. Columnæ.*	*T. Bulbocodium.*
Crocus vernus.	C. vernus.	C. vernus.	C. vernus.
Crocus nudiflorus.	C. nudiflorus.	C. nudiflorus.	C. nudiflorus.
Narcissus biflorus.	N. biflorus.	N. biflorus.	N. biflorus.
Narcissus Pseudo-Narcissus	N. Pseudo-Nar.	N. Pseudo-Narcissus.	N. Pseudo-Narcissus.
Leucojum æstivum.	L. æstivum.	L. æstivum.	L. æstivum.
Galanthus nivalis.	G. nivalis.	G. nivalis.	G. nivalis.
Asparagus officinalis.	A. officinalis.	A. officinalis.	A. officinalis.
Convallaria majalis	C. majalis.	C. majalis.	C. majalis.
Polygonatum verticillatum	*C. verticillata.*	*P. verticillatum.*	*P. verticillatum.*
Polygonatum officinale.	*C. Polygonatum*	*P. officinale.*	*P. officinale.*
Polygonatum multiflorum.	*C. multiflora.*	*P. multiflorum.*	*P. multiflorum.*
Maianthemum bifolium.	*Convallaria bifolia.*	*M. bifolium.*	(" Probably planted.")
Ruscus aculeatus.	R. aculeatus.	R. aculeatus.	R. aculeatus.
Tulipa sylvestris.	T. sylvestris.	T. sylvestris.	T. sylvestris.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Fritillaria Meleagris.	F. Meleagris.	F. Meleagris.	F. Meleagris.
Lloydia serotina.	*Anthericum serotinum. L. serotina.*		*L. serotina.*
Ornithogalum umbellatum.	O. umbellatum.	O. umbellatum.	O. umbellatum.
Ornithogalum pyrenaicum.	O. pyrenaicum.	O. pyrenaicum.	O. pyrenaicum.
Ornithogalum nutans.	O. nutans.	O. nutans.	O. nutans.
Gagia lutea.	G. lutea.	G. lutea.	G. lutea.
Scilla autumnalis.	S. autumnalis.	S. autumnalis.	S. autumnalis.
Scilla verna.	S. verna.	S. verna.	S. verna.
Allium Ampeloprasum.	A. Ampelopr.	A. Ampeloprasum.	A. Ampeloprasum.
Allium Babingtonii.	*A. Babingtonii.*	*A. Ampeloprasum.*	*A. Ampeloprasum.*
Allium Scorodoprasum.	A. Scorodopr.	A. Scorodoprasum.	A. Scorodoprasum.
Allium vineale.	A. vineale.	A. vineale.	A. vineale.
Allium sphærocephalum.	A. sphæroceph.	A. sphærocephalum.	A. sphærocephalum.
Allium oleraceum.	A. oleraceum.	A. oleraceum.	A. oleraceum.
Allium Schœnoprasum.	A. Schœnopr.	A. Schœnoprasum.	A. Schœnoprasum.
Allium ursinum.	A. ursinum.	A. ursinum.	A. ursinum.
Simethis bicolor.	S. bicolor.	S. bicolor.	S. bicolor.
Endymion nutans.	*Hyacin. non-scr.*	*Agraphis nutans.*	*Scilla nutans.*
Muscari racemosum.	M. racemosum.	M. racemosum.	M. racemosum.
Colchicum autumnale.	C. autumnale.	C. autumnale.	C. autumnale.
Tofieldia palustris.	T. palustris.	T. palustris.	T. palustris.
Eriocaulon septangulare.	E. septangulare.	E. septangulare.	E. septangulare.
Narthecium ossifragum.	N. ossifragum.	N. ossifragum.	N. ossifragum.
Juncus maritimus.	J. maritimus.	J. maritimus.	J. maritimus.
Juncus acutus.	J. acutus.	J. acutus.	J. acutus.
Juncus effusus.	*J. effusus.*	*J. communis.*	*J. communis.*
Juncus conglomeratus.	*J. conglomeratus.*	*J. communis.*	*J. communis.*
Juncus glaucus.	J. glaucus.	J. glaucus.	J. glaucus.
Juncus diffusus.	*J. diffusus.*	*J. glaucus.*	*J. glaucus.*
Juncus balticus.	J. balticus.	J. balticus.	J. balticus.
Juncus filiformis.	J. filiformis.	J. filiformis.	J. filiformis.
Juncus castaneus.	J. castaneus.	J. castaneus.	J. castaneus.
Juncus triglumis.	*J. triglumis.*	*J. triglumis.*	*J. biglumis.*
Juncus biglumis.	J. biglumis.	J. biglumis.	J. biglumis.
Juncus trifidus.	J. trifidus.	J. trifidus.	J. trifidus.
Juncus obtusiflorus.	J. obtusiflorus.	J. obtusiflorus.	J. obtusiflorus.
Juncus acutiflorus.	*J. acutiflorus.*	*J. acutiflorus.*	*J. articulatus.*
Juncus lamprocarpus.	*J. lamprocarpus.*	*J. lamprocarpus.*	*J. articulatus.*
Juncus nigritellus.	*J. lamprocarpus.*	*J. nigritellus.*	*J. articulatus.*
Juncus supinus.	*J. supinus.*	*J. uliginosus.*	*J. articulatus.*
Juncus squarrosus.	J. squarrosus.	J. squarrosus.	J. squarrosus.
Juncus compressus.	J. compressus.	J. compressus.	J. compressus.
Juncus Gerardi.	*J. compressus.*	*J. compressus.*	*J. compressus.*
Juncus bufonius.	J. bufonius.	J. bufonius.	J. bufonius.
Luzula sylvatica.	L. sylvatica.	L. sylvatica.	L. sylvatica.
Luzula Forsteri.	*L. Forsteri.*	*L. Forsteri.*	*L. pilosa.*
Luzula Borreri.	*L. pilosa.*	*L. hybrida.*	*L. pilosa.*

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Luzula pilosa.	L. pilosa.	L. pilosa.	L. pilosa.
Luzula campestris.	L. campestris.	L. campestris.	L. campestris.
Luzula multiflora.	*L. multiflora.*	*L. campestris.*	*L. campestris.*
Luzula spicata.	L. spicata.	L. spicata.	L. spicata.
Luzula arcuata.	L. arcuata.	L. arcuata.	L. arcuata.
Alisma Plantago.	A. Plantago.	A. Plantago.	A. Plantago.
Alisma ranunculoides.	A. ranunculoides.	A. ranunculoides.	A. ranunculoides.
Alisma natans.	A. natans.	A. natans.	A. natans.
Actinocarpus Damasonium	*A. Damasonium.*	*A. Damasonium.*	*Damason. stellatum.*
Sagittaria sagittifolia.	S. sagittifolia.	S. sagittifolia.	S. sagittifolia.
Butomus umbellatus.	B. umbellatus.	B. umbellatus.	B. umbellatus.
Scheuchzeria palustris.	S. palustris.	S. palustris.	S. palustris.
Triglochin maritimum.	T. maritimum.	T. maritimum.	T. maritimum.
Triglochlin palustre.	T. palustre.	T. palustre.	T. palustre.
Typha latifolia.	T. latifolia.	T. latifolia.	T. latifolia.
Typha angustifolia.	T. angustifolia.	T. angustifolia.	T. angustifolia.
Sparganium ramosum.	S. ramosum	S. ramosum.	S. ramosum.
Sparganium simplex.	S. simplex.	S. simplex.	S. simplex.
Sparganium natans.	S. natans.	S. natans.	S. natans.
Sparganium minimum.	*S. minimum.*	*S. minimum.*	*S. natans.*
Acorus Calamus.	A. Calamus.	A. Calamus.	A. Calamus.
Arum maculatum.	A. maculatum.	A. maculatum.	A. maculatum.
Arum italicum.	(Excluded.)	(Excluded.)	(Excluded.)
Lemna trisulca.	L. trisulca.	L. trisulca.	L. trisulca.
Lemna minor.	L. minor.	L. minor.	L. minor.
Lemna polyrhiza.	L. polyrhiza.	L. polyrhiza.	L. polyrhiza.
Lemna gibba.	L. gibba.	L. gibba.	L. gibba.
Potamogeton natans.	P. natans.	P. natans.	P. natans.
Potamogeton polygonifol.	*P. oblongus.*	*P. oblongus.*	*P. natans.*
Potamogeton plantagineus.	*P. plantagineus.*	*P. plantagineus.*	*P. natans.*
Potamogeton rufescens.	*P. rufescens.*	*P. rufescens.*	*P. lucens.*
Potamogeton lanceolatus.	*P. plantagineus.*	*P. plantagineus.*	*P. lucens.*
Potamogeton sparganiifol.	(Excluded.)	(Excluded.)	(Excluded.)
Potamogeton heterophyllus	P. heterophyllus.	P. heterophyllus.	P. heterophyllus.
Potamogeton lucens.	P. lucens.	P. lucens.	P. lucens.
Potamogeton longifolius.	(*Excluded.*)	*P. longifolius.*	*P. lucens.*
Potamogeton prælongus.	P. prælongus.	P. prælongus.	P. prælongus.
Potamogeton perfoliatus.	P. perfoliatus.	P. perfoliatus.	P. perfoliatus.
Potamogeton crispus.	P. crispus.	P. crispus.	P. crispus.
Potamogeton zosterifolius.	*P. zosterifolius.*	*P. zosterifolius.*	*P. pusillus.*
Potamogeton acutifolius.	*P. acutifolius.*	*P. acutifolius.*	*P. pusillus.*
Potamogeton gramineus.	*P. gramineus.*	*P. gramineus.*	*P. pusillus.*
Potamogeton compressus.	*P. compressus.*	*P. pusillus.*	*P. pusillus.*
Potamogeton pusillus.	P. pusillus.	P. pusillus.	P. pusillus.
Potamogeton trichoides.	*P. trichoides.*	*P. trichoides.*	*P. pusillus.*
Potamogeton flabellatus.	*P. flabellatus.*	*P. pectinatus.*	(*Omitted.*)
Potamogeton pectinatus.	P. pectinatus.	P. pectinatus.	P. pectinatus.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Potamogeton filiformis.	*P. filiformis.*	*P. filiformis.*	*P. pectinatus.*
Potamogeton densus.	P. densus.	P. densus.	P. densus.
Ruppia maritima.	R. maritima.	R. maritima.	R. maritima.
Ruppia rostellata.	*R. maritima.*	*R. maritima.*	*R. maritima.*
Zannichellia palustris.	Z. palustris.	Z. palustris.	Z. palustris.
Zostera nana.	Z. nana.	Z. nana.	Z. nana.
Zostera marina.	Z. marina.	Z. marina.	Z. marina.
Naias flexilis.	N. flexilis.	N. flexilis.	N. flexilis.
Cyperus longus.	C. longus.	C. longus.	C. longus.
Cyperus fuscus.	C. fuscus.	C. fuscus.	C. fuscus.
Schœnus nigricans.	S. nigricans.	S. nigricans.	S. nigricans.
Cladium Mariscus.	C. Mariscus.	C. Mariscus.	C. Mariscus.
Rhynchospora alba.	R. alba.	R. alba.	R. alba.
Rhynchospora fusca.	R. fusca.	R. fusca.	R. fusca.
Eleocharis palustris.	*Scirpus palustris.*	*Eleocharis palustris.*	*Scirpus palustris.*
Eleocharis uniglumis.	*Scirpus unigl.*	*Eleocharis palustris.*	*Scirpus palustris.*
Eleocharis multicaulis.	*Scirpus multic.*	*Eleocharis multicaulis.*	*Scirpus multicaulis.*
Eleocharis acicularis.	*Scirpus acicul.*	*Eleocharis acicularis.*	*Scirpus acicularis.*
Scirpus maritimus.	S. maritimus.	S. maritimus.	S. maritimus.
Scirpus sylvaticus.	S. sylvaticus.	S. sylvaticus.	S. sylvaticus.
Scirpus carinatus.	*S. carinatus.*	*S. carinatus.*	*S. lacustris.*
Scirpus triqueter.	S. triqueter.	S. triqueter.	S. triqueter.
Scirpus lacustris.	S. lacustris.	S. lacustris.	S. lacustris.
Scirpus Tabernæmontani.	*S. lacustris.*	*S. Tabernæmontani.*	*S. lacustris.*
Scirpus cæspitosus.	S. cæspitosus.	S. cæspitosus.	S. cæspitosus.
Scirpus pauciflorus.	S. pauciflorus.	S. pauciflorus.	S. pauciflorus.
Scirpus parvulus.	S. parvulus.	[S. parvulus.]	(Excluded.)
Scirpus fluitans.	*Scirpus fluitans.*	*Isolepis fluitans.*	*Scirpus fluitans.*
Scirpus setaceus.	*Scirpus setaceus*	*Isolepis setaceus.*	*Scirpus setaceus.*
Scirpus Savii.	*Scirpus Savii.*	*Isolepis Savii.*	*Scirpus Savii.*
Scirpus Holoschœnus.	*S. Holoschœnus.*	*Isolepis Holoschœnus.*	*Scirpus Holoschœnus.*
Blysmus compressus.	B. compressus.	B. compressus.	B. compressus.
Blysmus rufus.	B. rufus.	B. rufus.	B. rufus.
Eriophorum alpinum.	(Excluded.)	E. alpinum.	E. alpinum.
Eriophorum vaginatum.	E. vaginatum.	E. vaginatum.	E. vaginatum.
Eriophorum angustifolium.	*E. angustifolium.*	*E. angustifolium.*	*E. polystachyum.*
Eriophorum latifolium.	*E. latifolium.*	*E. latifolium.*	*E. polystachyum.*
Eriophorum gracile.	*E. gracile.*	*E. gracile.*	*E. polystachyum.*
Kobresia caricina.	*Elyna caricina.*	*Kobresia caricina.*	*Kobresia caricina.*
Carex dioica.	C. dioica.	C. dioica.	C. dioica.
Carex Davalliana.	*(Excluded.)*	*C. Davalliana.*	*C. dioica.*
Carex pulicaris.	C. pulicaris.	C. pulicaris.	C. pulicaris.
Carex rupestris.	C. rupestris.	C. rupestris.	C. rupestris.
Carex pauciflora.	C. pauciflora.	C. pauciflora.	C. pauciflora.
Carex incurva.	C. incurva.	C. incurva.	C. incurva.
Carex divisa.	C. divisa.	C. divisa.	C. divisa.
Carex disticha.	*C. intermedia.*	*C. intermedia.*	*C. arenaria.*

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Carex arenaria.	C. arenaria.	C. arenaria.	C. arenaria.
Carex vulpina.	C. vulpina.	C. vulpina.	C. vulpina.
Carex muricata.	C. muricata.	C. muricata.	C. muricata.
Carex divulsa.	*C. divulsa.*	*C. divulsa.*	*C. muricata.*
Carex teretiuscula.	*C. teretiuscula.*	*C. teretiuscula.*	*C. paniculata.*
Carex paradoxa,	*C. paradoxa.*	*C. paradoxa.*	*C. paniculata.*
Carex paniculata.	C. paniculata.	C. paniculata.	C. paniculata.
Carex brizoides.	(Excluded.)	C. brizoides.	(Excluded.)
Carex bœnninghauseniana.	*C. bœnninghau.*	*C. bœnninghau.*	*C. axillaris.*
Carex axillaris.	C. axillaris.	C. axillaris.	C. axillaris.
Carex remota.	C. remota.	C. remota.	C. remota.
Carex stellulata.	C. stellulata.	C. stellulata.	C. stellulata.
Carex elongata.	C. elongata.	C. elongata.	C. elongata.
Carex curta.	*C. curta.*	*C. curta.*	*C. canescens.*
Carex vitilis.	*C. curta.*	*C. curta.*	*C. canescens.*
Carex lagopina.	*C. leporina.*	*C. leporina.*	*C. lagopina.*
Carex ovalis.	*C. ovalis.*	*C. ovalis.*	*C. leporina.*
Carex stricta.	*C. stricta.*	*C. cæspitosa.*	*C. cæspitosa.*
Carex acuta.	C. acuta.	C. acuta.	C. acuta.
Carex rigida.	*C. rigida.*	*C. rigida.*	*C. cæspitosa.*
Carex aquatilis.	*C. aquatilis.*	*C. aquatilis.*	*C. cæspitosa.*
Carex vulgaris.	*C. vulgaris.*	*C. vulgaris.*	*C. cæspitosa.*
Carex Gibsoni.	(Excluded.)	[*C. Gibsoni.*]	*C. acuta.*
Carex Vahlii.	*C. Vahlii.*	*C. Vahlii.*	*C. alpina.*
Carex Buxbaumii.	*C. canescens.*	*C. canescens.*	*C. Buxbaumii.*
Carex atrata.	C. atrata.	C. atrata.	C. atrata.
Carex pallescens.	C. pallescens.	C. pallescens.	C. pallescens.
Carex panicea.	C. panicea.	C. panicea.	C. panicea.
Carex vaginata.	*C. panicea.*	*C. vaginata.*	*C. panicea.*
Carex limosa.	C. limosa.	C. limosa.	C. limosa.
Carex irrigua.	*C. limosa.*	*C. limosa.*	*C. limosa.*
Carex rariflora.	*C. rariflora.*	*C. rariflora.*	*C. limosa.*
Carex capillaris.	C. capillaris.	C. capillaris.	C. capillaris.
Carex strigosa.	C. strigosa.	C. strigosa.	C. strigosa.
Carex pendula.	C. pendula.	C. pendula.	C. pendula.
Carex humilis.	*C. clandestina.*	*C. clandestina.*	*C. humilis*
Carex digitata.	C. digitata.	C. digitata.	C. digitata.
Carex præcox.	C. præcox.	C. præcox.	C. præcox.
Carex montana.	*C. montana.*	*C. collina.*	*C. montana.*
Carex pilulifera.	C. pilulifera.	C. pilulifera.	C. pilulifera.
Carex tomentosa.	C. tomentosa.	C. tomentosa.	C. tomentosa.
Carex glauca.	C. glauca.	C. glauca.	C. glauca.
Carex ustulata.	(Excluded.)	C. ustulata.	(Excluded.)
Carex flava.	C. flava.	C. flava.	C. flava.
Carex Œderi.	*C. flava.*	*C. flava.*	*C. flava.*
Carex extensa.	C. extensa.	C. extensa.	C. extensa.
Carex fulva.	C. fulva.	C. fulva.	*C. distans.*

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Carex punctata.	C. punctata.	C. punctata.	C. punctata.
Carex distans.	C. distans.	C. distans.	C. distans.
Carex binervis.	*C. binervis.*	*C. binervis.*	*C. distans.*
Carex lævigata.	*C. lævigata.*	*C. lævigata.*	*C. distans.*
Carex depauperata.	*C. depauperata.*	*C. depauperata.*	*C. distans.*
Carex sylvatica.	C. sylvatica.	C. sylvatica.	C. sylvatica.
Carex Pseudo-cyperus.	C. Pseudo-cyp.	C. Pseudo-cyperus.	C. Pseudo-cyperus.
Carex filiformis.	C. filiformis.	C. filiformis.	C. filiformis.
Carex hirta.	C. hirta.	C. hirta.	C. hirta.
Carex pulla.	*C. saxatilis.*	*C. saxatilis.*	*C. saxatilis.*
Carex Grahami.	*C. saxatilis.*	*C. saxatilis.*	*C. saxatilis.*
Carex ampullacea.	C. ampullacea.	C. ampullacea.	C. ampullacea.
Carex vesicaria.	C. vesicaria.	C. vesicaria.	C. vesicaria.
Carex paludosa.	C. paludosa.	C. paludosa.	C. paludosa.
Carex riparia.	*C. riparia.*	*C. riparia.*	*C. paludosa.*
Digitaria humifusa.	*D. humifusa.*	*D. humifusa.*	*Panicum glabrum.*
Setaria viridis.	*S. viridis.*	*S. viridis.*	*Panicum viride.*
Cynodon Dactylon.	C. Dactylon.	C. Dactylon.	C. Dactylon.
Spartina stricta.	S. stricta.	S. stricta.	S. stricta.
Spartina alterniflora.	*S. alterniflora.*	*S. alterniflora.*	*S. stricta.*
Knappia agrostidea.	*K. agrostidea.*	*K. agrostidea.*	*Chamagrostis minima.*
Phalaris canariensis.	P. canariensis.	P. canariensis.	P. canariensis.
Phalaris arundinacea.	*P. arundinacea.*	*P. arundinacea.*	*Digraphis arundin.*
Anthoxanthum odoratum.	A. odoratum.	A. odoratum.	A. odoratum.
Hierochloe borealis.	H. borealis.	H. borealis.	H. borealis.
Phleum asperum.	P. asperum.	P. asperum.	P. asperum.
Phleum Bœhmeri.	P. Bœhmeri.	P. Bœhmeri.	P. Bœhmeri.
Phleum arenarium.	P. arenarium.	P. arenarium.	P. arenarium.
Phleum pratense.	P. pratense.	P. pratense.	P. pratense.
Phleum alpinum.	P. alpinum.	P. alpinum.	P. alpinum.
Alopecurus pratensis.	A. pratensis.	A. pratensis.	A. pratensis.
Alopecurus alpinus.	A. alpinus.	A. alpinus.	A. alpinus.
Alopecurus geniculatus.	A. geniculatus.	A. geniculatus.	A. geniculatus.
Alopecurus fulvus.	*A. fulvus.*	*A. fulvus.*	*A. geniculatus.*
Alopecurus bulbosus.	*A. bulbosus.*	*A. bulbosus.*	*A. geniculatus.*
Alopecurus agrestis.	A. agrestis.	A. agrestis.	A. agrestis.
Sesleria cœrulea.	S. cœrulea.	S. cœrulea.	S. cœrulea.
Nardus stricta.	N. stricta.	N. stricta.	N. stricta.
Leersa oryzoides.	L. oryzoides.	L. oryzoides.	L. oryzoides.
Milium effusum.	M. effusum.	M. effusum.	M. effusum.
Phragmites communis.	*Arundo Phrag.*	*Phragmites communis.*	*Arundo Phragmites.*
Psamma arenaria.	*Ammophila aren.*	*Psamma arenaria.*	*Psamma arenaria.*
Calamagrostis lanceolata.	*Arundo Calamag.*	*Calamagrostis lanc.*	*Calamagrostis lanc.*
Calamagrostis Epigejos.	*Arundo Epigejos.*	*Calamagrostis Epig.*	*Calamagrostis Epig.*
Calamagrostis stricta.	*Arundo stricta.*	*Calamagrostis stricta.*	*Calamagrostis stricta.*
Calamagrostis stricta.	*Arun. lapponica.*	*Calamagrostis stricta.*	*Calamagrostis stricta.*
pera Spica-venti.	*A. Spica-venti.*	*A. Spica-venti.*	*Agrostis Spica-venti.*

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Apera interrupta.	*A. interrupta.*	*A. interrupta.*	*Agrostis Spica-venti.*
Agrostis setacea.	A. setacea.	A. setacea.	A. setacea.
Agrostis canina.	A. canina.	A. canina.	A. canina.
Agrostis vulgaris.	*A. vulgaris.*	*A. vulgaris.*	*A. alba.*
Agrostis alba.	A. alba.	A. alba.	A. alba.
Polypogon monspeliensis.	P. monspeliensis.	P. monspeliensis.	P. monspeliensis.
Polypogon littoralis.	P. littoralis.	P. littoralis.	P. littoralis.
Gastridium lendigerum.	G. lendigerum.	G. lendigerum.	G. lendigerum.
Holcus lanatus.	H. lanatus.	H. lanatus.	H. lanatus.
Holcus mollis.	H. mollis.	H. mollis.	H. mollis.
Corynephorus canescens.	*Aira canescens.*	*Aira canescens.*	*Aira canescens.*
Aira cæspitosa.	A. cæspitosa.	A. cæspitosa.	A. cæspitosa.
Aira alpina.	*A. alpina.*	*A. alpina.*	*A. cæspitosa.*
Aira flexuosa.	A. flexuosa.	A. flexuosa.	A. flexuosa.
Aira caryophyllea.	A. caryophyllea.	A. caryophyllea.	A. caryophyllea.
Aira præcox.	A. præcox.	A. præcox.	A. præcox.
Trisetum flavescens.	*Avena flavesc.*	*Avena flavescens.*	*Avena flavescens.*
Avena fatua.	A. fatua.	A. fatua.	A. fatua.
Avena strigosa.	*A. strigosa.*	*A. strigosa.*	*A. fatua.*
Avena pratensis.	A. pratensis.	A. pratensis.	A. pratensis.
Avena pubescens.	*A. pubescens.*	*A. pubescens.*	*A. pratensis.*
Arrhenatherum avenaceum.	A. avenaceum.	A. avenaceum.	A. avenaceum.
Trioidia decumbens.	T. decumbens.	T. decumbens.	T. decumbens.
Koeleria cristata.	K. cristata.	K. cristata.	K. cristata.
Melica uniflora.	M. uniflora.	M. uniflora.	M. uniflora.
Melica nutans.	M. nutans.	M. nutans.	M. nutans.
Molinia cœrulea.	M. cœrulea.	M. cœrulea.	M. cœrulea.
Poa annua.	P. annua.	P. annua.	P. annua.
Poa bulbosa.	P. bulbosa.	P. bulbosa.	P. bulbosa.
Poa minor.	*P. laxa.*	*P. laxa.*	*P. laxa.*
Poa laxa.	P. laxa.	P. laxa.	P. laxa.
Poa alpina.	P. alpina.	P. alpina.	P. alpina.
Poa cæsia.	*P. cæsia.*	*P. nemoralis* or *P. alpina.*	*P. nemoralis.*
Poa nemoralis.	P. nemoralis.	P. nemoralis.	P. nemoralis.
Poa Parnellii.	*P. nemoralis.*	*P. nemoralis.*	*P. nemoralis.*
Poa Balfourii.	*P. cæsia.*	*P. nemoralis.*	*P. nemoralis.*
Poa trivialis.	P. trivialis.	P. trivialis.	P. trivialis.
Poa pratensis.	P. pratensis.	P. pratensis.	P. pratensis.
Poa compressa.	P. compressa.	P. compressa.	P. compressa.
Poa polynoda	*P. compressa.*	*P. compressa.*	*P. compressa.*
Glyceria aquatica.	*G. aquatica.*	*Poa aquatica.*	*Poa aquatica.*
Glyceria fluitans.	*G. fluitans.*	*Poa fluitans.*	*Poa fluitans.*
Glyceria plicata.	*G. plicata.*	*Poa fluitans.*	*Poa fluitans.*
Sclerochloa maritima.	*Glyceria marit.*	*Poa maritima.*	*Poa maritima.*
Sclerochloa distans.	*Glyceria distans.*	*Poa distans.*	*Poa distans.*
Sclerochloa Borreri.	*Glyceria Borreri.*	*Poa Borreri.*	*Poa distans.*
Sclerochloa procumbens.	*Glyceria proc.*	*Poa procumbens.*	*Poa procumbens.*

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Sclerochloa rigida.	*Glyceria rigida.*	*Poa rigida.*	*Poa rigida.*
Sclerochloa loliacea.	*Glyceria loliacea.*	*Poa loliacea.*	*Poa loliacea.*
Briza minor.	B. minor.	B. minor.	B. minor.
Briza media.	B. media.	B. media.	B. media.
Catabrosa aquatica.	C. aquatica.	C. aquatica.	C. aquatica.
Cynosurus cristatus.	C. cristatus.	C. cristatus.	C. cristatus.
Dactylis glomerata.	D. glomerata.	D. glomerata.	D. glomerata.
Festuca uniglumis.	F. uniglumis.	F. uniglumis.	F. uniglumis.
Festuca sciuroides.	*F. bromoides.*	*F. bromoides.*	*F. Myurus.*
Festuca Myurus.	*G. bromoides.*	*F. bromoides.*	*F. Myurus.*
Festuca ovina.	F. ovina.	F. ovina.	F. ovina.
Festuca ovina.	*F. duriuscula.*	*F. ovina.*	*F. ovina.*
Festuca rubra.	*F. rubra.*	*F. ovina.*	*F. ovina.*
Festuca sylvatica.	F. sylvatica.	F. sylvatica.	F. sylvatica.
Festuca gigantea.	*Bromus giganteus.*	*Festuca gigantea.*	*Bromus giganteus.*
Festuca arundinacea.	*F. elatior.*	*F. elatior.*	*F. elatior.*
Festuca arundinacea.	*F. arundinacea.*	*F. elatior.*	*F. elatior.*
Festuca pratensis.	*F. pratensis.*	*F. pratensis.*	*F. elatior.*
Bromus erectus.	B. erectus.	B. erectus.	B. erectus.
Bromus asper.	B. asper.	B. asper.	B. asper.
Bromus sterilis.	B. sterilis.	B. sterilis.	B. sterilis.
Bromus diandrus.	*B. madritensis.*	*B. madritensis.*	*B. madritensis.*
[*Serrafalcus secalinus.*]	*Bromus secalin.*	*Bromus secalinus.*	*Bromus arvensis.*
Serrafalcus commutatus.	*Bromus commu.*	*Bromus commutatus.*	*Bromus arvensis.*
Serrafalcus racemosus.	*Bromus mollis.*	*Bromus racemosus.*	*Bromus arvensis.*
Serrafalcus mollis.	*Bromus mollis.*	*Bromus mollis.*	*Bromus arvensis.*
Brachypodium sylvaticum.	B. sylvaticum.	B. sylvaticum.	B. sylvaticum.
Brachypodium pinnatum.	B. pinnatum.	B. pinnatum.	B. pinnatum.
Triticum caninum.	T. caninum.	T. caninum.	T. caninum.
Triticum repens.	T. repens.	T. repens.	T. repens.
Triticum pungens.	*? T. repens.*	*? T. laxum.*	*T. repens.*
Triticum acutum.	*T. laxum.*	*T. laxum.*	*T. repens.*
Triticum junceum.	*T. junceum.*	*T. junceum.*	*T. repens.*
Elymus arenarius.	E. arenarius.	E. arenarius.	E. arenarius.
Elymus geniculatus.	(Excluded.)	*E. geniculatus.*	*E. arenarius.*
Hordeum sylvaticum.	H. sylvaticum.	H. sylvaticum.	H. sylvaticum.
Hordeum pratense.	H. pratense.	H. pratense.	H. pratense.
Hordeum murinum.	H. murinum.	H. murinum.	H. murinum.
Hordeum maritimum.	H. maritimum.	H. maritimum.	H. maritimum.
Lepturus incurvatus.	*L. filiformis.*	*L. incurvatus.*	*L. incurvatus.*
Lolium perenne.	L. perenne.	L. perenne.	L. perenne.
[*Lolium italicum.*]	*L. italicum.*	*L. italicum.*	*L. perenne.*
Lolium temulentum.	L. temulentum.	L. temulentum.	L. temulentum.
Equisetum arvense.	E. arvense.	E. arvense.	E. arvense.
Equisetum umbrosum.	*E. umbrosum.*	*E. umbrosum.*	*E. pratense.*
Equisetum Telmateja.	E. Telmateja.	E. Telmateja.	E. Telmateja.
Equisetum sylvaticum.	E. sylvaticum.	E. sylvaticum.	E. sylvaticum.

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Equisetum limosum.	E. limosum.	E. limosum.	E. limosum.
Equisetum palustre.	E. palustre.	E. palustre.	E. palustre.
Equisetum hyemale.	E. hyemale.	E. hyemale.	E. hyemale.
? Equisetum Moorei.	*E. trachyodon.*	*E. hyemale.*	*E. ramosum.*
Equisetum trachyodon.	*E. trachyodon.*	*E. trachyodon.*	*E. ramosum.*
Equisetum variegatum.	E. variegatum.	E. variegatum.	E. variegatum.
Allosorus crispus.	*A. crispus.*	*Cryptogramme crispa.*	*Allosorus crispus.*
Polypodium vulgare.	P. vulgare.	P. vulgare.	P. vulgare.
Polypodium Phegopteris.	P. Phegopteris.	P. Phegopteris.	P. Phegopteris.
Polypodium Dryopteris.	P. Dryopteris.	P. Dryopteris.	P. Dryopteris.
Polypodium Robertianum.	*P. calcareum.*	*P. calcareum.*	*P. Dryopteris.*
Woodsia ilvensis.	W. ilvensis.	W. ilvensis.	W. ilvensis.
Woodsia ilvensis.	*W. hyperborea.*	*W. hyperborea.*	*W. ilvensis.*
Lastrea Thelypteris.	*L. Thelypteris.*	*Aspidium Thelypteris.*	*Aspidium Thelypteris.*
Lastrea Oreopteris.	*L. Oreopteris.*	*Aspidium Oreopteris.*	*Aspidium Oreopteris.*
Lastrea Filix-mas.	*L. Filix-mas.*	*Aspidium Filix-mas.* Aspidium remotum.	*Aspidium cristatum.*
Lastrea cristata.	*L. cristata.*	*Aspidium cristatum.*	*Aspidium cristatum.*
Lastrea spinulosa.	*L. spinulosa.*	*Aspidium cristatum.*	*Aspid. spinulosum.*
Lastrea rigida.	*L. rigida.*	*Aspidium rigidum.*	*Aspidium rigidum.*
Lastrea dilatata.	*L. dilatata.*	*Aspidium dilatatum.*	*Aspid. spinulosum.*
Lastrea Fœnisecii.	*L. Fœnisecii.*	*Aspidium dilatatum.*	*Aspid. spinulosum.*
Polystichum Lonchitis.	*P. Lonchitis.*	*Aspidium Lonchitis.*	*Aspidium Lonchitis.*
Polystichum aculeatum.	*P. aculeatum.*	*Aspidium lobatum.* *Aspidium aculeatum.*	*Aspidium aculeatum.* *Aspidium aculeatum.*
Polystichum angulare.	*P. angulare.*	*Aspidium angulare.*	*Aspidium aculeatum.*
Cystopteris fragilis.	C. fragilis.	C. fragilis.	C. fragilis.
Cystopteris dentata.	*C. fragilis.*	*C. fragilis.*	*C. fragilis.*
Cystopteris montana.	C. montana.	C. montana.	C. montana.
Pseudathyrium alpestre.	*P. alpestre.*	*Polypodium alpestre.*	*Polypodium alpestre.*
?Pseudathyrium flexile.	*P. alpestre.*	*Polypodium alpestre.*	*Polypodium alpestre.*
Athyrium Filix-fœmina.	*A. Filix-fœmina.*	*Asplenium Filix-fœm.*	*Asp. Filix-fœmina.*
Athyrium fontanum.	(Excluded.)	*Asplenium fontanum.*	*Asplenium fontanum.*
Asplenium lanceolatum.	A. lanceolatum.	A. lanceolatum.	A. lanceolatum.
?Asplenium acutum.	*A. Adian.-nigr.*	*A. Adiantum-nigrum.*	*A. Adiantum-nigrum.*
Asplen. Adiantum-nigrum.	A. Adian.-nigr.	A. Adiantum-nigrum.	A. Adiantum-nigrum.
Asplenium Trichomanes.	A. Trichomanes.	A. Trichomanes.	A. Trichomanes.
Asplenium viride.	*A. viride.*	*A. viride.*	*A. viride.*
Asplenium marinum.	A. marinum.	A. marinum.	A. marinum.
Asplenium Ruta-muraria.	A. Ruta-muraria.	A. Ruta-muraria.	A. Ruta-muraria.
Asplenium germanicum.	A. germanicum.	A. germanicum.	A. germanicum.
Asplenium septentrionale.	A. septentrionale.	A. septentrionale.	A. septentrionale.
Scolopendrium vulgare.	S. vulgare.	S. vulgare.	S. vulgare.
Ceterach officinarum.	C. officinarum.	C. officinarum.	C. officinarum.
Blechnum boreale.	*B. boreale.*	*B. boreale.*	*B. Spicant.*
Pteris aquilina.	P. aquilina.	P. aquilina.	P. acquilina.
Adiantum Capillus-Veneris.	A. Capillus-Ven.	A. Capillus-Veneris.	A. Capillus-Veneris.

BABINGTON.	LOND. CAT.	HOOKER & ARNOTT.	BENTHAM.
Trichomanes radicans.	T. radicans.	T. radicans.	T. radicans.
Hymenophyl. tunbridgense.	H. tunbridgense.	H. tunbridgense.	H. tunbridgense.
Hymenophyllum Wilsoni.	*H. Wilsoni.*	*H. Wilsoni.*	*H. tunbridgense.*
Osmunda regalis.	O. regalis.	O. regalis.	O. regalis.
Botrychium Lunaria.	B. Lunaria.	B. Lunaria.	B. Lunaria.
Ophioglossum vulgatum.	O. vulgatum.	O. vulgatum.	O. vulgatum.
Pilularia globulifera.	P. globulifera.	P. globulifera.	P. globulifera.
Isoetes lacustris.	I. lacustris.	I. lacustris.	I. lacustris.
Lycopodium clavatum.	L. clavatum.	L. clavatum.	L. clavatum.
Lycopodium annotinum.	L. annotinum.	L. annotinum.	L. annotinum.
Lycopodium alpinum.	L. alpinum.	L. alpinum.	L. alpinum.
Lycopodium Selago.	L. Selago.	L. Selago.	L. Selago.
Lycopodium inundatum.	L. inundatum.	L. inundatum.	L. inundatum.
Lycopodium selaginoides.	L. selaginoides.	L. selaginoides.	L. selaginoides.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers and Notices to Correspondents, with Remarks, Notes, Queries, etc.

1. In the first place, our thanks are especially due to our valued correspondent of 45, Frith Street, London, for *one* of the original specimens of *Cyperus fuscus*, collected at Little Chelsea about forty years ago, with Mr. A. Howarth's autograph ticket. The latter unfortunately does not show the precise date of his discovery; but as it (the plant) appears in Smith's 'English Flora' (see vol. i. *sub specie*), and as the author refers to Sir W. Hooker's continuation of the 'Flora Londinensis,' the plant in question was probably discovered between 1818 and 1828. If any reader of this note has a copy of the last-named work, or can conveniently refer to it, we hope he will be so good as to send us the precise period of this interesting discovery.

We hope to have the pleasure of an excursion to Llanwydyn, and to gather the rare plants of Moel Cae and Howel, and of the great oak-wood lying between them, when the days are long, viz. in the leafy month of June, and when we have the daisy not *alone*, but hundreds of lovely flowers and florets at our feet.

2. To our esteemed friend of Perth, a hundred apologies are tendered, and his many interesting papers we hope are destined to reappear in the pages of the 'Phytologist' before we are much older, and consequently nearer our journey's end.

The following is submitted, and we hope that its remedial qualities may be as successfully exhibited in other cases as they were in the following:—

Potentilla Tormentilla.

Having recently suffered severely from painful and protracted bowel complaint, and used all the remedies prescribed by professional skill, without deriving any benefit, I was advised by several friends (not medical) to drink a decoction of Tormentil-root; but as I am no friend to herb doc-

tors (of whom there are far too many) I was unwilling to use it. It is said a drowning man will catch at a straw, and it was so with me; I knew that if it were not beneficial, at least, like the priest's holy water, as they say in Scotland, it would be harmless. I consulted a modern medical work I possess, 'Domestic Medicine,' in Bohn's series, and found it there highly recommended; I likewise saw the same favourable report of its qualities in Green's 'Botanical Dictionary' and Thomson's 'Conspectus.' I then prepared a decoction according to the rule laid down in the latter work, and had only taken two doses when I experienced immediate relief. To the decoction I added a little cinnamon and ginger as an adjunct, to render it more grateful. For the benefit of those who may not have Thomson's 'Conspectus,' I insert the prescription in plain English: "Take dried Tormentil-root, one ounce; water, one English (imperial) pint and a half; boil down to one pint, and strain through a linen or cotton cloth; when cold take two ounces (four tablespoonfuls) three times a day." I promulgate the above for the benefit of suffering humanity (for the readers of the 'Phytologist' at least), as no rank or condition of men renders them exempt from this painful, dangerous, and debilitating malady. There is, I think, a Chinese proverb that says, "No man need die who has sage in his garden." I would say no man or woman need suffer when the Tormentil-root is so abundant, as an ounce can be had for twopence in any druggist's shop (chemist's, if you please) in the United Kingdom. When the roots had boiled until soft, I took them out of the water, and cut them into small fragments, and put them in again, and boiled down the decoction to the required quantity. I did so in order that the water might extract more thoroughly all their virtues. Although the 'Phytologist' is not a medical work, yet I trust the insertion of the above will not in the least detract from its merit, but may be the means of giving relief to any who, like myself, have or may suffer from this painful, troublesome, and dangerous complaint. JOHN SIM.

3. The subjoined will speak for itself, or tell its own object; see 'Phytologist,' vol. vi. p. 291.

LUZULA MULTIFLORA.

Though altogether unknown to your correspondent Mr. Sim, and to most readers of the 'Phytologist,' I may perhaps be pardoned for making a few remarks respecting the proposed division of *Luzula multiflora* into two species. In July I had an opportunity of examining living specimens of both varieties, and although the idea of separating them did not occur to me, I was struck by their dissimilarity in one or two important respects. It seems on the whole desirable that the change advocated by Mr. Sim should be adopted, but I would suggest that the specific name *L. aggregata* be given to var. *β* in preference to *L. congesta*, as the latter has been in turn affixed to each variety. Perhaps the union of these two species (if really distinct) may be attributed to the peculiar thickly-clustered panicle, which certainly gives both plants a character quite different from all other species of the same genus. L. C. MIALL.

4. Our correspondent "F. W.," of St. Ann's Hotel, Buxton, is hereby thanked for his communication, The High Peak of Derbyshire is a good botanizing tract, and the walk along the Wye from Buxton to Tideswell

will give the tourist an opportunity of seeing some delightful bits of scenery, and he may, when tired of looking at rapids, rocks, and hangers, gather many a pretty and rare plant in the nooks and corners of that charming dell, especially about Chee Torr. The walk down Dovedale is almost as interesting and of far greater celebrity. It may thank honest Izaak Walton and Cotton for that. It is also deservedly admired by the botanist, and the Dove has what the Wye has not, viz. a good path, not made for simplers but for anglers, but it serves both very well. There are also some semi-alpine species growing not far from Buxton, on Kinderscoat, Axedge, etc. It is a fertile district, but it does not "produce nearly all the indigenous plants of England." Some of our readers could name a good hundred which do not grow in Derbyshire.

5. The Editor would have much pleasure in answering the query sent by his excellent Glasgow correspondent "W. G.," but he is at present unable. If the work be published, it may not yet have reached London; or if it has been sent to the metropolitan bookseller, it has as yet reached neither our hands nor eyes.

6. Any of our learned readers can tell our estimable correspondent the origin or root of *Peloria*, but why it is applied to one abnormal form is not so obvious. The original word means something vast, or hideous, or terrific; gigantic like the Cyclops, horrible and dreadful like Scylla and the serpent Python, or terribly calamitous, like an earthquake.

Probably the term PELORIA is applied to morphological appearances on the same principle as that which accounts for the derivation of *lucus*, a grove, from *lux*, light, "because it does not shine;" and which, in the new botanical nomenclature calls the recently split *Cardamine*, *C. sylvatica* and *C. hirsuta*, and the latter name may have been given because the plant is *not rough*. Our correspondent's query is offered in his own terms, and it is humbly submitted to the judgment of the learned:—

PELORIA.

Can any of the readers of the 'Phytologist' say why a very curious abnormal form of *Linaria vulgaris* is called "Peloria"? I have searched botanical works in vain for elucidation, and can only in Lempriere's Classical Dictionary find the word at all, where it states that it was a "festival observed by the Thessalians," etc. G. B. W.

7. There may be a greater diversity of opinion about the carving out of a new species of *Lastrea* from *L. Filix-mas*, than there can be about *Peloria* and its applications and significations. The Editor does not think himself qualified to answer the former query, and he is quite certain that he has neither the ability nor inclination to attempt the other ticklish subject. When the splitting process should be discontinued, in variable species, is a question more easily raised than settled. If it be desirable to separate into *two*, why not into four, or eight, or sixteen, or even into an indefinite number, or until we have as many *species* as individuals? For we have not any two specimens of humanity precisely similar, either in mental or physical organization; no two objects in nature are exactly alike, not even a pair of male ferns.

But although unanimity on the limits of species be hopeless, our cor-

respondent is welcome to the small portion of space which will be occupied by his communication. He may air his own opinions, or in modern phraseology, ventilate them, and he may elicit the views of others on this subject. We will give him the means of spreading his doctrines, and few, very few, are better entitled to a hearing on the subject of British Ferns. If there be no room for the communication in this number, it shall take the precedence in our next forthcoming issue.

8. The Editor has the pleasure of offering his very hearty thanks to the 'Phytologist's' excellent Henley correspondent, and he has the pleasure of submitting the following further information about the plants of that neighbourhood:—

CAMPANULA PATULA.

As regards further details about *Campanula patula*, I found two small plants of it in a meadow which had been laid down in grass, about two years ago, in August (I think). It has, I am afraid, since disappeared.

Tulipa sylvestris was found in an orchard at the same place, viz. the Coppice, Shiplake, about a year ago, in the spring. It was also found more plentifully growing with Narcissus, in another orchard adjoining Binfield Heath, also in Shiplake, and may be still growing there. If I happen to be in the neighbourhood next spring, which I am afraid is not probable, I will look for it. I shall be proud to contribute any small information to the 'Phytologist' whenever I can. W. G. P.

9. In answer to "C. J. A.," of Preston, it may be said that the *polystichum* sent from Arnside Knot, Westmoreland, is what was called *Aspidium lobatum* in the good old days when George the Third was King of England, and Sir J. E. Smith the *facilè princeps* of British botanists. It still abounds in parts of Epping Forest, especially about Chigwell, Lambourne, Hainault Forest, etc. etc. It has seen many other changes besides those of nomenclature, but it is still in being, though reduced to a lower station in the vegetable kingdom.

10. There are besides the above, in our possession, several other missives, which are unavoidably postponed for want of space. Among these, are to be here recorded some from "H. and S. B.," of Sydenham, "R.C.A.P.," of Taunton, "J. S.," of Perth, "W.W. R.," of Greenwich: all these commmunications, contributions, notices, notes, hints, and questions will be the subject of another article in our next number.

Communications have been received from

John Sim; C. J. Ashfield; J. Britten; G. B. Wollaston; F. Walker; C. Howie; Walter Galt; Sidney Beisly; H. C.; Dr. Prior; John Gibbs; W.P.

RECEIVED FOR REVIEW.

The Preston Chronicle, October 25,
The Canadian Naturalist and Geologist.
The Edinburgh Weekly Review, November 22.
The Chelmsford Chronicle, Nov. 7, 1862.

BELGIAN BOTANY.

Three Days' Botanizing among the Dunes of West Flanders (Belgium).

A few details concerning the flora of a sea-coast opposite to that of England will not be uninteresting to the readers of the 'Phytologist.' It is the result of what I saw and observed in an excursion with the Botanical Society of Belgium, at the beginning of July, along the Belgian coast.

First of all, be it known that a Botanical Society has been quite recently founded here, which, at its opening meeting, decided that its first *réunion extraordinaire* should take place at Nieuport, and that it should be followed by an extensive botanical tour. The Society having obtained from the *Ministre des Travaux publics* railway tickets at reduced prices, the president sent several to the Horticultural Institution of Ghent, which liberal action urged our honourable and esteemed director, Mr. Van Houtte, to permit me and several comrades to join the scientific expedition in question. I took advantage, much more willingly, of this opportunity of visiting the borders of the North Sea, when I knew that our professor of botany, M. Crépin, was to be of the party; for I felt convinced that, having him for our guide, our researches would be well directed, and that we should amass an abundant collection of interesting species.

On the 5th of July, when we set out for Ostend, where the members of the Society and amateurs who had accepted the invitation were to assemble, and to start from thence to Nieuport, botanizing *en route*, those of our future companions who had preceded us were waiting on the platform for our arrival; amongst them was the president, M. B. Dumortier, a name well known in the scientific world, and who welcomed the new arrivals with his accustomed urbanity.

Loaded with our equipage, presses, and vasculums, we passed through Ostend, and astonished the natives by the variety and originality of our costume and equipments. I have reasons for believing that the inhabitants of Ostend will long preserve the memory of our strange appearance among them, so unlike that of the sea-bathing population who resort thither at this period of the year.

Having had a slight refreshment at the Hôtel St. Denis, where some of our friends had slept the previous night, we directed our steps to the Pavillon des Dunes, the place fixed for our departure. Many amongst us had never seen the sea, and the scene that it presented that day, seen from the pier, must have been more pleasing than striking. As far as the eye could reach, the ocean was smooth as a mirror; the gentle rippling of the waves scarcely disturbed the uniformity of the glass surface. Perhaps, thought I, while looking west, I am about the explore the Belgian coast, whilst several of my countrymen are walking along that of England, botanizing like myself. I was engaged in this reverie, when I found that the company was being divided into bands, so as to explore all the points of the dunes at once, in walking along the coast in three parallel lines. The weather calm, coupled with a splendid sun, predicted a beautiful mild afternoon, so we set out as nimble and as cheerful as a party of schoolboys. For the same reason that the sea was quite a fresh thing to several of us, so were the dunes a *terra incognita* (unexplored tract) for the majority. The flora was a novelty; those plants which, by their gigantic rhizomes, fix the moving and capricious sands, attracted a large amount of our admiration. First of all we paid our attentions to those enormous tufts of *Ammophila arenaria*, with its rush-like leaves, from the centre of which rise very large spikes loaded with tremulous stamens; then the numerous colonies of *Elymus arenarius* and *Triticum junceum*, mingled with a thousand varieties of *Triticum repens*, a type so polymorphous, that, according to certain authors, it comprehends several distinct species, few of which are as yet known or brought to light.

Having pretty well examined the tops of those dunes and their maritime slope, we made for the other side, to look at the produce of the meadows which lay at their foot, for in the former situation the flora is always very monotonous, and for the most part poor. The following common species are only to be met with, mixed with those already named, on the sea side of these hills:—*Silene conica, Viola sabulosa, Cakile maritima, Helianthemum vulgare, Anthyllis maritima, Eryngium maritimum, Jasione montana, Hippophaë rhamnoides, Salix repens, Carex arenaria, Festuca arenaria*, Osbeck (*F. sabulicola*, L. Duf.), *Kœleria albescens*, DC., *Phleum arenarium*.

On the grassy plots of the inner dunes we found in abundance *Thalictrum minus*, a species met with everywhere from Knocke to the French frontiers. Between Mariakerke and Middelkerke *Trifolium scabrum*, *Medicago minima*, *Plantago Coronopus*, scarcely visible in the grass; and *Cerastium tetrandrum* mixed with fine specimens of *Cochlearia Danica*. Here and there were a few solitary plants of *Asparagus officinalis* and small tufts of *Arabis sagittata*; then we met with enormous patches of *Sedum acre*, which, with the *littorale* variety of *Galium verum*, completely carpeted the dunes. Among the *G. verum* and *G. Mollugo*, which were very abundant, we saw here and there a hybrid which derived its being from these two species. Our attention was drawn to a curious form of *Erodium cicutarium*, with small pale flowers, which I think Mr. Jordan has termed his *E. Boreanum*. In the gaps made by the sand, and in the hollows in the roads, we remarked a robust variety of the *Arenaria serpyllifolia*, which constitutes the *A. Lloydii*, Jord.

On arriving at Middelkerke we espied on the sandy banks of a little garden, the rare *Carduus tenuiflorus*, which we saw again on that and the following days along the coast in the neighbouring villages. Another remarkable synanthera, but common in that part, is the *Onopordon Acanthium*, whose majestic habit is more like that of an exotic plant than of an indigenous species. In another garden we obtained *Fumaria densiflora*, DC. (*F. micrantha*, Lagasc.), which was found by Professor Crépin; a very beautiful species, and quite new to the general flora of this country.

A little beyond the village we came to a boggy meadow, which appeared to be the rendezvous of several interesting species,—*Sagina nodosa*, *Helosciadium repens*, *Apium graveolens*, *Glaux maritima*, *Cineraria palustris*, *Herminium Monorchis*, *Epipactis palustris*, *Juncus obtusiflorus*, *Scirpus compressus*, *Carex Pseudocyperus*, *Schœnus nigricans*, *Alopecurus fulvus*, *Lemna arrhiza*.

Here and there along the coast the *Cynoglossum officinale*, *Sisymbrium Sophia*, and *Anthriscus vulgaris* appeared. As far as the environs of Westende we met with nothing but the common species already cited, to which however must be added *Lycopsis arvensis* (common everywhere), *Asperula Cynanchica*, *Silene nutans*, *Avena pubescens*, *Bryonia dioica*, and *Carex trinervis*. As regards the last-named species, well distributed on the western borders of

the continent from Bayonne to the Isle of Texel, it is somewhat surprising that it has not yet been found in England. Perhaps it grows at some part or other in our eastern counties with *Carex vulgaris*, with which it has some slight resemblance. In the hard road towards Westende we observed *Scirpus pauciflorus*.

For upwards of an hour the sky had been covered with suspicious-looking clouds, which did not delay advancing in a phalanx towards the sea; this became rather disheartening, especially as there was no shelter obtainable in the neighbourhood. Increasing our steps among the loose sands, where walking costs no small amount of labour, we reached a fisherman's hut built up against a bulwark of sand, which almost hid it completely from view.

At first we hesitated about entering and asking hospitality, as we were ignorant of the language of the country, and thought our eccentric attire might cause a little uneasiness to the good people of these retired parts. However, as the thunder was beginning to rattle overhead, we no longer argued about the matter, but, walking round the humble dwelling, and pushing open the door, we besought its inmates in an Anglo-Flemish vernacular to let us remain under the roof till the storm had passed over; this was cheerfully granted. They offered us the only stools that the cabin possessed, and invited us to draw up to the hearth, where a turf fire was burning.

On leaving this hospitable family we offered a present of money, which was politely declined. Cutting across the fields, we were soon on the paved road from Ostend to Nieuport, where we saw in the distance several of our companions, who had left us at our departure from the Pavillon des Dunes. Like us they had been equally fortunate.

We continued our route in high spirits through Lombartzyde, where the church was adorned with an immense banner, containing the colours, not of one single nation only, but of all together. As it was the *Kermis*, or annual feast of the village, the place on which the fair was held was covered with booths of itinerary merchants, and every description of mountebanks, etc. We went for a spree to try our luck at a wheel-of-fortune, which wheeled in our favour, for it brought us a stock of cakes, of which we took especial care, so as to share them with the rest of the com-

pany at the supper table. On fitting seasons gaiety is not inconsistent with gravity; trifles light as air may with propriety mingle in the most important concerns of life. The sage fabulist of ancient times, who laid aside his philosophic garb and assumed the manner of a child, offers an example worthy of imitation. I was both diverted and edified with the great depth of gaiety which unveiled itself in several of our new friends.

In drawing near the gates of Nieuport we were met by the excellent president, Mr. Dumortier, and Mr. Muller, president of the Brussels Linnæan Society, who had gone on before to prepare our quarters. They were all very much pleased to see us in such high spirits, for they expected we were thoroughly drenched, and that our vivacity and good-nature had been carried off by the storm, which had also burst rather furiously over Nieuport.

It may be worthy of remark that fatigue disappears as if by enchantment on arrival at the gates of a town: there and then the pedestrian walks with a more stately bearing, and puts on a brighter countenance. Weary as some of us were, we did not neglect to return the smiles and kind though silent greetings of the fairer part of the population of Nieuport, the Belgian maids, who eyed us at their ease from their casements. If they did not admire the style of our dress and accoutrements, we could not help admiring their healthy and smiling faces. Under the guidance of our friends, who had arrived before us, we drew up at the 'Espérance,' a respectable hostelry, which we admired not more for its antique appearance than for the comfort and attention bestowed upon us by its owners.

Our company was divided into three groups, to be quartered respectively at the Hôtel de l'Espérance, the 'Perroquet,' and the 'Pelican.' I was one of seven who lodged at the 'Perroquet.' Having washed ourselves, and given a little attention to our toilet, we returned to the 'Espérance,' where a comfortable dinner had been prepared, and to which we were ready to do ample justice. The exercise and sea-breezes sharpen the appetite. At the dessert, of course, toasts were proposed; the first to the progress of botany, the second to the honourable president, who, notwithstanding his sixty-five summers, has preserved all his pristine freshness and gaiety intact. Being an excellent narrator, we begged him to recite to us some of his travelling adventures,

and he related in detail his famous story, of which he has given a few words in the preface of his 'Florula Belgica.' We were much amused with the comic disasters of poor Pierre Michel, of Nessonvaux, little suspecting that an adventure with gendarmes, guards, and sworsdmen, was impending over ourselves. There was a speech given in Flemish by Mr. K——, an alderman of the town, one of the invited guests. Of this we English did not understand a single word, though we applauded all the same. To this the president responded; and, as it was now eleven o'clock, we separated, some to the rooms prepared for them at the hotel, others threaded their way through the silent and solitary streets to reach their home, or rather their roosting-places at the 'Pelican' and 'Perroquet.'

Alas! the day was not yet finished. Our vasculums were full, and their contents needed our attention. An old and experienced member of our band strongly advised us to arrange our plants before retiring for the night, which we did, though, I must say, a little against our will. One o'clock echoed from the belfry when our task was finished.

HAMPSHIRE PLANTS.

Some Localities additional to those mentioned in Dr. Bromfield's Catalogue.—(Phytol. o. s. vol. iii.)

By Henry Trimen.

The following localities are chiefly round Portsmouth, and they were all noted during a short stay there in the past August, 1862. Much more has yet to be done in this part of Hants., especially in Hayling Island, the south coast of which only was explored by me this autumn.

The Isle of Wight attracts so many to its shores, that its botany may be considered complete as far as localities are concerned; whereas the opposite shore is almost deserted by botanists, though doubtless many a good plant would reward the diligent explorer. We want another Bromfield on the mainland of the county, and then we may get a Hampshire Flora.

Ranunculus hirsutus. Very abundant in Portsea Island.
Ranunculus confusus. Salt-water ponds in Portsea Island.

Ranunculus peltatus (?). Gower Pond, near Gosport.

Lepidium Smithii. Common about Southsea, and in Stokes Bay.

Senebiera didyma (*pinnatifida*, Dec.) Abundant in Stokes Bay.

Cakile maritima. South coast of Portsea Island.

Reseda lutea. On Portsdown.

Silene maritima. Abundant in the shingle of Stokes Bay and Portsea Island.

Spergula subulata. On the south shore of Hayling Island.

Cerastium tetrandrum. On the south shore of Hayling Island.

Hypericum Elodes. Gower Pond.

Linum angustifolium. North part of Portsea Island, and at Gosport.

Ononis arvensis (with white flowers). Hayling Island.

Ononis campestris. Common in Portsea Island.

Medicago maculata. Portsea Island.

Melilotus officinalis. Portsea Island.

Trifolium arvense. Southsea Common.

Trifolium striatum. Stokes Bay.

Trifolium scabrum. Stokes Bay and Southsea beach, and Hayling Island.

Trifolium subterraneum. Stokes Bay, (I saw nothing of *Lotus angustissimus* or *Trifolium glomeratum*, both of which Dr. Bromfield mentions as growing on a bank in Stokes Bay: no doubt this was my own fault, or possibly it was too late in the season for them).

Trifolium fragiferum. Very abundant in Portsea and Hayling Island.

Lythrum Salicaria. Stokes Bay.

Ceratophyllum sp.? Gower Pond. Is there any way of determining the species of this genus in the absence of the fruit?

Epilobium palustre (quite glabrous). Gower Pond.

Apium graveolens. Portchester.

Sison Amomum. Common about Portsmouth and in Hayling Island.

Œnanthe pimpinelloides. North part of Portsea Island, in damp pastures.

Œnanthe Lachenalii. Muddy shores of Portsea and Hayling Island.

Silaus pratensis, with *Œ. pimpinelloides*, in Portsea Island.

Crithmum maritimum. Grows sparingly on the low sandy shore of Hayling Island.

Torilis infesta. On Portsdown.

Torilis nodosa. Round Southsea Castle, not common about here.

Conium maculatum. A most abundant weed round Portsmouth.

Galium cruciatum. In Portsea Island.

Galium palustre, β Witheringii. Gower Pond.

Eupatorium cannabinum. In the shingle on the south coast of Hayling Island.

Petasites vulgaris (vel *fragrans*). Under a paling in Hayling Island.

Erigeron acris. Dry bank near Portsmouth.

Inula crithmoides. North side of Portsea Island (Hillsea Lines).

Anthemis nobilis. Abundant on Southsea Common, and the shores of Stokes Bay.

Matricaria inodora, β maritima. Common on the coast.

Matricaria Chamomilla. At the foot of Portsdown.

Filago minima. Southsea Common, abundant.

Senecio sylvaticus. In all parts of Portsea Island.

Carlina vulgaris. South coast of Hayling and Portsea Island.

Centaurea nigra, β radiata. On Portsdown.

Centaurea Calcitrapa. Very abundant at the foot of Portsdown. between Corsham and Wymmering.

Carduus tenuiflorus. Very common in Portsea and Hayling Island.

Helminthia echioides. Portsea and Hayling Islands.

Hieracium sylvaticum. Hayling Island (south coast).

Erica Tetralix. South-west corner of Hayling Island.

Erythræa pulchella. Southsea Common.

Menyanthes trifoliata. Gower Pond.

Cuscuta Epithymum. Abundant on Southsea Common.

Borago officinalis. Well established at Portchester.

Myosotis palustris. Gower Pond, Southampton.

Myosotis cæspitosa. Hayling Island.

Solanum Dulcamara, β marina. A bush, three feet high, on the shore of Hayling Island.

Verbascum Blattaria (the normal variety with yellow flowers). Between Gosport and Alverstoke, truly wild.

Digitalis purpurea (with pale flowers). Shingle, south shore of Hayling Island.

Linaria Cymbalaria. Between the flagstones in front of the hotel in Hayling Island. (This locality exposes the present condition of the island as far as visitors go: it is truly a desert of half-finished houses.)

Veronica polita. Portsea Island, common.

Lycopus europæus. Gomer Pond.

Salvia verbenaca. Abundant on the "glacis" of Portsmouth fortifications.

Calamintha officinalis. Hedgebank, east part of Portsea Island.

Scutellaria galericulata. Gomer Pond.

Scutellaria minor. South-west corner of Hayling Island.

Nepeta Cataria. On Portsdown.

Lamium amplexicaule. On Southsea Common, etc.

Lysimachia vulgaris. Gomer Pond, abundant.

Plantago media. Portsdown.

Amaranthus retroflexus. Waste ground at Southampton.

Salicornia radicans. Hayling Island, mud flats.

Atriplex littoralis. Portsea and Hayling Islands, common.

Atriplex erecta. Cornfields on Portsdown.

Atriplex angustifolia. } Maritime forms, Hayling and Portsea Is-
Atriplex hastata (?). } lands, and shore of Stokes Bay.

Atriplex deltoidea. Waste place in Portsea Island.

Atriplex Babingtonii. In the sand on south coast of Hayling Island.

Atriplex laciniata. On the south coast of Hayling Island. (Only one plant seen.)

(The maritime plant marked *hastata* (?) may be the *deltoidea* γ *triangularis* (Willd.) of the 'Manual,' but I am much puzzled with the sea-shore varieties of this troublesome genus. Some of the specimens of *angustifolia* gathered on the beach both here and in the Isle of Wight have much broader leaves than the normal form of that plant, and are likely to mislead.)

Polygonum amphibium (*floating form*). Gomer Pond.

Euphorbia portlandica. I only gathered one plant of this in Stokes Bay, though Dr. Bromfield says it is there "very abundant and luxuriant."

Mercurialis annua β *ambigua.* Southampton. This plant was little more than a monœcious form of *annua*, though the leaves were rather narrower than the usual state of the plant.

It seems by no means uncommon in many parts of England.

Myrica Gale. Gomer Pond, abundant.

Spiranthes autumnalis. Dry bank near Portsmouth.

Iris fœtidissima. Portsea Island.

Juncus squarrosus. South-west corner of Hayling Island.

Alisma ranunculoides. Shore of Stokes Bay.

Sparganium simplex. Gomer Pond.

Ruppia sp.? Gomer Pond.

Zannichellia palustris. Gomer Pond.

Eleocharis uniglumis. Stokes Bay. (Surely only a seaside form of *E. palustris.*)

Scirpus Tabernæmontani. Portsea Island, ditches, etc.

Scirpus setaceus. Southampton.

Polypogon littoralis. Neither so plentiful nor so large now in the Portchester station as was mentioned by Dr. Bromfield; but still in considerable quantity, and larger than in Portsea Island. This species seems to flower much earlier than *P. monspeliensis,* its usual (? invariable) companion; in August the latter was in excellent condition, whereas *littoralis* was quite *passé.* In the descriptions of these plants in books, I think that the awns are in both plants described as too short.

Molinia cœrulea. South-west corner of Hayling Island. (Four feet high.)

Triticum acutum (DC.), *T. laxum* (Fr.). Hayling and Portsea Islands. (*The Triticum* of this coast.) (The "minute sharp points" on the upper surface of the leaf, are in my plants so minute as to require a very high microscopic power to discern them at all.)

Lepturus incurvatus. Southsea.

Aspenium Ruta-muraria. Wall of Haslar Hospital, Gosport.

Scolopendrium vulgare. Hayling Island, common.

I was enabled to verify many of Dr. Bromfield's localities for this part of Hampshire, but these are not included in the above list for the following reason: to republish already recorded localities is only waste of paper and printers' ink, besides burdening botanical literature with useless matter. Having given this opinion I must hope for my own credit that none of the

above list is old and well-known, but if it be so, I apologize to the readers of the 'Phytologist' for occupying their time so unprofitably; and I hope that ere long we may see more Hampshire lists published in these pages, as it is thus that the flora of a large county must be gradually accumulated.

NORFOLK BOTANY.

Plants growing on Yarmouth Denes, and about Gorleston, Bradwell, Caistor, Ormesby, and Runham.

The town of Great Yarmouth is situated on the south-eastern point or extremity of the county, about twenty miles from the city of Norwich, and about ten miles from Lowestoft.

It stands on a sand-ridge, which is but slightly elevated above the line of coast. The promontory, or rather spit, on which the town stands is bounded on the west and south by the harbour or the estuary of the Yare, and on the east by the sea and the extensive sandy beach, sand-hills, and flats called the Denes.

The formation of this tract, which is extensive and constantly increasing, is well deserving the attentive study both of geographers and geologists. It explains how the harbours in South Kent and Sussex, viz. Sandwich, Hythe, New Romney, Rye, etc., have by the accumulation of the sand been gradually silted or filled up.

The Bure, a navigable river, which flows from above Aylsham and joins the river Yare at the head of the harbour, about two miles or so before the united rivers enter the sea, once flowed into the sea near Caistor by a channel which has long disappeared. It now flows in a direction almost parallel to the sea, for several miles before it reaches the ocean. Its ancient direct course has been diverted, probably at first by nature, and subsequently by art kept in its present direction.

The ancient town of Great Yarmouth is built on the wedge-shaped point or tongue of land which lies between the sea and the river, as before said, and the Denes are the north boundary of the borough.

The original town is built along the harbour, and consists of rows of good houses, fronting the river, and a series of Rows, as they are called, which unite the market-place and the principal

street to the quay. These Rows are very numerous, upwards of a hundred and fifty, and so narrow that no vehicle of the ordinary description can pass through them. They are all thoroughfares, and lined with houses or courtyards, somewhat in the fashion of Eastern cities,—*parva componere magnis*, comparing small things with great.

The spacious market-place is on the most elevated part, and the declivity is towards the sea and the land also.

The newest erections are on the Denes, and appear to follow the sea, which is annually retreating and constantly adding to the land all along the shore, from the harbour-mouth northwards.

The grand esplanade, which is probably two miles in length, *i. e.* from near the Nelson Column to nearly opposite the North Battery, is far from being completed; and probably ere it is filled with buildings there may be room for another similar line between it and the sea.

The harbour is well secured at the mouth of the river by two strong jetties, which are intended to prevent the drift from blowing across its entrance. The channel is considerably contracted, and the great expanse of water in the part called Breydon supplies the means of scouring away what would form a bar and prevent vessels of heavy burden from entering.

The engineering peculiarities of this harbour are simple and eminently successful. The *broad* or Breydon is a vast reservoir of many hundred acres, and causes a strong current to set in toward the sea with the reflux, and thus prevents any very serious accumulation at the harbour's mouth.

It is probable that in a course of ages Yarmouth may be twenty miles from the sea, and the dangerous navigation called Yarmouth Roads may be united to *terra firma*. There is near the shore a deep channel, where ships ride safely at anchor; and at some distance beyond, there is a sand-bank, or a series of sand-banks, indicated by buoys, where there is no anchorage, and barely depth of water to admit of small craft sailing over at low water.

The celebrity of Yarmouth as a fishing-town will pass away when this great bay is entirely filled up and become pastures for herds and flocks, like the present Denes. Fish, worth catching, are usually found on or about sand-banks;—and though Yarmouth is not so eminent for its cod as the banks of Newfound-

land, yet cod and other large fish are obtained here, and plenty of haddocks, mackerel, and herrings.

Fishing and navigation are the mainstays of Great Yarmouth. Miles of nets are spread out on the Denes every morning, and taken up in the evening and carted off to the yawls or fishing-boats.

The wheel carriages of Yarmouth are very characteristic of the place. They are of the simplest possible construction, consisting of two shafts with a few cross-pieces of wood where the load is placed, and where the driver stands. The wheels are very low, and are placed underneath the carriage, not by its side. They are as simple in their contrivance and structure as the rest of this antique vehicle.

The two wheels are united by what is more like a nave than an axletree, and they appear to move on an iron spindle, or pin, or rod, which is fixed into the frame of the carriage. The wheels appear to be so connected as to form one entire piece of mechanism.

These Yarmouth *buggeys* resemble the ancient British war chariots, only they have two poles and one horse. The ancient chariot had one pole, and was drawn by a pair of horses.

When it is considered that the soil of the Denes is as uniform as any soil can be, and that the exposure has as little variety as possible, the visitor will not be disappointed by the poverty of their flora.

The following list was compiled after walking over the Denes in all directions once or twice every day in the third week of July; these walks were taken mostly in the morning before breakfast, or in returning home from a longer walk.

It should be premised that the Denes, where most remote from the sea, are enclosed and surrounded by deep ditches, and the marsh plants are spreading in this direction.

Alisma ranunculoides is one of the marsh plants which are advancing onwards as the sea retires; and both forms of the great Water Plantain are common enough here, as everywhere else.

Cakile maritima and *Honckenja peploides* are genuine marine productions, never growing beyond the reach of the sprinklings of salt water.

Camelina sativa here, as everywhere else (?), tells its own story, viz. that it is an intruder. It was seen only in suspicious

company; its confederates were *Kœniga maritima, Phalaris canariensis, Carduus marianus (Silybum marianum), Onopordum Acanthium, Delphinium Consolida, Erysimum cheiranthoides, Mercurialis annua,* and similar productions, which a genuine follower of the new and improved systems of phyto-geography would be ashamed to record. Ignorance of their history and of their names would be a sufficient qualification, *ceteris paribus,* for admission into the most exclusive and select of botanical coteries.

Carduus nutans and *C. tenuiflorus* abound on the verge of the Denes, and also where rubbish is shot. Are these not therefore justly suspected and liable to be shot into the three heaps of *rejectamenta* of British plants called EXCLUDED SPECIES?

Carex arenaria is present everywhere on the Denes, but it shuns the wet parts and nestles in the dry sands.

Cerastium arvense is exceedingly plentiful about halfway between Yarmouth and Caistor, beyond the North Battery. Here it is very ornamental. It is sometimes a tall plant and clings to the Furze and other rigid plants like *Stellaria graminea,* and in other places it is only a few inches high. Is it *C. strictum* in this state? If it be, it is a very accommodating plant, yielding itself to the species-maker like plastic clay to the potter.

Chenopodium Bonus-Henricus and *C. olidum* are also very plentiful. In the sand and at the bases of the walls the latter is nearly as frequent as Shepherd's Purse.

The most ornamental sea-sand plants are *Eryngium maritimum* and *Convolvulus Soldanella,* the latter especially in the evening, when its fine deep pink blossoms are fully expanded; the foliage of the latter is beautiful at all times.

The commonest plants on the Denes are *Galium verum*—the true Lady's Bedstraw, also one of the most ornamental in the later summer months—and *Ononis antiquorum.* These luxuriate in the dry sand and consolidate the loose soil.

Trefoils also abound, but with the exception of *T. suffocatum,* none of this genus that were seen by us are rare. The Haresfoot also, both the erect form and also the bushy maritime white variety, which was observed by Ray and the earlier botanists, but which is neglected by their more learned succesSsors.

The Dog Violet, that which abounds about New Brighton on the western coast, is quite as plentiful here. The long creeping stems of this Violet help to retain and consolidate the shifting sand.

Jasione montana is another Dene-plant. This species is partial to sand of all sorts; but it grows more luxuriantly in the richer soil of Cheshire.

Lotus corniculatus would not appear in any list of *plantæ rariores*, only about Yarmouth—where the uniformity and poverty of the soil diminish the number of the species—every plant is worthy of observation.

Ranunculus Flammula grows about the edges of shallow grassy pools, often accompanied with *Helosciadium nodiflorum*, *H. repens?*, and *H. inundatum*.

Rhinanthus Crista-Galli appears as a larger form or with a larger flower on the sand-hills about Caistor, than it usually bears when it appears on rich meadows. It is nearly as conspicuous as the form which grows in the Lincolnshire fens, and which is called a species and dignified with the epithet *great*.

The sand-hills about Caistor are covered with *Aira canescens* (*Corynephorus canescens*). This with *Triticum junceum* and *Elymus arenarius* constitute the grassy covering of these Dunes (Denes).

The rarest plant we observed was *Teesdalia nudicaulis*, in fruit. It appeared only in one place, about halfway between Yarmouth and Caistor. Near it we saw a single plant or so of *Thalictrum minus* (?), or what would have passed muster for this species a score of years ago.

Sisymbrium Sophia was very abundant on the turf fences skirting the Denes.

Vicia lathyroides is another of the scarce plants of this tract. It was so scarce that we only saw a single specimen; but our visit was rather later than the usual flowering period of this Vetch.

Sedum anglicum was plentiful in many parts of the coast, and especially near Caistor. It was far from unfrequent on the shores of Suffolk; and it was found nearly thirty years ago on the sandy shore of Mersea Island, Essex. In Ray's 'Synopsis,' Dillenius's edition, page 270, it is localized, "in sterilioribus Suffolciæ, itinere a *Yarmouth* ad *Donewich* (between Yarmouth and Dunwich). In litore marino prope *Brakelsham* (sea-coast near, etc)." *Plantago Coronopus* is one of the commonest of the Dene plants.

Frankenia lævis, which in former times, viz. in 1822, abounded

by the mouth of the Yare, adjacent to the ferry, has long since disappeared.* Yarmouth has examples of defunct plants. Battersea, Peckham, Clapham Common, and Wandsworth are not the sole localities that have to bemoan the loss of their shady lanes, green fields, and rare species. The march of modern meliorations has reached as far as this remote corner of Norfolk. *Note.* This is the locality of *Trifolium suffocatum.*

These are most of the Denes' plants observed in July, 1862.

The Caistor and Runham marshes adjoin the Denes. There are between the marshes and the Denes, in most parts, only the road, and here and there a slip of cultivated land gained from the sea.

The river Bure runs through these marshes, and as they are in close proximity to Yarmouth, they were, like the Denes, often visited when we had but little time or were not disposed for a long walk. Our walk was usually along the brink of the river on the northern, or Caistor side, from Yarmouth to Runham.

Althæa officinalis, not yet in flower, ornaments the sides of all the cuts and ditches hereabout, but not quite so plentifully as in Romney Marsh. *Rumex Hydrolapathum* grows in deep water, almost always accompanied with *Hydrocharis Morsus-ranæ,* and more rarely with *Sagittaria sagittifolia, Hippuris vulgaris, Butomus umbellatus, Polygonum amphibium, Myriophyllum spicatum* and *M. verticillatum, Ceratophyllum demersum, Potamogeton gramineus, Sparganium ramosum* and *S. simplex.* By the brink of the river, and where the ground was daily covered by the tide, *Cochlearia anglica, Apium graveolens, Glaux maritima, Triglochin maritima, Plantago maritima, Atriplex marina, Samolus Valerandi,* throve well. *Conium maculatum, Delphinium Consolida, Agrimonia Eupatoria, Lepidium ruderale,* and less rare plants, grow on the upper parts of the bank, generally beyond the reach of the tide. *Torilis nodosa* grew on the path as plentiful as on the banks of the Thames below Woolwich.

About Runham village, *Mentha sylvestris* grows in the muddy ditches and in rubbishy waste places, accompanied with *Melissa officinalis,* the latter an outcast from the gardens.

* A friend, who only a few years ago botanized about Yarmouth, etc., told the writer that there were fine examples of this plant, *Frankenia lævis,* hanging in festoons from the piers of the bridge at the head of the harbour. Will our Yarmouth correspondent be so kind as to tell us if this rare plant be still there?

Cineraria palustris (*Senecio* of recent authors) reported often from these marshes, we had not the pleasure of seeing, nor did we discover any rare plants in this part of the country.

In going from Caistor to Ormesby, a plant, or perhaps two, of *Veronica montana* was seen, and a few bushes of *Rosa arvensis*, which probably is not rare, though we did not see much of it. *Lupulus Humulus* was another hedge-plant of these parts.

In going from Caistor to Ormsby, by turning somewhat to the left, the pedestrian may have the pleasure of seeing the ruins or remains of what is by courtesy called a castle, "Caistor Castle," an unsuspected tautology. *Caistor*, *castrum*, and *castle* are all synonymous terms, and these names betray their Roman or foreign origin.

On the walls of this castle we saw Wallflower (?), *Reseda Luteola*, *Echium vulgare*, etc. How many of these are British and how many are foreigners? And how is a novice to distinguish the natives from the aliens? By book learning? Unhappily the books, like some trumpets, give an uncertain sound.

The land on which Caistor and Ormesby stand is like what is observed in many parts of Norfolk, viz. a ridge of sand between two marshes. Caistor and Ormesby are on the ridge. Some remarks on the formations of this county will subsequently appear.

We were promised great success in the marshes beyond Caistor, especially about Horsey, where there are some extensive *broads*. These were beyond our beat.

Rumex palustris certainly grows about Yarmouth, and probably *R. maritimus* also. This did not grow in marshy places, as at Letchmere, near Wandsworth, but on dry open places, with several nitrogen-loving plants, such as Chenopods, Annual Mercury, etc.

On the Suffolk side of Yarmouth, viz. beyond the river, about Gorleston and Bradwell, the following were observed.

From Gorleston churchyard there is a lane which leads to a farm about a mile from the church; the farm is the first place after passing the church, and there the road or lane terminates.

About this farm, *Hyoscyamus vulgaris*, *Silybum Marianum*, *Onopordum Acanthium*, were plentiful enough, and all equally entitled to the rank of citizenship, or all deserving of banishment from the more respectable families of the small British vegetable

kingdom. They might have all grown here for centuries, or they might have been as notorious upstarts as the Wandsworth plants.

They were countenanced by some more respectable individuals, viz. *Verbascum Thapsus* and *V. pulverulentum*, *Salvia verbenaca*, (Gorleston churchyard), *Pyrus Malus*, *Veronica montana*, *Pyrethrum Parthenium*,—also a suspected plant, but common compared with the above,—*Lastrea angularis*, *Scolopendrium vulgare*, *Tamus communis*, *Galium cruciatum*, *Anthemis Cotula*, *Hypericum humifusum* and *H. perforatum*, etc. etc.

About a mile or two from the end of this lane, there is a kind of path, but not a public one, to Bradwell church. In this churchyard, which has a fine situation and is as pleasant as such lugubrious places can be, there grows in considerable plenty *Rosa spinosissima* and *Smyrnium Olusatrum*,—the latter a plant questionable on the score of nationality, while the former rejoices in a pedigree which has never yet been impugned. In this sacred spot, these with several more common species find a congenial soil; they grow cheek by jowl, in close contact, like the ashes of the great and ignoble, the wise and learned, which mix with the remains of simple and innocent rustics; an example among many, of the living being nourished by the dead. Here the plants grow, and here they decay and perish; and probably they have been here since the church and churchyard were consecrated to the purposes of divine worship and Christian sepulture.

In the marshes near Gorleston, *Sium angustifolium*, *Carex Pseudo-cyperus*, and several common or aquatic plants, were observed.

Reviews.

Notes sur quelques Plantes rares ou critiques de la Belgique. Par François Crepin. Second Notice.

In a previous review of this important though small pamphlet, it was hinted that our readers would have another, though briefer, report of its contents. This implied promise is now to be redeemed.

Our author has proved by cultivation that *Epilobium ligula-*

tum, Baker, is *E. palustre*, var. *latifolium*. His experiments and the results are as follows:—

"I sowed seeds obtained from *E. ligulatum* sent me by Mr. Baker, and I raised, with a slight difference, the typical form of *E. palustre*. The new species diminished in size, its stem became cylindrical, with the exception of two lines of hair developed from the point of *foliar* insertion (opposite leaves), and taking the place of two prominent lines between the lower joints. In this variety the curious stolons of *E. palustre* are equally well developed in autumn. This variety, in a wild state, has often the base of its stem creeping, and deeply buried in the turf; but when cultivated, its stem recovers its usual state, erect at the base."

In this species, *E. palustre*, and in *Oxalis stricta*, the stolons are very characteristic. There are in both (?) these, two kinds of stolons, produced from the axils of the lowermost leaves; the one sort producing only bulbils or little buds, the other rosettes of spreading leaves. Both kinds are capable of rooting and of continuing the plant on which they grow. Are botanists generally aware that *Oxalis stricta* has what is called a perennial duration, equally with *Epilobium palustre?* All authors describe the roots of the latter as perennial, and most call the former an annual.

Would physiological botanical observers have the goodness to tell students what is the difference between bulbils and rosettes? Or does the bulbil become a rosette when developed, and is the undeveloped rosette different from a bulbil? Is there any essential difference between them? Is it satisfactory to ascribe a different origin and organization to two bodies (or to separate them), if in process of time they are undistinguishable, and produce the same results, viz. living plants? It may be said that seeds, buds, bulbs, and stolons, are all equally capable of continuing the existence of the individual. Seeds, however, produce a new individual or a new variety of individuals, sometimes a new race. Detached bulbs, stolons, etc., whether they are developed above-ground, like the strawberry, or under-ground, like *Stachys palustris, Doronicum Pardalianches*, etc., only continue the individual or increase its number.

The above-ground stolons and the under-ground stolons differ little except in their position, either exposed to the light or developed in darkness. They equally produce plants exactly like

their parents. Is not the economy, or origin, or organization, of the bulbils and the rosettes similar, and not analogous?

Another remark not unconnected with the duration of certain species is offered about the longevity of *Cynoglossum montanum*, a species long combined with *C. officinale*, and which, by all modern authors, not by Mr. Hudson, nor Dr. Withering, but from Sir J. E. Smith downwards, has been called a biennial.

The editor of the 'Phytologist' would not again have obtruded his views on a subject which was definitely settled years ago, viz. the duration of this species, if an opinion had not been consigned to him by the author of these 'Notes,' to which he has no just claim, which he takes the liberty of repudiating and rejecting *in toto*, as a groundless assumption which could not be seriously maintained by any person who has bestowed but a moderate share of his attention on the subject. He has no hesitation in asserting that the question has been decided both by history and experience, by testimony past and present, viz. that the plant in question is *not a biennial*, but a perennial; or its duration is as indefinite as that of the *Pulmonaria*, the *Symphytum*, and of many other plants of the Order, whose longevity was never called in question.

It may be that he did not state his opinion very decidedly, but he did not enter a single word militating against the opinion of his correspondent, who brought the question under the notice of the scientific public. Let our readers compare the article in the 'Phytologist,' and they will find that there is no ground for imputing this opinion to the editor.

Our excellent Belgian correspondent and friend, if he will allow us to call him by that honourable name, has debited us with an absurd opinion (*avis*) that the plant, though truly (*bien*) a biennial, may accidentally live three or four years, and flower two or three times. See 'Notes,' etc., p. 52.

The editor of the 'Phytologist' has often *vivâ voce* and *literâ scriptâ*, both in word and writing, affirmed that there is no certain duration implied in the term 'biennial;' that it sometimes signifies a few months, and sometimes a few years: for example, the Foxglove exists usually six months, and it is called a biennial. The garden *Angelica officinalis* exists generally two or three years, sometimes four years, and it is also called a biennial.

The terms 'annual' and 'biennial,' whether they denote a few

weeks, a few months, or a few years, should be understood as expressing the duration of plants which only flower *once*, and then decay. Whatever may be the length of time elapsing between their first springing from seed, reaching maturity, and perishing, they agree in this, that they only flower once in their lives. It is possible to prolong the existence of these plants by preventing their flowering, and also by cutting off their flowers before the seed is come to maturity; but no plant which flowers more than once from the same root, or on the same stem or branch, can with any propriety be called an annual or a biennial. That an annual or a truly biennial plant can flower two or three times, even by accident, is a fact which needs confirmation strong as Holy Writ, ere it can be received into any orthodox phytological confession of faith. We will not own it, for it forms no part of our botanical creed.

The modern terms *annual* and *biennial*, in their natural legitimate sense and usual application, are deceptive and misleading expressions, and should be abandoned.

Some plants, popularly named annuals, have but a very short duration. Several Fungi do not exist above a day; some herbaceous plants barely survive a month. There are biennials which live only a few months, and there are others which endure several years.

The term 'perennial' is also very indefinite, embracing species which live a few years, and others which live, it may be said, for ever.

The Resedas and Saponarias are examples; some of the former barely flower twice, while the common Soapwort has a sempiternal duration.

Into which class is the American Aloe to be put? This plant is said to flower once in a century.

There are some species which are annual in one country, and perennial in another. How are they to be classified, as annuals or perennials?

M. Crepin concludes his note on the duration of *Cynoglossum sylvaticum*, for which we own our obligations to Mr. Sim, with the following: "C'est du reste là un fait assez fréquemment observé chez les plantes bisannuelles." If our author means that biennial species are frequently observed to flower thrice, or even twice, in two or three successive seasons, it is a fact which the editor of the 'Phytologist' has never seen, nor even heard of,

and he decidedly repudiates the assertion that such a fact has ever been reported by him.

Though the terms now employed to express the duration of plants be not only indefinite, defective, and deceptive, a word is wanted to signify that a given or assumed plant flowers only once from the same root. The term 'annual' might be somewhat amplified in signification, viz. inclusive of what are called annual and biennial, and the latter should be discarded from descriptive works.

Cynoglossum sylvaticum, var. *C. montanum,* or *medium,* or *virens,* or *virginicum,* or *germanicum, apenninum,* or *officinale* β, is neither annual nor biennial, but has a duration as extensive and indefinite as *Symphytum tuberosum,* though it does not increase so fast by radical buds, shoots, etc.

On pp. 53–58 there is an elaborate article on the various species or varieties, or on both, of the genus *Lappa,* which is here commended to the notice of the inquisitive; and a few questions are propounded about the term *type,* which is now so commonly met with in descriptive scientific works.

To help our readers to understand the drift of the question or questions which follow, let them assume that the typical forms of roots are *fibrous,* of stems *cylindrical,* of leaves *flat,* of flowers *circular.* Of these typical forms there are several modifications; for example, some roots are fleshy and fibrous, some stems angular, some leaves cylindrical, some flowers cruciform, triangular, etc. Is the type of the entire vegetable creation, or of its individual organs, to be found amongst the simplest, or among the most complex forms? What is the type of a Class or of an Order? Is it to be found in the simplest Order or genus, or in the most complex? Is it a plant or an idea—a thing or an abstract notion?

What species is the type of a genus? What individual plant is *par excellence* assumed to be the type of a species?

Do authors know what they mean by *type?* If they do, it would be worth their while to enlighten their less learned brethren, who may wish to be their humble tractable disciples.

On what principles do authors decide or assert that a certain form, say, for example, *Lappa minor* or *L. intermedia,* is a species, and *L. pubens* a variety? How is the typical character of *L. minor* ascertained? Are there no typical forms among the group called *L. pubens?* What merit has the former to entitle

it to this high pre-eminence? And wherein consists the inferiority of *L. pubens*, that it should be consigned to obscurity?

Are there gradations in typical rank? Do some individuals approach nearer to an ideal type than others do?

Are all types ideal, both perfect, less perfect, and abnormal types? Are the descriptions of genera, species, etc., drawn up from individuals or from the imagination? Are types really natural existing things or poetic inventions, realities or imaginary creations, facts or fancies? What is the history of this term, 'type'? When was it introduced? Is it connected with the new science, ethnology? What are the synonyms of 'type'? What is its value, or import, or meaning, in the vocabulary of botanists?

Page 62 contains a notice of the discovery of *Artemisia camphorata* by one of our fair correspondents. See 'Phytologist' for December, 1861, No. 80.

Crepis nicæensis, a species new to Belgium, may possibly turn up in such places as Battersea, Wandsworth, or Kew Bridge. Some two years ago a very large form of *Crepis biennis* sprang up *hortulo in nostro Chelseyano*, and the same was detected among a lot of specimens collected at Kew Bridge, a place notoriously suspicious. Our garden example did not originate in that quarter.

Bromus patulus, a Grass frequently seen at Wandsworth in former years, but not to be found there now, is another of the recently detected plants of Belgium.

B. arvensis, M. Crepin remarks, has often, in Belgium, been mistaken for *B. patulus*, and it is not very improbable that in England *B. secalinus* has been occasionally mistaken for *B. squarrosus*, a south of Europe species.

In order to assist our readers in determining this plant, *B. patulus*, viz. such of them as have no good descriptions or figures of the species, we quote the following distinctive marks from M. Crépin's 'Notes,' p. 75:—

"The panicle of *E. patulus* always inclines or droops to one side; its branches are very slender and flexible. The spikelets are larger than in *B. arvensis*; the glumes are broader, and more closely imbricated, even at maturity, than they are in the other; the upper glumelle is sensibly shorter than the lower one; the awns are longer, always twisted and divaricate (divergent) in clear warm days, seldom erect, or but slightly spreading; its anthers are very short. *Note.* The awns are long in *B. arvensis*.

Manuscript Magazine of the Glasgow Naturalists' Society.
No. 3, for July, 1862.

Our excellent friend and correspondent Mr. "W. G." has just sent another volume or number of this singular, and pleasing, and instructive miscellany. It has been read with delight, and its varied contents will help to fill up several spare places in our own publication.

As has been already remarked, in reviewing the second number, it is not a fair subject for criticism, as it can only be seen by a very small section of our readers, viz. those who dwell in St. Mungo's diocese, the Barony, the Gorbals, the Goosedubs, and other parts of the great western emporium.

The contents of this number are multifarious, but all quite appropriate, embracing some one or other of the branches of natural history.

The first article is a "Contribution towards a Flora of the Counties of Tyrone, Londonderry, and Donegal." This is a large subject, but the contribution towards its flora is a generous one, between six and seven hundred species,—a good beginning. Some of the plants are of great rarity, particularly *Anemone ranunculoides, Arenaria verna, Draba incana, Silene Armeria, Erodium moschatum, Rosa cinnamomea, R. hibernica, Saxifraga umbrosa, Ligusticum scoticum, Hypochœris maculata, Crepis biennis, Hieracium cerinthoides, Anchusa sempervirens, Veronica peregrina, Polygonum Roberti* (what is this?), *Euphorbia hiberna, Potagometon prælongus, Adiantum Capillus-Veneris,* etc.

Every botanist would enjoy a month's botanizing in the north-west of Ireland in June and July, when the summer days are long; would they were aye fine! It may be safely predicted that the collecting books and boxes of a party of London botanists would soon be filled with the productions of the rocky shores of the Atlantic, and of the mountains, bogs, loughs, and rivers, of *Ould* Ireland.

The next article is a monograph of the British Titmice, with an illustration. To this there follow in succession, Conglomerate papers (geological), "On the *Comparitive* Physiology of Digestion." Is *comparitive* a slip—a *lapsus calami*—or a new mode of spelling this word, which is from the Latin *comparativus,* from

comparo? It is a freak of the index-maker; on referring to p. 77, the reader will see that the usual orthography has been adopted.

Next there are "Rambles of a City Naturalist" (geological and antiquarian), "*Limnæa auricularia*" (zoological), "Dredging Days," "Mammon, Eros, and the Naturalist; or, Catching a Dryad." Some reader will think or say—What is this? It is, *lector benevolentissime*, a good-natured bantering article on *utilitarianism*, or what some call practical philosophy, and others the pleasant art of money-catching. The hero of this tale ran away after a Dryad, and caught—what?—not a Tartar, but some rural or sylvan beauty, and was himself caught and carried off by a stronger captor, better known by the common name of Cupid than Eros.

Three papers, named "Botanical Notes," follow the tale of Cupid and his frisky captive. "A Visit to the Giant's Causeway," "Catkin Braes" (botanical), "The Hydra Rock-Pools," "Properties and Uses of the British Wild Plants," "Scientific Memoranda of the past Half-year," "Chronicles of the Glasgow Naturalists' Society," "Answers to Correspondents" fill up the volume, or are the contents of this number of the manuscript magazine. They are not wanting in variety, and they are all replete with both interest and information, blended with some humour.

One article was accidentally omitted, viz. that on the "Origin and Distribution of Plants," on which a remark or two may be hung, *non per collum, sed per occasionem*.

On this subject there are two questions which logicians call two of the ten predicaments of the Stagyrite, viz. the *quando* and the *ubi;* when and where—neither of those categories has been satisfactorily determined in the above science. The dispute about specific centres and successive increasing distribution is premature.

Consider the *locus*, or the word responding to the question *where;* give the geologist his myriads of ages for the disseminations and distributions of a few alpine species originally created as individuals on Greenland's icy mountains, and which, by continuous migrations on floating icebergs, have been carried to Scandinavia, Wales, Scotland, the Carpathian Mountains, the Alps, the Pyrenees, the Himalayas, the Andes, and nobody knows how far: all this is possible, and what is assumed by these

savants may be conceded. But what clouds of dust must these wise men raise to blind the eyes of observers to facts which have been accomplished in historic periods! A muddle of learned locutions may envelope the transmigration of species during prehistoric ages, but we want to clear up what has taken place in the days of our progenitors, and almost under our very noses.

How were the fens of Lincolnshire, Norfolk, Essex, Kent, and Sussex, furnished with their specific, peculiar vegetation—from the bottom of the sea, of which they were part not many years ago; or from the adjoining hills of chalk, greensand, etc.? When were their plants first produced, and where did they exist till the fresh water and marsh-lands were prepared for their present habitation? Was only one single plant created for their supply, or were myriads produced?

Where did the endemic (the peculiar) plants of the Azorean Islands dwell ere there was land raised up from the deep channels of the Atlantic? It may easily be granted that they are *wise* men who can satisfactorily answer these difficult questions. It is possible that both parties of the scientific are right in a measure, and both wrong, when they generalize. The creation of individual plants in prehistoric times may be sufficient to account for some phenomena of vegetation, while different laws must be assumed to explain the admitted existence of other facts.

Do any of the learned claim the knowledge of the Most High? Did He consult them when He laid the foundation of the earth, and caused grass to grow for cattle, and roots, herbs, and fruits, for the service of mankind? What is the sum, and what is the real value of our knowledge about the origin of our earth, and its multifarious productions? The great poet calls him happy who understands the causes of things:

"Felix qui potuit rerum cognoscere causas."

. . . . . .

"Fortunatus et ille qui novit Deos agrestes."

"And happier he who worships Nature's God."

How much of what is now dignified with the name of science can be comprehended in Aristotle's definition of knowledge, viz. that which is comprehensive, exact, and which could not be otherwise?

If modern science, represented by the terms *origin* and *distribution* of plants, *specific types, Germanic, Atlantic,* Scottish

types, local, distributive, general types, etc., be science, the Stagyrite's definition of science, which mankind have accepted for many ages, must be changed or expunged from our scientific formulas; for many of the facts revealed by our modern teachers of science *could* be otherwise.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers and Notices to Correspondents, with Remarks, Notes, Queries, etc.

1. Gatherings on Braunton Burrows. See p. 355.—An apology is offered to our readers for the following list of typographical errors in the article on the botany of Braunton Burrows, printed in the December number. Our correspondents would greatly oblige us by writing *all proper names* as legibly as they can. Page 355, line 23, for 'Cowhe' read ''Combe' (short for Ilfracombe); for 'Mutchoe' read 'Mortehoe;' l. 30, for '*Asplenium*' read '*Athyrium*;' l. 34, for 'richly-covered' read 'richly-carved.' P. 356, l. 15, for 'Hill-rush' read 'Bulrush;' l. 22, for '*E. cicutarium* α *maritimum*' read '*E. cicutarium* and *maritimum*.' P. 357, l. 19, for '*Lecopsis*' read '*Lycopsis*;' l. 37, for 'Mutchoe' read 'Mortehoe;' for 'rock-post' read 'rock-pool;' for 'dew' read 'sun;' l. 40, for 'Rain' read 'Time.' P. 358, l. 14, for 'to Saunton End' read 'to the Saunton end.'

2. Barmouth Ferns.—Our reverend Oswestry correspondent is hereby informed that his paper on the Welsh Ferns will appear as soon as we have room. The Editor is much indebted to the author.

3. A private missive will soon, it is hoped, be ready for our fair and obliging Brussels correspondent.

Riccia natans.—Would you allow me to ask the readers of the 'Phytologist,' if *Riccia natans* is still found in this country, and if so, would any one kindly supply me with a few live specimens?—Walter W. Reeves, 20, South Street, Greenwich.

Exotic and Rare Plants at Wandsworth.

Three years have now elapsed since an interesting article appeared in the 'Phytologist' on the exotic and rare plants growing spontaneously on a piece of waste ground adjoining the Wandsworth steamboat pier. Part of this ground is now enclosed, so that but a comparatively small part is now open to the botanist. In the autumn of the now past year I visited this place several times, and it may not be uninteresting to botanists in general, and to the London botanist in particular, to learn the result of my explorings. I must first mention, however, that the piece of ground alluded to is divided into three parts by two rows of palings, which cross it near the centre. In the third of these divisions, counting from that nearest the pier, nothing worth notice is to be found, but the first two make up for its deficiency by the richness and variety of their vegetation. In the

second of them is a depression, full of black, or rather brown, mud, but at high tide the water enters and fills it.

I will now, as briefly as possible, give a list of those plants which I have found in the first of these divisions, with their comparative frequency, and the dates and duration of their appearance.

Ranunculus hirsutus	A single specimen	Sept. 13.
Delphinium Consolida	A single specimen	Sept. 18.
Erysimum cheiranthoides	Very scarce	Sept. 18.
Sinapis nigra	Not unfrequent	Oct. 4.
Diplotaxis erucoides?	A large plant	Oct. 4.
Diplotaxis tenuifolia	Not unfrequent	Sept. 15.
Enarthrocarpus lyratus	A single specimen	Oct. 21.
Melilotus parviflora	Very abundant	Sept. 11.
Melilotus messanensis	Not common	Sept. 11.
Erigeron canadensis	Abundant	Sept. 18.
Calliopsis bicolor	Not unfrequent	Sept. 18.
Chrysanthemum segetum	A single specimen	Oct. 4.

The italicized plants in the above list are those which are universally known to be foreign to this country; the solitary plant of *Delphinium Consolida* bore pink blossoms, and none of the above could be considered abundant, save *Melilotus parviflora* and *Erigeron canadensis*, neither of which are indigenous. In the second division a still greater profusion of plants occurs, as will be seen by the following list:—

Papaver Argemone	Not unfrequent	Sept. 11.
Lepidium Draba	Abundant	Sept. 11.
Erysimum orientale	Not unfrequent	Sept. 13.
Diplotaxis muralis	Not unfrequent	Sept. 13.
Silene noctiflora	A single specimen	Sept. 15.
Spergula nodosa	Abundant	Sept. 15.
Ononis, sp. ?	Not unfrequent	Sept. 15.
Medicago denticulata	Abundant	Sept. 13.
Medicago, sp. ?	Not unfrequent	Sept. 18.
Melilotus arvensis ?	Very abundant	Sept. 11.
Melilotus leucantha	A single specimen	Oct. 4.
Melilotus messanensis	Very abundant	Sept. 11.
Trifolium resupinatum	Very abundant	Sept. 11.
Trifolium constantinopolitanum	Very abundant	Sept. 11.
Trifolium, sp. ?	Abundant	Sept. 13.
Trifolium hybridum	Not unfrequent	Sept. 13.
Lythrum hyssopifolium	Abundant	Sept. 13.
Ammi majus	Abundant	Sept. 13.
Torilis nodosa	Very abundant	Sept. 13.
Torilis infesta	Abundant	Sept. 11.
Peucedanum, sp. ?	Not unfrequent	Sept. 18.
Centaurea Cyanus	Not unfrequent	Sept. 11.
Centaurea Calcitrapa	Sparingly	Sept. 11.
Anthemis arvensis	Abundant	Sept. 13.
Veronica Buxbaumii	Not unfrequent	Oct. 4.
Anagallis cœrulea	Very abundant	Sept. 13.
Plantago Lagopus	Very abundant	Sept. 11.

As regards the plants in the preceding list, nearly all of them were in full blossom; *Lepidium Draba*, however, was principally in seed, though flowering specimens were not wanting. This was also the case with *Erysimum orientale*, only one specimen of this being in blossom. *Spergula nodosa* was

abundant by the stone coping on the Thames wall. The species of *Ononis* I could not ascertain, as the plants were all very young, but they will probably blossom next year. The *Medicago* was in blossom, but did not appear to be any one of those mentioned in the former list of 1859. The *Melilotus* I believe to be *M. arvensis*, but as this genus is at present in an unsettled state, I decline hazarding any opinion on the matter. *M. messanensis* was as abundant in this division as *M. parviflora* was in the former. The *Trifolium* which I have left unnamed I had never met with before, and will not venture to determine it. *Lythrum hyssopifolium* was abundant, both in seed and in a young state, but no specimen was in blossom. A curious fact may be mentioned regarding *Anagallis cœrulea*, that, whereas this was extremely abundant, *A. arvensis* occurs but once, and then in a situation far removed from *A. cœrulea*. *Plantago Lagopus* is likewise extremely abundant. Before concluding, I may just mention that all, or nearly all, of the plants here mentioned were in blossom at the stated times, and I would also just hint to London botanists that the spot is well worth a visit, as new treasures appear on almost every occasion, and I also wish that they may be as successful as I have been.

J. BRITTEN.

To the Editor of the 'Phytologist.'

Sir,—I am indebted to a review of the 'Canadian Naturalist' in your last number, for pointing out an error in my paper on the White Mountains, which I had overlooked in reading the proof. The words, "those which on the one hand escape," should be, "that which on the one hand escapes." Allow me also to say that I am not the author of a 'Flora of the White Mountains,' nor indeed one of the regular workers in that field. My little excursion was undertaken principally with the view of collecting material for the study of the plants found in a subfossil state in the post-pliocene deposits of Canada; and the notes published in the 'Naturalist' were intended to direct the attention of naturalists in this country to the geological and geographical questions connected with these plants.

J. W. DAWSON.

M'Gill College, Montreal, November 20, 1862.

CONVOLVULUS SEPIUM, *flore roseo.*

About two miles southward of Ryde, in the Isle of Wight, is a place called Upton, a spot about 280 feet above the level of the sea. On this spot stands, very conspicuously, a large windmill, from which are most extensive views of sea and land: looking north, is seen, Ryde, the Solent Sea, and the opposite coast of Hants., with Portsea, Portsmouth, and Portsdown Hill beyond. To the east is seen Hayling Island and the coast of Sussex, the Channel beyond, Chichester, and its cathedral. To the south, Ashey, Mesley, Arreton, and St. Catherine Downs; and to the west, Osborne, Norris Castle, the Southampton Water, and the town of Southampton about fifteen miles distant. The following is taken from Barber's 'Views of the Isle of Wight:'—

"*The Mill at Aldermore.*—An easy effort, the distance not exceeding a mile and a half. The direction is south, through Upper Ryde, and will lead, after passing the turnpike by Haylands, to the seat of Admiral Locke; Upton House, the residence of James P. Lind, Esq., M.D., is also

in the vicinity. The view from the mill on a favourable day realizes some of the most magnificent effects of a well-executed panorama. The principal objects are, north, the Solent, and the coast beyond; east, Bembridge Down, with the fine sheet of water called Brading Haven; south, Runwell and Ashey Downs, the latter distinguished by the peculiar rotundity of its swell, and by its sea-mark; west, inland scenery, possessing much of the richness that so generally characterizes the island."

This spot is one of the *lions* pointed out to the visitors of Ryde when they are inclined to go lion-hunting, but I do not wish to lead you into this furious sport, but to take you on the road further south, about six hundred yards, to Upton Farm, occupied by Mr. James Isaacs. This farm is situated on the right-hand side of the road, and there is a way through it into a bridle-road across a field westward, to another farm called Kemp Hill. Along this bridle-road, after getting over a five-barred gate (for the gate is generally fastened), is a hedgerow on a dry bank, some distance from any garden. On this bank I found growing *Convolvulus sepium flore roseo*, a specimen of which I sent you in August last. The growth of the plant is not so luxuriant as the *C. sepium* which grows near it; its flowers are not quite so large as the *C. sepium*, and are rose-coloured, with five stripes of white; its leaves are also different in shape to the *C. sepium*, and the edges are brown. In September, 1857, I found this plant growing in the same place, and I sent you some of its flowers, but I do not think any notice was taken of it in the 'Phytologist.' Will you kindly give your opinion as to whether you think it a new discovery?

HARRIET BEISLY.

PERTH BOTANY.

Aremonia agrimonoides.—This plant, which has caused no small stir among limitarian botanists, has been discovered in another locality in this district. A young lad, a lover of flowers, belonging to Perth, was last May collecting plants on the banks of the Almond, two miles north of Perth, where, among other things, he collected the *A. agrimonoides*. (He is not a botanist.) He showed his collection to a man in Perth, who knows a good many of our common plants. I chanced to see the latter a few days ago; he told me a young lad (William Hogg) had brought him from the banks of the Almond a bit of a plant which he never had seen, and knew nothing at all about; but from the description he gave me, I at once concluded it to be the *Aremonia*. I sent for the young lad myself, and he fortunately had a bit of it, which he showed me, which set the matter at rest, and confirmed my opinion. I enclose a small fragment. This new station is in a plantation (partly planted by man, partly by nature) on the left bank of the Almond, near its confluence with the Tay, two miles north of Perth city, and one mile west of Scone Palace. You will please announce this in the 'Phytologist' for the delectation of some of our friends who like to hear the truth, even though it upsets some of their pet theories.

JOHN SIM.

RUBUS LACINIATUS.

This truly beautiful Bramble was discovered by my worthy friend, Mr. White, of Perth, early this month (October, 1862). He told me he found it growing amongst other *Rubi* on the north-west side of Kinnoull Hill,

near its summit, and about the middle of the wood. Its discovery was quite accidental and unexpected. His object that day (if I mistake not) was chiefly collecting Mosses, and, in passing through the wood, his attention was arrested by its handsomely-cut foliage and pinkish-red blossoms; he collected two or three sprigs, and gave me one to compare with the *Rubi* in my herbarium, but neither in my collection nor in his own had we a similar species. The business was now—what *Rubus* is it? After much searching and inquiry, we have determined it to be *Rubus laciniatus*, not recorded in any of our works on British botany, but not the less likely to be a British plant, though unobserved hitherto by the compilers of our British floras. Ill health has prevented me from visiting the locality, which is just about a mile from my house, but I know the spot, and shall (D.V.) visit it personally as soon as able. Mr. White says he observed about five or six thriving bushes (plants) of it; the locality is about five hundred feet elevated about the Tay. I do not wonder that it has never been discovered here before, as the north side of the hill is quite uninteresting in a botanical point of view; it is the south side, from the summit downwards, that contains the many rarities already recorded in the pages of this Journal, from which I see that this *Rubus* has been already observed in other parts of Great Britain. JOHN SIM.

Bridge End, Perth, October, 1862.

FORMS OF LASTREA FILIX-MAS.

It has been obvious to me for many years that some of the forms of *Lastrea Filix-mas*, now known only as *varieties*, are fully entitled to the rank of *species*, and I would suggest to pteridologists the following specific names and characters as being appropriate :—

Lastrea Filix-mas . .	to be called	*L. Filix-mas.*
var. *paleacea*, M.*	,,	*L. pseudo-mas*, W.
var. *abbreviata*, M.	,,	*L. propinqua*, W.

Diagnostics.—LASTREA FILIX-MAS.—*Partly deciduous*, lying prostrate in winter; fronds lanceolate, bipinnate, attaining nearly five feet in length; pinnæ elongate deltoid, pinnate, pinnulæ oval, serrate, *very slightly auricled*, the lowest pair being rather longer than the rest; indusium *when young* subpeltate (or like an inverted soup-plate), *not embracing the spore-cases*, partially evanescent.

LASTREA PSEUDO-MAS (W.).*—*Subevergreen*, not prostrate in winter, coriaceous; fronds lanceolate, bipinnate, attaining full five feet in length; pinnæ elongate, deltoid, or pyramidal, pinnate; pinnulæ paralleloid or linear-obtuse, *not auricled*, serrulate, the first anterior and posterior pair scarcely longer than the rest; indusium when young *embracing spore-cases*, persistent, subrotund, depressed.

LASTREA PROPINQUA (W.).—*Deciduous*, subalpine; fronds ovate lanceolate, bipinnate, attaining but rarely four feet in length; pinnæ pinnate, pyramidal, inciso-lobate; pinnulæ *biserrulate*, crisped, *strongly auricled*, basal pair stipitate, much longer than the rest; indusium embracing the spore-cases. B.

Chiselhurst, October 27th, 1862.

* See 'Phytologist,' new series, vol. i. p. 172; remarks on name, spores, etc.; pinnulæ used instead of pinnules. "M.," Moore. "W.," Wollaston.

Kentish Botany.

Centaurea solstitialis, Yellow Stor-Thistle, Barnaby's Thistle.—On Friday, the 5th of September, 1862, I found this plant growing in a clover-field on the north side of the road leading from Bromley to Chiselhurst. This field forms part of the Beckley estate, lately purchased by George Wythes, Esq., and which formerly belonged to Mr. Wells, who occupied its mansion, etc. Some houses are being erected at the top of the field, and shortly I expect the whole meadow will be covered with bricks and mortar. Could you tell me why this flower is called St. Barnaby's Thistle? St. Barnabas's day is on the 11th of June, and the 'Floral Directory' states that the *Chrysanthemum leucanthemum* is the flower dedicated to St. Barnabas. S. Beisly.

Shakspeare Flowers.

I think it is generally agreed by the contributors to the 'Phytologist,' that the flower called Long Purples in 'Hamlet' (forming part of Ophelia's garland) is the *Orchis mascula;* but I was asked by Mr. Perry, of Warwick, a few days since, whether Shakspeare might not have intended the *Arum maculatum* as Long Purples. I doubt this, because I think the *Arum* would not have been so readily found in the "meadow near the brook, across which the Willow grew aslaunt," as the *Orchis mascula;* but I should feel much obliged if some of your readers can inform me if they ever heard the *Arum* called Long Purples. It is called by other names, such as Starchwort, Lords-and-Ladies, Cuckoopint, Wake-robin, Calf's-foot, and Rampe, but I never heard it called Long Purples. The *Caltha palustris* is called "May-blobs" by the children who gather the flower in the meadows near Warwick; they also call the Wood Anemone (*A. nemorosa*) "Granny's Nightcap;" and the *Stellaria holostea* is called by them "Billy White's Buttons." S. Beisly.

List of Alpine Plants for Sale.

Wulfenia carinthiaca; several Gentians, among which *Gentiana purpurea; Gnaphalium Leontopodium* (*Leontopodium alpinum*), and others of that genus; *Dryas octopetala, Campanula spicata, Saxifragas, Violas, Cyperaceæ*, and *Gramineæ*. Intending purchasers may apply to A. I., 28, Upper Manor Street, Chelsea, S.W.

Communications have been received from

James Cracknell; Dr. Prior; John Peers; Walter W. Reeves; Rev. T. F. Ravenshaw; Rev. W. W. How; W. Pamplin; John Sim; J. S. M.; James Lothian; J. W. Dawson; F. Walker; T. R. A. Briggs; W. Richardson; W. Ashley; B. M. Watkins.

RECEIVED FOR REVIEW.

Notes on Books.
The Edinburgh Weekly Review, December 6.
The Argyleshire Herald, December 5.
The Edinburgh Weekly Review, December 13.

LANCASHIRE BOTANY.

Plants of Southport. *By* JOHN WINDSOR.

On the 21st of August, 1862, accompanied by a young and ardent botanist, I visited Southport, a well-known marine locality on our Lancashire coast. From being a small village some thirty or forty years ago, it has rather rapidly extended itself, and become now comparatively a large and populous town, presenting a very gay appearance on a fine summer's day like that on which we visited it. At that season of the year especially, it is much frequented by the inhabitants of Liverpool, Manchester, etc., partly for health, and partly for pleasure. A few years since, I had an opportunity of visiting it several times, and noticing some of its botanical productions; but on this occasion I found that spots where I had before seen several interesting plants were now occupied by human habitations, already erected, and many others in the process of construction.

Notwithstanding the great increase and striking changes in the town itself, Southport and its neighbourhood within a few miles may still be justly considered to afford a rich field for botanical exploration. I shall now proceed to enumerate the plants which have there presented themselves, adding to my own list the names of some others, specimens of most of which I have this year received from my friends Mr. Richard Buxton (the author of the 'Manchester Flora') and Mr. Edward Leeds. I may take this opportunity of stating that the latter gentleman has a garden at Stretford, near Manchester, rich in the cultivation, not only of numerous exotic, but of many rare British plants.

Immediately after our arrival at Southport, about eleven o'clock A.M., we started through the town to the north shore and its neighbourhood, to some distance towards the embouchure of the river Ribble, which separates it from the opposite shore of Lytham.

Of the plants enumerated below, some I collected this year, which I had not previously met with at Southport, and others which I had formerly seen did not present themselves in their old localities on this occasion; but as most of them have been found by others this season, I shall record them here.

Lycopsis arvensis abounds at Southport; *Cynoglossum officinale* is also found there. *Echium vulgare* I have seen plentifully on former occasions, but did not meet with it this time. Several specimens of *Beta vulgaris* I met with in a field, but it might have originated in a neighbouring garden. *Gentiana Amarella* was tolerably abundant, as also were *Chlora perfoliata, Erythræa pulchella, E. littoralis,* and *E. Centaurium.* The last was very variable in its stature, being in some cases very short or stunted, in others attaining its usual height, intermediate forms also occurring. I did not on this occasion meet with *E. latifolia,* but it has been seen in the neighbourhood this and in former years, although not in flower. In a rather low, damp field, our attention was attracted by plants growing prostrate on the ground; the first specimen I saw had no flowers, but soon others presented themselves with fine yellow blossoms, and I then recognized it as *Mimulus luteus,* apparently quite spontaneous, and at some distance from the town *Aster Tripolium* occurred; not far from the same locality also *Plantago maritima, Triglochin maritimum, Sagina nodosa, Epilobium tetragonum, Salix Helix* and *S. argentea, Veronica Anagallis, Glaux maritima, Euphorbia Paralias* and *E. portlandica,* in another place; *Bidens cernua, Alisma ranunculoides, Parnassia palustris, Samolus Valerandi, Cakile maritima, Epipactis palustris, Orchis latifolia, Sparganium simplex, Juncus acutiflorus* and *J. obtusiflorus, Carex arenaria, Equisetum palustre, E. hyemale,* and *E. variegatum,* not far off, were met with; *Trifolium arvense* abundantly; *Erodium cicutarium, Anthyllis vulneraria, Lychnis Githago, Carlina vulgaris, Ononis arvensis, Reseda Luteola, Vicia anguslifolia, Thrincia hirta, Festuca uniglumis, Phleum arenarium, Festuca rubra,* abundant; and *Agrostis alba,* var. *subrepens* (Bab.), *Spiranthes autumnalis, Samolus Valerandi,* etc., had been previously collected near Southport.

In returning from the north shore and its vicinity, we diverged to some distance on the old Manchester road to look for *Bartsia viscosa* where I had formerly seen it, but on this occasion did not find it. I have specimens however of it, gathered this summer near Southport, both by Mr. Buxton and Mr. Leeds.

In rambling along the sea border of the town, I looked in vain for the beautiful *Convolvulus Soldanella* where I had for-

merly seen it, also for *Pyrola rotundifolia*, var. *bracteata* or *maritima*, and for *Sisymbrium Sophia*, of which I had once seen plenty here. Of the two latter, however, I have received specimens gathered this year, near Southport, by Mr. Buxton, who has visited the town and neighbourhood twice during the last summer, spending some time, and whose accuracy may be relied on. I may take the opportunity here of stating that I have been informed of the existence of a 'Southport Flora,' which however I have not seen, and I am sorry to add that my informant, who had seen it, considered it to be by no means altogether trustworthy. In the latter part of the day I spent an hour or two in the south part of the town and its vicinity, collecting here a few additional plants, as *Saponaria officinalis*, (*S. Vaccaria* was seen by a friend of Mr. Buxton, and by himself, on a rubbish-heap about four miles from Southport, last summer,) *Centaurea Cyanus*, *Œnothera biennis*, abundantly; *Medicago sativa*, and some others. *Monotropa Hypopitys*, formerly met with, I did not see on this occasion, but have specimens of it also collected by Mr. R. Buxton. To him also I am indebted for a knowledge of other Southport plants (and of almost all of these I have specimens from him) in addition to those already mentioned, as *Blysmus rufus* and *B. compressus*, *Festuca rubra*, var. *arenaria*, *Festuca bromoides*, *Anagallis tenella*, *Œnanthe crocata*, *Œ. fistulosa*, *Œ. Lachenalii*, *Rumex maritimus*, *Teesdalia nudicaulis*, *Vicia Bobartii*, and *Filago minima*.

In addition to some of the above, Mr. Edward Leeds has shown some specimens collected near Southport in 1862, of *Scirpus pauciflorus* and *S. palustris*, *Rhynchospora alba*, *Catabrosa aquatica*, *Juncus acutiflorus*, *Sparganium simplex*, *Carex panicea*, *C. pilulifera*, *C. extensa*, *C. Œderi*, *Triglochin palustre*, *Myriophyllum verticillatum*, *Pastinaca sativa*, *Salsola Kali*, *Trifolium fragiferum*, *Hypericum quadrangulum*, *Senecio erucifolius*, etc.

The muscological department of botany in regard to Southport has been ably and successfully investigated by Messrs. Wilson, Wood, Marratt, Powell, and Buxton, and I think I am correct in stating the following mosses as growing there, along with some others:—*Bryum cernuum*, *B. uliginosum*, *B. Marratii*, *B. catophyllum*, *B. Warneum*, *Hypnum lycopodioides*, *H. polygamum*, *H. salebrosum*, *H. elodes*, *H. commutatum*, *H. Kneipfii*, and *H.*

speciosum, Meesia uliginosa, Amplyodon dealbatum, Catascopium nigritum, and *Fissidens bryoides.*

Since writing the above, I have had an opportunity of communicating with Mr. Buxton, who has diligently investigated the botany of Southport, and I have thus been enabled to add considerably to the extent of my list. He adds the following names, omitting some commoner ones:—

On the North Shore.

Torilis nodosa.
Cochlearia anglica.
Armeria maritima, and on south shore also.
Euphorbia exigua.
Erigeron acris (plentiful).
Chrysanthemum segetum.
Carduus acanthoides.
Anthemis Cotula (plentiful).
Matricaria Chamomilla (plentiful).
Apium graveolens (plentiful).
Papaver Rhœas.
Papaver Argemone.
Ranunculus hirsutus.
Scirpus maritimus (common).
Chenopodium maritimum.
Salicornia herbacea, and perhaps procumbens; part was erect, part procumbent.
Silene anglica.
Silene noctiflora.
Coronopus Ruellii.
Potamogeton heterophyllus.
Phellandrium aquaticum.
Utricularia minor.
Hydrocharis Morsus-ranæ.
Myrica Gale.
Hordium murinum (rare in the Manchester district).
Ammophila arenaria.
Triticum junceum.

On the South Shore.

Ornithopus perpusillus (rather inland).
Myosotis collina.
Gentiana campestris.
Gentiana Pneumonanthe.
Bidens tripartita.
Listera ovata (plentiful).
Epipactis latifolia (plentiful).
Juncus maritimus.
Reseda fruticulosa.
Gnaphalium germanicum.
Radiola Millegrana.
Centunculus minimus.
Raphanus Raphanistrum (plentiful).
Sinapis nigra.
Myriophyllum spicatum.
Cerastium tetrandrum (abundant).
Viola flavicornis.
Vicia lathyroides.
Drosera rotundifolia.
Leonurus Cardiaca.
Lamium incisum.
Lamium amplexicaule.
Arenaria serpyllifolia (abundant).
Anthriscus vulgaris.
Menyanthes trifoliata (abundant).
Rumex Hydrolapathum.
Osmunda regalis.

Inland.

Stellaria glauca.
Lythrum Salicaria.
Butomus umbellatus is said to grow at Southport.
Rubus cæsius (abundant on sand-hills).
Kœniga maritima (about 1850, where Promenade now stands).

Pretty General near Southport.

Aira caryophyllea (inland).
Aira præcox (inland).
Myosotis versicolor.
Sagina maritima (plentiful).
Salix repens (var. fusca, prostrate, etc.).
Salix Smithiana.
Veronica arvensis (frequent).
Juncus lamprocarpus.
Juncus cœnosus.
Carex intermedia.
Carex distans.
Hieracium umbellatum (very common).
Lemna gibba.
Trifolium procumbens (common).
Hottonia palustris.
Hippuris vulgaris (common).
Linaria vulgaris.
Sium angustifolium.
Urtica urens (abundant).

BELGIAN BOTANY.

(Continued from page 390.)

Next morning we set out for Lombartzyde, a locality interesting for rare plants, and with which M. Coemans, one of the Vice-Presidents of the Society, was marvellously well acquainted. Guided by him, we met with the following rare species :—*Carex divisa, Carex distans, Tragopogon porrifolius, Galium tricorne, Asparagus officinalis.* In ditches between this village and Nieuport we observed the *Galium elongatum,* a species spread over all maritime parts, as well as *Scirpus Tabernæmontani.* In cultivated places we saw *Avena fatua* and *Veronica didyma.* Along the borders of the road, *Medicago maculata* and *Senebiera Coronopus* are common. Here and there are scattered *Helminthia echioides* and *Barkhausia taraxacifolia.* This latter exists also at Westende and Middelkerke. On the grassy plots and open places, we observed examples of *Lepturus incurvatus* and *Sagina stricta,* Fries, a new species for the Belgian Flora, due to the researches of M. Crépin, whose piercing eye allows nothing to escape his observation. In similar places we found again *Cerastium tetrandrum, Cochlearia danica, Sagina nodosa, Scirpus pauciflorus.* On reaching the dunes we perceived in the meadows *Erythræa linariæfolia, Glaux maritima, Blitum rubrum, Schœnus nigricans, Scirpus compressus, Carex trinervis.* Along the channel at places often washed by the sea we discovered an exclusively maritime flora; the turf is entirely composed of *Armeria maritima, Glyceria maritima,* mixed with *Spergularia media* (*Arenaria marginata,* DC.), *Plantago maritima, Statice Limonium,* and *Salicornia herbacea.* The high Grass was full of *Aster Tripolium, Juncus Gerardi,* and *Triglochin maritimum.* On the steep grassy banks were observed

Trifolium maritimum, Lotus tenuifolius, Œnanthe peucedanifolia, Torilis nodosa, Senecio erucæfolius. Lastly, on the lower parts of the channel we gathered *Artemisia maritima* and *Halimus portulacoides.*

Our boxes overflowing with botanical spoil, we re-entered Nieuport at half-past twelve. At two o'clock the grand meeting was to take place, to which the editor of the 'Stad Nieuport' had invited all the notabilities of the town, by means of an advertisement. The great room of the town-hall had been placed at the disposal of the Society, and on our entry we found it nearly filled. The officers of the garrison with the most influential residents were there, and I hope that they had as much pleasure as we had interest in hearing different points of *cryptogamy* and *phanerogamy* discussed. Well-bred, charitable auditors will be gratified by the homage they pay to science, and by the countenance they give to its cultivators, even although they may be no great adepts in the mysteries of structural, physiological, and systematic botany.

The meeting was opened by a discourse from the President, about Dodoens' influence on botany in the sixteenth century, and on the merits of the remarkable works of L'Obel and Clusius, two other learned Belgians. Curiously enough, a descendant of this last-named botanist assisted at the meeting, in the person of M. De Lescluse, an inhabitant of Nieuport. M. Coemans read a very interesting paper on *cryptogamy*, and M. Crépin's turn came twice to read different *notices*. M. Bommer, who has the care of the Society's collections, gave an account of his observations on the use of scales of Ferns.

The meeting terminated, as a matter of course, by speeches; could it be otherwise? Nothing can prosper nowadays without the accompaniments of oratory, music, and good dinners; and as it is the common-sense and genial way of doing things, we hope our readers will bottle up any sour remarks about the incompatibleness of scientific discussion with social enjoyment, and be content to applaud, or at least not to condemn.

The evening of that day saw us again reunited at the Hôtel de l'Espérance. There were nearly thirty of us at the dinner-table, and like the day before, the most perfect cordiality reigned among us all, young and old.

Having arisen early to arrange our plants of the day before,

and to pack up our luggage, on opening our windows we encountered the discouraging sight of a beating rain, which rendered the streets and squares of the town sadly desolate. Every one was asking—Shall we go or not while this weather lasts? One of our number being bold enough to go down and inspect the sky from the large market-place, came back quite crest-fallen, convinced that the weather was decidedly against us during the rest of the day. However he had met on the road an old jocular fisherman, who assured him that when he had emptied his second morning's glass the rain would cease, but he was not going to take his second drop of brandy before ten o'clock!

To arouse the sleepers, it had been preconcerted that a member of the company should procure a postilion's horn, and sound the *réveille* an hour before the departure. Our friend T——, being somewhat musical, was fortunate enough to discover in the garret of the Hôtel du Pelican, an old trumpet, having perhaps already served at the troubled times of the Belgian communes to call the brave burgesses to the ramparts of Nieuport. At six, the trumpet gave out its plaintive sounds, being admirably in harmony with the desolation of the earth and sky. Fortunately Flora, who patronizes her votaries, succeeded in persuading St. Swithin to interrupt his famous forty days' flood, and Æolus, the king of tempests, let loose his myrmidons from the west.

Notwithstanding wind and tide, we set out at eight o'clock, preceeded by an ass laden with eatables, and confided to the care of old Balthazar. We cast a last and long look at the good little town of Nieuport, which had been so hospitable to us, and shaking hands with our new friends that we were leaving behind, we quickly passed the outskirts of the town. Like vessels knocked about by the wind, we were obliged to take in a reef—in other words to fasten our hats with string or with our handkerchiefs, and button up our coats. The wind was so boisterous that we could scarcely struggle against it and keep on the bank of the channel. On a part of the demolished ramparts, on the western side, we found in abundance magnificent tufts of *Atriplex littoralis*, var. *serrata* (*A. marina*, L.), mixed with *Blitum rubrum* and *Chenopodium murale*, *Papaver Lecoqii* mingled with *Papaver dubium*, *Glyceria distans*, *Hyoscyamus niger*, and numerous splendid tufts of *Fumaria densiflora* in company with *F. media*.

The shallow parts of the channel on the right bank resembled

in every point those of the left, explored the day before. Being a good way behind, we quickened our steps to rejoin the others who were greatly ahead of us, and whose whereabouts were made known to us at intervals by the sounds of the trumpet. We carried in triumph our large tufts of *Fumaria densiflora* to distribute to those who had passed without observing it. On reaching them we went across a dry meadow, where grew the elegant and rare *Anacamptis pyramidalis* and the *Phelipæa cærulea*. Further on, near a little hamlet belonging to the commune of Nieuport, we observed in the moist meadows the following species:—*Orobanche Galii*, (*O. minor* parasite upon the *Erodium cicutarium*,) *Orchis Conopsea*, *Neottia ovata*, *Anagallis tenella*, *Juncus maritimus*. Growing along the edges of the road was *Marrubium vulgare*, in company with several other plants already cited. Leaving these meadows, we went towards the dunes.

These thousands of sandy hills and immense plains of glittering sand, where squalls of wind scarcely allowed us to advance, presented an imposing spectacle. Such a scene cannot be painted either by the pen or brush; it must be seen, to be appreciated in all its grandeur and wild appearance. Now and then the rolling sea would show itself between two projecting dunes, and add new features to the picture of this desert.

Descending once more into the grassy valleys, we saw again *Anagallis tenella*, *Erythræa linariæfolia*, and *Juncus maritimus*. In the same valley we also found *Honkeneja peploides*, *Euphorbia Paralias*, and *Scirpus pauciflorus*.

Having tried in vain, by mounting the highest points, to discover our other companions, we decided, after an hour's exploration amid the howling of the tempest and the sand-drifts, to regain the road where the mule had preceded us. Sea air singularly sharpens the appetite, and we manifested a great desire to inspect the contents of the baskets. From an elevated spot we at last discovered Master Long-ears grazing peaceably on the grass of the plain, imitating in a more profitable manner the example of his masters in their botanical occupations. We hailed the conductor, who appeared as if he wanted to continue his route, and instantly fell like an avalanche on the faithful animal, whose load was soon to become relics, *i.e.* empty bottles, ham and mutton bones, etc. "The hungry stomach has no ears," says a French proverb, so we quickly attacked the eatables laid out on the turf.

The same appetite that had hastened our march was likewise felt by those in our rear, who from a shorter cut did not delay making their appearance. Each one sat down on the grass, and our obliging *maître d'hôtel*, M. M——, distributed with exemplary justice both solids and liquids.

One of the last arrived narrated to us the adventure to which I have already alluded. Whilst he and his party were collecting maritime plants, a keeper approached them with a gun on his shoulder, and accompanied by a huge mastiff, spoke rather rudely to the President, ordering him to discontinue digging up his plant, or he should make him; he even seemed about to present his gun; however, seeing the determined obstinacy of the company, he left swearing, assuring them that he was going to obtain the assistance of the Nieuport *gendarmerie*. I regret not knowing the name of this uncouth individual, so as to hand him over to the execration of all present and future botanists.

We took the road towards Oostdunkerke, in the neighbourhood of which we found *Bromus tectorum* and *Rosa pimpinellifolia*. There our excellent comrade Dr. V—— was obliged to leave us. From Oostdunkerke we arrived at Coxyde, picking up on the road *Fumaria densiflora* and *Trifolium micranthum*, var. We cut across the dunes to *La Panne*, the place where we were to reassemble so as to arrive altogether at *Furnes*, the end of our journey. In the immense tract of dunes between *Coxyde* and *La Panne* the following species are abundant:—*Honkeneja peploides, Parnassia palustris, Anagallis tenella, Euphorbia Paralias, Thesium humifusum, Herminium Monorchis, Epipactis palustris, Schœnus nigricans, Carex trinervis, Ophioglossum vulgatum*. The numerous patches of the white and red *Anagallis* were especially remarkable, as well as the thousand tufts of *Thesium*. Here and there we saw amongst the Grass the microscopical *Equisetum variegatum* and rosettes of *Gentiana Amarella*. We saw also the *Cuscuta Epithymum, Lithospermum officinale, Senecio sylvaticus, Alisma ranunculoides*. A very common plant in chalky soils, but not to be met with in the greater part of Lower Belgium, (viz. the Campinian zone), is the *Primula officinalis*, which grows here in the dunes. M. Coemans gathered near the beach a few leaves of *Zostera nana*, a very rare plant in this country. If I had to treat of the zoology of the seashore, I should not omit the multitude of rabbits living on the dunes. Nothing is more

lively than these little creatures browsing the Festucas and tender plants of these places, and to see them surprised at the unexpected presence of a new sort of browsers.

Nature has been very provident in planting on the dunes which border the sea, a multitude of plants having strong rhizomes, which fix together the sands, and thus prevent the waters from submerging the low parts. Among these species I must mention the *Glaux maritima*, whose rhizomes do not appear to be much known, and are undescribed in all my books.

With the exception of a violent west wind, the day had been passably fine, but arrived at La Panne we were caught on the road by a shower, or rather a deluge. Like the rabbits we too were surprised, but unlike them we had no warren near. Before reaching Furnes we were literally soaked to the skin; still we were able to remark in the ditches along the road, *Sium angustifolium*, *Hippuris vulgaris*, and *Juncus obtusiflorus*; in the Flax, *Lathyrus tuberosus*; close to Furnes, *Verbascum Blattaria* and *Trifolium micranthum*.

In a pitiable plight we disembarked at the port, that is at the Hôtel de la Noble Rose, a house bearing a noble name, but, as we found, ignoble in its hospitality. When the first four arrived they gave us a hearty welcome, and prepared a large fire to dry our garments, while our rooms were being prepared. Whilst we were busy wringing our clothes and changing our shoes, the main body of the caravan crowded into the hotel, went upstairs, and took possession of the prepared rooms. The master favoured them at the expense of the first-comers, who had a legitimate right to occupy the first rooms, but were obliged to seek lodgings elsewhere.

Leaving in dudgeon the "Noble Rose," we went to lodge at the Hôtel de la Couronne, nearly opposite, where a good old matron received us in a friendly way, and where the *demoiselles* even lent us garments to put on while our clothes were being dried. *Honni celui qui mal y pense!* At supper, our curious dresses caused no little amount of merriment. Before we were awake the next morning, M. Crépin, who lodged under the same roof, had already visited the town and returned loaded with a large box full of beautiful specimens of *Parietaria diffusa*, gathered on the walls of an old convent.

Having had a hearty breakfast, we arranged our parcels of

plants, and at half-past seven the railway from Furnes to Bruges conveyed some of us towards Ghent, Brussels, and different parts of the country.

I feel assured that every one carried away with him agreeable *souvenirs* of this exciting and successful scientific expedition. As for me and my comrades, we have reasons to think ourselves particularly favoured by the hearty welcome that we received from the President and all the members of the Society, and we desire their acceptance, through this channel, of the lively expressions of our deepest gratitude. H. H. C.

Gendbrugge lez Gand, August, 1862.

NORFOLK BOTANY.

Norwich, St. Faith's, Mousehold Heath.

(See page 402, vol. vi.)

On Thursday, July 17th, our small party left Yarmouth by the half-past nine o'clock train, for Norwich, whither we arrived in about three-quarters of an hour.

Our first object was the cathedral, which we reached when divine service had just ended. This sacred edifice, as learned topographers would say, is a noble and august specimen of ecclesiastical architecture; and many other similar epithets might be added without danger of exhausting the subject.

No doubt this is all strictly true; it is a venerable pile. It is no servile copy of any similar structure. This would have been impossible, for most of the cathedrals in England were begun about the same time, or in the same century, though finished at different periods. Some of them are not yet finished!

The two principal edifices in Norwich are the cathedral and the castle; the situation of the former is not like a city set on a hill, but humble or lowly, like the genuine followers of the great Founder of our holy religion. The latter, the castle, has a prominent position commanding the entire city. The mother-church, with its lofty spire pointing heavenwards, reminds the pious of their future home; the castle frowns terribly on all transgressors of law,—made for the peace and welfare of society.

From the castle, and from its terraces, complete views of the ancient city of Norwich are obtainable.

Norwich is the city of churches, and in this respect it is like Bristol; and one of these, St. Peter's church, is about the finest in England, except St. Mary Redcliffe, of the western metropolis.

The situation of this modern capital of East Anglia is almost, if not quite superb. The cathedral is nearly central, between the two rivers, for there is a river on each side of the ancient city; but it is probable that the early inhabitants soon found the place too small for them, and the buildings gradually crept up the hanging slopes—for Norwich is surrounded by eminences—and as her hills are well wooded, at a distance the city appears sheltered by woods or by a series of groves.

Our business was rather with the country and its productions than with the civil and ecclesiastical edifices of this county, or even with the picturesque; but in going to St. Faith's, for we were bound thither, we stepped into one of the principal houses in the book-trade to ask our way, and to purchase a small hand-book of the city. We were courteously told the way, and besides, were conducted to the castle by one of the lads of the establishment, whose antiquarian information would be creditable in a professed *cicerone*.

We were directed to go by St. Augustine's gate to the Aylsham Road, and on our way remarked that the remains of bygone ages were fast disappearing, being replaced by more commodious dwellings, and other marks of sanitary improvement.

Ancient names remain, and these alone are the memorials of a past period.

What a number of ideas connected with the religious condition of the kingdom is associated with the venerable name of the Apostle of England, or the still more eminent name, though not so dear to Englishmen, the pious, zealous, and learned Bishop of Hippo, the greatest man of the Western Church.

But if indulgence were given to these reflections of an antiquarian and ecclesiastical nature, our paper would be full ere we reached the description of what we saw when we arrived at St. Faith's.

The geographical relations of this place presented formidable difficulties to us, who were utter strangers in these parts. In

the first place, we had to discover on which side of the city it was situated, whether on the north, or on the east, or on the west, or on the south, or—what was more definite—on what road it was. (*Note.* We were utter strangers in Norwich.) This point was settled, after some close inspection of the map, by younger eyes than belonged to him who had to walk thither. The distance was the next question, and on this point the difference of opinion was extreme: some said it was seven miles, some said six, some five, and one said only four. It is probable that they were all about right, for the first informant was a charioteer, and as it was at the station where he was asked, and as it was six good, *i. e.* long miles, from that point, he was justified in saying seven, for he would have exacted payment for this distance. The others were right, for they reckoned from the places where they were when they gave the information. The good man who estimated the distance to St. Faith's at four miles, evidently intended from St. Augustine's gate.

Our impression was, that when we reached St. Faith's, we should have as much difficulty in finding the marshes or bogs as we had in ascertaining the right way and the exact distance from Norwich. This turned out precisely as we feared.

All the information procurable amounted to this, viz. that there was some rough, or waste, or pasture land, at St. Faith's, some distance beyond the workhouse.

The way from Norwich to St. Faith's is about as straight as the crow flies, and there being no other parish on the road, and only a few detached houses, there was no difficulty in finding it. But the difficulty of finding the marshes or bogs was not lessened by our being at St. Faith's. We found the workhouse or "union" all right, and the pasture-ground beyond, but no bog; only a few marl-holes here and there, and the chief part of the space nearly as firm and dry as the downs above Buckland and Dorking.

We applied to the farmer of the place to help us in this emergency, telling him the whole history of the ancient celebrity of the place when Sir Thomas Brown botanized here more than two centuries ago, and when Sir James Edward Smith wrote the 'Flora Britannica,' more than fifty years since.

He told us that persons did come here to look for plants, and especially referred to a fair visitor, who came periodically to look

for Ferns. He further asserted that he knew of no other bogs; and no doubt he told us the truth, as he appeared to be interested in maintaining the ancient reputation of the place, for he not only very politely conducted us to the chief pits, but went into the spongy swamps to gather anything which we pointed out as desirable. It was not his fault that we did not light upon the proper spot, and enjoy the pleasure of collecting the proper plants.

Before we left Yarmouth for St. Faith's, due inquiry was made about the present condition of these once-celebrated botanical localities; and though we were advised to go to another part of the country, viz. to Flotman or Flordon, we were also informed that St. Faith's bogs were *in statu quo*, viz. as they were in the times of Sir T. Brown and Sir J. E. Smith; and our belief now is, that we have not seen the proper bogs at St. Faith's. This is a discovery which it is humbly hoped some enterprising botanist will make, and he shall be duly crowned with the laurel, and have his heels invested or armed with the botanical spurs—the trophies of success.

The few plants we saw here will soon be entered.

First, on the bank at the roadside, near St. Augustine's gate, close to Norwich, *Medicago falcata* was detected. This is very local, that is, it did not appear so far as half a mile from the gate. (*Note*. The gate was like St. Faith's bogs, invisible.) Another and more widely-distributed plant, was *Verbascum pulverulentum*. This appeared here and there on the roadside, quite as frequently as *V. Thapsus*. It is believed that this fine plant abounds in the lane beyond Gorlestone church, but it was not in flower there in the summer of 1862.

In the marl-pits at St. Faith's we saw *Menyanthes trifoliata*, a common plant in Norfolk; also *Ranunculus Lingua*, far from scarce in watery places, *Pedicularis palustris*, *Lastrea Thelypteris*, one of the commonest Ferns in this county, were collected.

In a little wood between this waste and another similar one beyond, we saw the Lily of the Valley in countless multitudes.

On leaving the road at St. Faith's for Catton, we got just one specimen of *Nepeta Cataria*; and it might be inferred that the plant is a rare one, for this was the first and the last that we saw in the county.

But as one swallow does not make a summer, so one visit to a county does not justify the visitor in dogmatizing about its productions. There are doubtless many plants in Norfolk that we did not see, and many more Catmints than the solitary one seen at St. Faith's.

At St. Faith's we turned to the left to go by Catton to Mousehold Heath, (here they call it Mussel Heath,) a long and not very interesting walk. We reached the heath in time to see the flag waving behind the butts, the practice-ground of the Norwich riflemen, and were warned by the reports of musketry not to intrude.

In walking from Catton to Mousehold Heath, *Lactuca virosa* and *Verbascum pulverulentum* were found in the lane which unites Mousehold Heath to Norwich.

We arrived in Norwich in time for the last train for Yarmouth, which starts about eight in the evening, very much fatigued, and not very much contented with the results of one of the longest and most expensive of our excursions.

If the advice so often urged upon the readers of the 'Phytologist' had been followed, we should at least have had an easier, if not a more successful day.

This only proves the truth of the trite old saw, viz. that it is easier to give than to take good counsel. It is here repeated for the special advantage of all the readers of the 'Phytologist' who may have the good fortune of visiting Norwich, and who may, by giving ear to the counsels of sage experience, make a better use of their opportunity than their humble servant, the relator.

It has often been our lot to learn that a celebrated or crack locality is like some inscriptions on tombstones, which present the reader with a too flattering character of the deceased. We went to St. Faith's because it appears often in the pages of the 'English Flora,' and in those of the 'Botanist's Guide.' If any person has a fortnight to spare, and means to spend it at Norwich, he may safely spend a day at St. Faith's; but if he has only one day to spare for the city and environs both, he should be content to look into the rivers and ditches between the city and Brandon station, and go to Mousehold Heath; or if his time will permit, he may visit Ranworth Fen, which is not much further from Norwich than St. Faith's. Our belief is, that St.

Faith's bogs lie in this direction, and not near St. Faith's, Horsam; but this is purely a surmise. Some amiable Norfolk reader of this may possibly be induced to tell the writer if his conjecture be right, or set him right if he is wrong. One of the charities of the ancient world, and one of the most practical, useful, and cheapest, is to show strangers their way courteously, *comiter viam erranti monstrare.*

Another suggestion, ere we conclude, is offered to far-off students of East Anglian botany, viz. to make Norwich their head-quarters instead of Yarmouth or Lowestoft. There are several advantages which suggest this. First, there is greater space for excursions in all directions; at Yarmouth the visitor is cut off from one entire side, viz. the eastern, by the sea. He may have twice as many excursions from Norwich as he can have from Yarmouth, without going over the same ground more than once. Again, the number of trains leaving and arriving in the former, renders it more eligible for a botanist. There are two stations at Yarmouth, but only few trains leave in the course of the day. Again, there is a museum and a good herbarium at Norwich, and some one will always be found there to give needful information to a stranger. Lastly, the expense of travelling from Norwich to Yarmouth and Lowestoft was less than from Yarmouth to Norwich.

The following brief remarks are made with the intention of giving strangers some idea of the formation and aspect of Norfolk, one of the largest counties of England. This county possesses but slight inequalities of surface, and has no great variety of soil. It is a series of marshy flats and sandy plains of inconsiderable elevation.

The traveller who enters it *viâ* Cambridge, first crosses the Little Ouse, which drains the western parts of the county, apparent by a continuation of the eastern lowlands. The railway crosses Thetford Heath, an immense tract of land which will probably, at no very distant period, succumb to the plough and harrow, and be as celebrated for its barley as it has long been for its rare plants and rabbit-warrens.

Between Harling Road and Wymondham, the railroad passes through a tract which has been long in tillage, and it is tolerably productive. The soil is a light sandy loam, not unfertile, and very easily cultivated.

Near Norwich, on the west, the rich meadows again appear on the two branches of the Yare, which unite below this city, and flow through the centre of the extensive and valuable tract of marsh which extends to Yarmouth.

With the exception of some high land about Buckenham and Reedham, this is a treeless flat, intersected by ditches, and grazed by countless herds of cattle and horses, or it is shut up from cattle, and its produce converted into hay.

The fens appear (invariably?) wherever there is a considerable stream or river. These flats border the Little Ouse, the Yare, the Waveney, and the Bure, and between these broad fens there are narrow strips of cornland or inconsiderably elevated flats, several of which, as about Belton, St. Olave's, Lowestoft, Carton, etc., are still in their natural condition, sandy heaths fringed with boggy meadows.

The produce of the fenny tracts will gradually fertilize the sands which lie between them; and all the lands of Norfolk and Suffolk are destined to produce heavy crops of barley, and sufficient supplies of wheat for their own population, and plenty of oats for their horses.

If we can credit the wonderful revelations of geology,—and they are said to be both credible and incontrovertible,—we may easily comprehend the formation of this county while its fenny parts were many fathoms under water, and its heaths or elevated flats were not quite emerged from the ocean, but were the resorts of myriads of soles, flounders, cod, haddock, herrings, etc. The extent of the Wash, or broad estuary, the common receptacle of all the rivers which drain the eastern lowlands, from Saffron Walden and Bedford on the south, to Lincoln on the north, is constantly diminishing, and the land is consequently increasing. The same change is taking place, though on a smaller scale, about Yarmouth, where the sea is retiring from its margin, and the land is gradually and sensibly increased.

Besides this addition to the sandy shores by the retirement of the sea, or rather by its incessant operation of constructing a barrier against its own restless activities at this particular point, the process, going on far beyond the present roadstead for ships, is probably very much greater. The sandbanks constituting the dangers and terrors of navigation on the Norfolk and Suffolk coasts, when sufficiently elevated, will become islands, and

sooner or later, by the continuous operation of the same causes, will be united to the continent, *i. e.* the adjoining shores, and the present deep channels, or the navigable parts of the sea, will become rivers. Yarmouth Denes will then have a river on each side, viz. a new stream on the east, and on the west, the Bure, which now forms the western limit of this tract, and the sea the eastern. The supply for the new river will be derived from Horsey, Hemsted, etc.; and it is not improbable that in a series of ages that portion of the sea conterminous to the Denes will be dry land, and a new Denes, or barrier of sand, will appear several miles to the east of the existing shore-line.

When the whole of Norfolk was submerged, when Ely was truly an island, and long after, when the Danish king Knut (Canute) turned his ship's head to the shore to hear the matin song of the holy brotherhood, the fens adjoining the three rivers which enter the sea at Yarmouth were covered with water, and were great estuaries like the Wash. They would as easily now be laid under water as the unfortunate parts of the flat country about Lynn and Wisbeach.

Since those remote times, long before the arrival of the Danes, and before the Roman dominion, or about two thousand years ago, some miles have been added to this part of the coast. These changes, however, are often produced in briefer periods. Caistor stands on the extremity of the elevated spot where are now the parishes of Mautby, Ormesby, etc., or, in other words, it was at no very distant period (though probably there are no historic proofs extant of its being in this state) an insular spot surrounded by the ocean, and a calamity similar to that which has befallen the country about Lynn would reduce it to its original insular condition. Suppose the Runham and Caistor marshes were under water, and the Filby broads united to the ocean; this part of the county commanded by Caistor Castle, and containing the churches of Filby, Mautby, the Ormesbys, etc., would be an island, and the most fertile land would be covered with water to the depth of several feet, if not several yards.

The luxuriant vegetation of the brinks, and even the bottoms, of the present ditches, inform us that in a not very long series of ages the present peaty formations of the fens have been produced. The action of the waves on the shores of the sea tell us

how the ancient sandbanks which now constitute the elevated portions of Norfolk have been accumulated.

The drainage of these eastern fens is effected by windmills—not mills, but pumps, worked by the wind. These raise the water from the ditches, and it is conveyed over the bank into the stream or river, which is considerably higher than the level of these flat or depressed tracts. The drainage by sluices, as in Kent, is impracticable, because the land is not yet elevated above the level of the sea at low water, *i. e.* when it is ebb-flood.

Supposing that the sea will retain its present level,—a very probable assumption,—a time will come when the Norfolk fens may be drained as the Kentish fens are now; and at this time, which may not come till many ages have passed away, the latter may have so far been elevated by the silent, though constant, increase of soil, as to be drainable without any mechanical contrivance whatever—merely the force of gravitation, the necessity of the water's flowing towards the lower level, *i. e.* the sea.

The conservators of the Norfolk rivers doubtless prohibit the use of steam as a motive or propelling power. The ripple produced by the agitation of the water, and the rapid passage of vessels through these narrow, though navigable rivers, would wear away the banks, and the preservation of the whole country would be endangered.

Numerous trows, of no very great burden, daily navigate these three rivers—the Bure, the Yare, and the Waveney. These are never tracked, or drawn by horses, as on the Thames, Avon, and other more southern rivers, but are dependent solely on the wind. They are occasionally becalmed, and at bends of the stream they must move their craft by the slow process of pushing them past the bend by long poles. As the rivers are all far above-ground, and the breezes are never impeded by trees and buildings, the trows get the full benefit of it. The use of steam power would facilitate navigation, but it would risk the safety of the banks, which protect the whole country from the calamitous effects of such an inundation as that with which the fens about Lynn and Wisbeach have been so recently visited.

THE FERNS OF BARMOUTH.

By the Rev. W. Walsham How.

To the Fern-student there are very few places equal to Barmouth. The whole neighbourhood is one splended Fern-garden. Even the most unscientific lover of nature must be delighted with the amazing profusion and variety of the Ferns which clothe almost every wall and rock around. The Barmouth Ferns are indeed so enchanting that a short paper upon them cannot fail to be interesting to the readers of the 'Phytologist.' Let us give rightful precedence to *the* distinctively Barmouth Fern, the rare *Asplenium lanceolatum* (Lance-leaved Spleenwort), here happily too abundant, and too difficult to extract, to be much injured by the highway-robbery of rapacious botanists. This Fern grows in large tufts on the south side of the wall, between the road and the estuary on the Aberamfra' Hill. It is also profusely abundant about a mile from Barmouth, on the Dolgelley Road, growing deepset among the loose stones of the wall, on the north side of the road; on the Harlech side of Barmouth it grows, but in no great quantity, on the steep face of rock, by the roadside, half a mile from the town. A few plants may be found in the walls by the roadside, but it is met with in far greater abundance on some low wall close above the shore, below Llanaber church, where it is more easy to procure roots than in most other places. It is frequently mixed with, or close to, its nearest of kin, *Asplenium Adiantum-nigrum* (Black Spleenwort), which to an unpractised eye somewhat resembles it. The rarer Fern is, however, in this neighbourhood, easily recognized from its remarkable convexity, a character not always belonging to it in other places. It is of a darkish green, bent down and curled under (except in young fronds) on each side of the main stem, and seems peculiarly attractive to dust and spiders' webs. Next to this we will name the universal favourite, *Osmunda regalis,* not an uncommon Fern in this district. It is very plentiful and fine on the banks of the Glandwr stream, and occurs near several of the other small streams, as well as in the boggy flats between Barmouth and Dolgelley, and between the Harlech road and the sea. The Beech Fern (*Polypodium Phegopteris*) is to be met with in many places, as in the lanes above Borthwen, by the Glandwr stream

at Arthog, etc. The Oak Fern (*P. Dryopteris*) is much less abundant close to Barmouth, although it may be met with in the stony ground above the Cors-y-gedol lakes, and is most plentiful in the valley of the Mawddach above Llanelltyd. The Parsley Fern (*Allosorus crispus*) is another which is scarce in the immediate neighbourhood, although it is to be seen, mingled with Beech Fern and the pretty *Lastrea recurva* (of which more shortly), on a small length of old wall, not very far from Barmouth, and happily in a very out-of-the-way spot, which we do not intend to particularize further. The *Cistopteris fragilis* (Brittle Fern) grows on Cader Idris, but like the Parsley Fern, which is also there in profusion, may probably be found sparingly nearer to Barmouth. *Lastrea Oreopteris* (Mountain Fern) will be found readily in the lanes above Borthwen, and in many other places. The green Spleenwort (*Asplenium viride*) grows upon Diphwys, and the Sea Spleenwort (*A. murinum*) on the shores of the estuary; but these are in such small quantities that it is better to be rather general in referring to their haunts, with a view to possible peculators.*

Of the commoner Ferns, such as Male Fern, Lady Fern, Hard Fern, Broad Fern, Black Spleenwort, *Polypodium vulgare, Asplenium Trichomanes,* and *Pteris aquilina,* there is the utmost profusion. We invite attention to the varieties of Lady Fern, which are worth noticing; but still more to the wide field of study offered by the various species and subdivisions of the Broad Fern. On the peaty ditch-banks in the bogs, especially near Arthog, we find the enormous dark-green scaly-stemmed fronds of the true Broad Fern (*Lastrea dilatata*). It is probably the same species which occurs among the rocks and stones, more or less plentifully on all the hills. Whether the *spinulosa,* the narrow upright marsh species, occurs in the neighbourhood, we are unable to say; it may probably be found. But the walls in many parts abound with dwarf varieties, among which a frequent type is that described by Newman as *Lastrea multiflora nana.* The gem however of this group of Ferns is the lovely *Lastrea recurva,* which seems to grow in this neighbourhood only on walls,

* There can, however, be no harm in mentioning that the latter Fern also grows, *out of reach of depredators,* in some caves below the road between Henddol and Llwyngwril. The *Ceterach officinarum* may be found in small quantities at Llanelltyd.

and only in its very dwarf, bright, crisped, and tufted form. It is to be found on several old walls near Barmouth, and on the Harlech road, between Barmouth and Llanbedr. It grows in very dense tufts, the greater part of the fronds being barren, and of a peculiarly bright vivid green. The outer and larger fronds alone are seed-bearing. Every smallest part of the frond is distinctly concave, which gives the plant its crisped appearance, and at a little distance it might almost be mistaken for the Parsley Fern. The fronds do not exceed a few inches in length. It is hard to believe that this is the same Fern which is found five or six times as large in moist woods, and is sometimes known as *Lastrea Fœnisecii* or *dumetorum*. To us the most expressive name is that suggested by Newman, *L. concava*. It is to be hoped that botanists will be sparing of this pretty Fern when they find it, as it is not very plentiful. We have but one other Fern to mention, the curious Moss-like *Hymenophyllum Wilsoni*, which may be found among the rocks, in the streams on the Cader Idris side of the river, and near Dolgelley, as well as at Pistill-y-Caen. It probably exists in the streams nearer to Barmouth, but we have not seen it ourselves. The other and rarer Filmy Fern (*H. tunbridgense*) is *said* to grow near Barmouth, as also the Adder's-tongue and the Moonwort, but we cannot verify these.

On the Nativity or Spontaneity of INULA HELENIUM, VINCA MINOR, *and* SAMBUCUS EBULUS.

It has been affirmed, in the 'Phytologist,' that VINCA MINOR and SAMBUCUS EBULUS are entitled at least to the same civic status as that which is assigned to INULA HELENIUM.

If nativity depend on the unquestioned spontaneous growth of a plant in any one place,—on its wildness, say, in only one locality, in *one* county,—its claims to be ranked among the truly British species are sufficiently valid to entitle it to this distinction. But if its spontaneity or wildness is not confined to one county or single locality, it has surely *à fortiori* still higher claims to be considered a true native.

In the only systematic work on this subject, the distribution of the British species, this principle is most capriciously or pedantically ignored. In the 'Cybele' (see *sub specie Inula Hele-*

nium) the first of the three above-named plants is called a *native*, and to this there can be no reasonable objection, even were its spontaneous growth limited to the Isle of Wight and Devon. But if *Inula Helenium* be a native, a fact which is neither asserted nor denied by the author of these remarks, why are not the two latter, viz. the Periwinkle and the Dwarf Elder, also called native? They are called *denizens*, a new-fangled term, which implies that they were aliens in this land some ages or centuries ago, say, in the times of the giants, long before the Romans or even the Phœnicians visited the southern coasts of England. It may be affirmed with all the certainty which is attainable on the subject, that the above-named pair are as much entitled to be called native as the Elecampane; or if they be denizens, or aliens naturalized for many years, so is *Inula Helenium*, and many other plants.

The following facts and remarks are offered to the readers of the 'Phytologist,' to show them the inconsistency of this notion, and the gross delusion of those who believe in the infallibility of the author of the 'Cybele.' Grant that the first-named plant is native, the nativity of the other two must be admitted, on the authority of Mr. Cocker. For one wild plant of Elecampane seen by the writer, hundreds of thousands have been seen of the other two, but especially of the Periwinkle. (See 'Phytologist' for September, 1862.) This will be more satisfactorily proved by the experience and observations of others, viz. the authors of the local floras of Britain, etc. Thirty local lists of plants or floras have been consulted, and the result is that in nine floras all the three species are noticed as equally wild. These local lists are 'Flora Vectensis,' the Flora of Devon, the Flora of Bedford, Oxford, Hertford, etc.

The Periwinkle appears in twenty-five Floras, and its nativity is questioned in but six; one of these in which it is considered doubtful is Tenby, South Wales, and another is Yorkshire; but as Yorkshire is a large county, and as the Periwinkle passes unchallenged both in the Liverpool and Manchester Floras, the reason assigned by the author of the Yorkshire Flora for calling it a suspected denizen or a doubtful alien is not deserving of very great consideration. The source of his inspiration is too manifest to entitle him to implicit credence. He only quotes one station, viz. Storthes Hall, and infers that being an associate of *Saxifraga umbrosa*, allowed to be an introduction here, the Peri-

winkle should follow suit. Some may demur to this illustration of the old proverb, "Birds of a feather flock together"—*Similes similibus congregantur.*

This judgment is however justifiable, on the law laid down by the farmer, who according to the fabulist condemned the pigeon because she was an associate of the rooks, and as guilty of plundering as the birds of the black-feathered races. Do naturalists proceed on these principles in determining the nativity of plants? If so, they should discard the Primrose, the Wood *Luzulas,* and many other unquestioned native plants which are associated in woods with the unhappy *Periwinkle.*

The Dwarf Elder appears in above twenty British local lists, and it is unsuspected in all but three.

If these two plants, *Vinca minor* and *Sambucus Ebulus,* are to be classed among the introductions, the aliens and the denizens, because they are not found growing spontaneously in every district which has a list of its vegetable productions, surely on the same principle and for the same reasons the Elecampane should appear among these doubtful natives or suspected aliens.

This latter species, *Inula Helenium,* does not appear in above one-half of the local lists, and in at least one-half of them it is a questionable native. Besides this, in every one of these districts from which it has been reported as genuine, other localities are produced which are certainly suspicious and where the *Inula* plainly appears to be an escape, as it is called, or found growing in parts where it was formerly cultivated, as, for example, in the grounds of Quarr Abbey, a ruin near Ryde, in the Isle of Wight.

But there is another notoriously exotic species which illustrates the caprice or inconsistency, or what you will, charitable reader, of the author of the 'Cybele,' viz. *Euphorbia Esula,* which never has had any voucher for its native origin. (See 'Phytologist' for November, 1862, p. 349.)

All the Scottish botanists unanimously ignore it as a Scottish species. Smith enters it on Lightfoot's authority (see E. F.), without consulting his predecessor, and the author of the 'Cybele' blindly trusted to this blind guide and entered a plant as a native (?) which does not appear in any local Flora whatever, either as a native or a naturalized species. To this day, it appears to be confined to its old locality, Hulne Abbey walls.

The botanists of Scotland, where the plant is said to grow, are supplied with Northumbrian examples to represent this species in their herbaria.

These remarks are not published with the slightest intention of decrying the only work we possess on this interesting and important subject, but solely with the view of saving our readers from the influence of a strange delusion, viz. that of believing a plant to be a native which does not appear in any local British Flora, and in the great work of Sir J. E. Smith rests on no authority whatever.

The species *Inula Helenium, Vinca minor,* and *Sambucus Ebulus* may be safely considered as British plants, if we are to trust the most competent authorities, viz. local botanists, while, on the contrary, *Euphorbia Esula* has no local authority. It would not have been unseen by the late Dr. Johnston, if it had been even a well-established *alien* about Coldstream. QUIVIS.

Review.

The Banffshire Journal for Tuesday, September 2nd, 1862.

The above-named copy of a Scottish newspaper has been transmitted by our obliging friend and correspondent, Mr. John Sim, of Perth, and the following notices of rare plants and their localities are extracted for the information of our readers in general, and especially for such of them as are acquainted with the 'Northern Flora,' an unfinished work on the botany of Scotland, north of the Tay.

The lively author of this entertaining and instructive history of a botanical excursion from Banff to Dufftown, etc., tells his readers that he and his companions started by rail, on a Monday morning, after seeing *Sagina maritima,* and one or two species of *Atriplex,* on the seashore.

Several interesting plants grow on the Knock, a round conical hill, which is visible from several parts of Aberdeenshire. On this land and seamark there grow the following rare plants, viz. *Listera cordata, Drosera rotundifolia,* and *D. anglica.* Other Knock plants which every collector delights to see, are *Rubus Chamæmorus, Genista anglica, Hypericum humifusum, Orchis maculata,* etc.

The Balloch, near Keith, is described as the botanist's paradise, and the plants in this northern Eden are *Cardamine amara, Adoxa Moschatellina, Paris quadrifolia* (very rare), *Listera ovata, Pyrola secunda, Sanicula europæa, Trollius europæus, Trientalis europæa, Carduus heterophyllus.*

The following anecdote about the recent introduction of turnips into that remote part of our island will remind the readers of Charles Lamb's works of his curious answer to a Hertfordshire farmer about the goodness of the turnips in a certain season. The honest folks of Banffshire knew that turnips were good either with or *minus* the legs of mutton:—

"In passing, let us mark a few things. On that little house at Bridgefoot of Boyndie, tradition has it that Cumberland's men hanged a herd-boy as a spy. But we are past, and now at Mill of Boyndie. It was on that farm that turnips were first seen in Banffshire. They were introduced by the last Lord Findlater. Calling one day on Mr. Milne, he asked him how the turnips were thriving? 'Very well, my Lord, but the people are stealing them all,' was the answer. The good Lord Findlater said for comfort, 'The more they steal the better.' He knew that, as the people learned their good qualities, they would soon grow them for themselves."

The following good remark on the curative properties of the St. John's-worts, *Hypericum hirsutum, H. pulchrum,* etc., may amuse the unbelievers in Dr. Coffin:—

"These plants have many other excellent qualities, in which our forefathers put implicit faith, and by which they were healed of their diseases, rather by the plants having none of the reputed qualities, and thus nature, being left to itself, effected the cure; or perhaps it may be, as Taine, a clever French writer, says, that people got cured of their diseases so long as the medicine had the power!"

Does the clever Frenchman believe that the plant, or drug derived therefrom, has lost its power, or that the patients have lost their confidence in its efficacy?

"Near Botriphne, in Loch Park, were found the following:—*Hippuris vulgaris* (Mare's-tail), one or two species of *Myriophyllum*, with other water plants. In the hills around the loch, grows, in great plenty, *Sanicula europæa* (Sanicle). It is one of the umbelliferous plants, and has glittering dark-green leaves. It receives its name from its supposed healing virtues (from *sano*, to heal). An old writer sums up its virtues in these words:—'And briefly, it is as effectual in binding, restraining, con-

solidating, heating, drying, and healing, as Comfrey, Bugle, Self-heal, or any other of the compounds or vulnerary herbs whatsoever.' "

There are many whose faith is but small in the healing qualities of these plants, but who will assent to the creed of the good old herbalist "that Sanicle is as effective as Self-heal."

"The ruins of the Castle of Balvenie yield some botanical rarities. Near the Castle you meet with one of the Winter Greens, *Pyrola secunda?* On the walls grow *Ervum hirsutum*, *Anthriscus vulgaris*, *Matricaria Parthenium* (Feverfew), the last being an introduced plant, but now growing wild in several parts of the country. This plant was held in old time to be under Venus, and to have great healing virtues. Among its other qualities, 'the distilled water taketh away freckles, and other spots and deformities in the face.' Another of the same genus is a most noxious weed in every part, *M. inodora*, with a variety having fleshy leaves, which grows along the seaside. In some parts of the county this plant goes by the name of 'Horse Gowans,' whilst in other parts, another, and a much more handsome plant, the Ox-eye Daisy, bears that name. In a field near the Castle grows *Thlaspi arvense* (Penny-cress), a somewhat rare plant. It gets its name from the form of its seeds, being *flat* pouches. It is named Penny-cress from a fancied resemblance in the size and form of the seed-vessel to a silver penny. It bears also the names of Smooth Treacle or Mithridate Mustard, because it is best for compounding what old medical men called 'Treakle and mithridate, for it is held to be itself an antidote resisting poyson and venome.' The seeds are said to yield more oil than linseeds. The plant has the smell of Garlic, and if cows eat it, it imparts that flavour to the milk.

"We are soon on the road for Tomintoul, eighteen miles ahead of us, with a gloomy sky and wet roads. With stout legs and merry hearts we proceed, and land in Mr. Findlater's duck-pond, a little above the station. It yielded *Bartsia Odontites* and *Juncus bufonius*, both common plants. The fields about Dufftown are gay with Sow-thistle, *Sonchus arvensis*, a tall handsome yellow flower of the *Compositæ*. It, as well as another, *S. oleraceus*, is abundant. Dufftown is soon in our rear, and we are off the highway into every bog, and ditch, and field, but meet with little remarkable. In a bog in a small wood beyond Dufftown, and before coming upon the farm of Lettoch, we meet with our old friend *Drosera rotundifolia*, also *Triglochin palustre*. *Sedum villosum* makes its appearance. It is one of the Stonecrops, so called from their growing on the tops of dykes, and on rocks with a thin coating of soil. Another species, having bright yellow flowers, is abundant. It is *Sedum acre* (Wall Pepper). An old herbalist says: 'It is under the dominion of the moon,

cold in quality, and something binding, and therefore very good to stay defluctions, especially such as fall upon the eyes.'

" Glenrinnes did not yield much. The crops in some parts looked well, but they are somewhat late. The glen has, on the whole, a rather cold appearance. Cultivation has done much, and it will do more, although nature, both in soil and subsoil, and in rock formation, is not very genial. Through the Glack of Braigach, we pass into Glenlivat, and reach Craighead. At the inn here we rested, and partook of refreshment. At Craighead the limestone again appears, and the soil is better. Near the bridge that spans the Tervy we found the Moonwort, *Botrychium Lunaria*, a beautiful Fern; it grows in several places along the road. *Lycopodium selaginoides* also grows here. In a bog a little further along the road, and within about a hundred and fifty yards of the Shenval, we met with *Sedum villosum*, *Gentiana campestris*, *Carex curta*, *C. stellaris*, and others. Near Achorachan grows luxuriantly *Anthriscus sylvestris*, called by the people 'Wild Carraway.' The Livat crossed, we reach Tomnavoulin, and find in a bog above the new school-house one of the *Veronicæ*, or Speedwells. *Veronica scutellata*, a plant we have gathered in the moss of Banff. A little further on we meet with *Genista anglica* and *Arctostaphylos Uva-ursi*, vulgarly called 'Gnashicks.' Evening was now beginning to close, and we hastened on over a very bad road, and through a dreary country, that seems almost to bid defiance to cultivation, although the good folks are doing much to subdue it. Tomintoul is reached in the 'gloamin',' and we make for Mr. John Smith's inn: we find everything very comfortable, and, what gives everything a relish, we meet with great kindness. We were soon at home, and began to gather over again the plants of the day. And here, in these comfortable quarters, and with the prospect of a day of hard toil before us on the morrow, we bid the reader adieu for a time."

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers and Notices to Correspondents.

Erodium maritimum, Locality of.—The *Erodiums* you ask about were gathered on the eastern side of Penmaen-bach-mawr, and, what is very singular, all three of the British species were growing within twenty yards of each other. I have not my enlarged map at hand, but have put the name as near as I can recollect it.

The letters from Argyleshire have been duly delivered by her Majesty's servants, and the reader's humble servant will soon submit them to the consideration of his constituents. Our correspondent is encouraged to compile a list of the plants of Kintyre, a compact, well-defined district, with a very great extent of seacoast, with some not very inconsiderable eminences on its surface.

We hope to publish a review of the work on Alpine Plants which accompanied the letters.

PETASITES FRAGRANS.—The following, from our excellent Plymouth correspondent, has just arrived:—A few days ago I noticed *Petasites fragrans* in flower at Crabtree, where it was diffusing delicious odours. The observation of Babington, that this plant is "quite naturalized in some places in the south," is applicable to this neighbourhood. I know more stations of it than of *P. vulgaris*, which is not common here.

Our Buxton correspondent informs us that at Buxton "there is a man who trades in botanical rarities, that is, he supplies the visitors with wild flowers, and the consequence is what may be expected, viz. that the *rariores* become *rarissimæ*, and the latter, in process of time, disappear like snow on the mountains in the months of July and August."

This disappearance of rare plants is a local and chronic complaint, for which there is no remedy. Patience is a useless appliance. Many years ago we were informed of the destructive propensities of flower-collectors in Surrey, and requested not to patronize these wholesale *rhizotomists* (root-grubbers): but—alas for sentimentality!—poverty makes people acquainted with strange bedfellows; and cold and hunger, and the cravings of small childer who cry for bread, extinguish the sentimentalities!

Our Sheffield correspondent is to be commended for keeping secret the exact locality of *Achillea decolorans*. Are all who cannot plead poverty as an excuse, innocent of taking from Nature's abundance more than they really want, careless of the claims of posterity, unmindful of the disappointment which their rapacious greed may cause to some future hunter after rare plants? Let Mr. Stevens answer these questions. I have purchased in his sale-rooms, among a moderately-sized bundle of plants, above a hundred examples of one plant confined to the chalk of the south of England. Hundreds of specimens of rare species were disposed of for less than a shilling per hundred. Only last season, May or June, 1862, thousands of specimens of the rarest of British Ferns, collected by a gentleman (so said the catalogue), and his property, were sold at Mr. Stevens's auction-rooms.

RHYNCHOSPORA.

I take the opportunity of mentioning an *erratum* in the little article headed "Devon Plants," in the December number of the 'Phytologist;' the sentence, as it now stands, conveys a different meaning from what I intended:—"On examining my specimens of *Rhynchospora*, I was struck with the peculiar way in which this plant perpetuates itself," etc. It should be: "On examining my specimens of *Rhynchospora* I was struck with the peculiar way in which this plant perpetuates itself, and increases by forming almost semibulbous shoots within the sheaths at the base of the stalk, which shoots, when quite rootless, a touch is in some cases sufficient to detach from the parent stem." T. R. ARCHER BRIGGS.

WILTSHIRE PLANTS.

It would seem as if *Carex clandestina* (*humilis*) had eloped from Salisbury Plain in a clandestine manner, for I explored very carefully ten miles of the road between Stonehenge and Heytesbury, frequently with my eyes

placed near the ground, and directed forwards, so that the minutest plant could hardly escape detection—but no *C. humilis* could I see. *C. vulgaris* was plentiful enough, and *C. paludosa* on the wet margin of a wood. The road I took led through the Winterbourn Stoke; perhaps if I had gone the Shrewton road I should have found the object of my pursuit. *Thesium humifusum*, *Asperula cynanchica*, *Poterium Sanguisorba*, and *Spiræa Filipendula*, were very abundant both at Stonehenge and on the chalk-hills near Devizes. *Koeleria cristata* was found in the same localities.

I was waiting indoors for two days, about ten miles from Marston Maisey, waiting for the weather to clear up, that I might have the gratification of gathering *Carex tomentosa*, and of sending you a specimen; but the rain detained me until the third morning, when I was obliged to leave the neighbourhood, though reluctantly, without visiting the habitat of this rare *Carex*. I found, however, *Dipsacus fullonum*, *Valeriana dioica*, and some very fine specimens of *Carex hirta*.

In the neighbourhood of Devizes I found *Ornithogalum pyrenaicum*, *Viola hirta* (past flowering), *Carex paludosa*, *Euphorbia amygdaloides*, *Vicia sylvatica*, *Pastinaca sativa*, and *Scabiosa Columbaria*. *Viola hirta* too was seen, but past flowering.

When in the neighbourhood of Heytesbury, I purposed visiting the habitat of *Cnicus tuberosus*, but had a cultivated specimen given to me which had been raised from seed procured at Boyton. The neighbourhood furnished me with *Clematis Vitalba*, *Helianthemum vulgare*, with *very hairy* sepals; *Viburnum Lantana*, *Calamintha Acinos*, and *C. Clinopodium*.

Near Bath I found *Ceterach officinarum* and *Geranium pyrenaicum*; the latter with flowers *intensely* purple, like *G. sanguineum*. In the same neighbourhood I found *Galium Mollugo*, on whose roots was growing *Orobanche caryophyllacea*. RURICOLA.

CAMPANULA TRACHELIUM. (*White-flowered variety, from Perth.*)

I had brought to me in July, 1862, from the banks of the Almond, two miles north from Perth, what I consider to be a white-flowering variety of *Campanula Trachelium*; the locality is on a sort of bank considerably removed from the river, and far from any human habitation, so that it can neither be a garden escape nor brought hither by a river flood. This is another Perth rarity. Had the young lad brought two specimens, I would have sent you one. I am not able to go so far myself. J. S.

DIPSADS.

In the tragedy of 'Sophonisba,' Massinissa, the young Prince of Numidia, who had been driven from his throne and country by Syphax, is represented saying—

> "To hunt with hungry tigers for my prey,
> And thirst with Dipsads in the burning sand."

reproaches the queen interceding for her late lord in these and other lines, descriptive of Syphax's cruelty. Does the poet mean *Dipsacus*, Teasel? Did Dr. Lindley, *emeritus* professor of botany in the University of London, and the poet Thomson, drink out of the same spring, or derive their inspiration from the same source? The great systematic botanist uses a similar terminology in the names of his Alliances.

Extracts from Correspondence.

I have now before me in my veranda where I am writing, a plant of an Orchid apparently new, for it agrees with none of those figured by Dupetit Thouars or Richard as belonging to the African islands; it was gathered on the top of the Bruce mountain, which rises in all its majesty above me to 2800 feet. We have glorious mountain scenery here, and I enjoy scrambling among the precipices of the scarped Trap rocks, of which, and their *débris*, this entire island is composed: much progress has been made with its flora, and this year I hope to make a good raid on the *Orchidaceæ* and the *Cinchonaceæ*, which are numerous and very interesting; the Grasses and the *Cyperaceæ* I have nearly completed.

Ph. B. Ayres.

Civil Hospital, Port Louis, Mauritius, Oct. 5, 1862.

Scottish Botany.—Cromarty Plants.

Rosa spinosissima, *R. villosa*, *R. tomentosa*, *Trientalis europæa* (out of bloom), *Astragalus Hypoglottis*, *Cochlearia anglica*, *Saxifraga stellaris*, *S. aizoides*, *Pinguicula vulgaris* (in seed), *Narthecium ossifragum*, *Triglochin palustre*, *T. maritima*, *Carex pauciflora*, *Galium boreale*, *Antennaria dioica*, *Festuca ovina*, var. *vivipara*, *Melampyrum sylvaticum*, *Pyrola minor*, *Rubus saxatilis*, *Circæa alpina*, *Gentiana campestris* (white and blue), *Mertensia maritima*, *Rubus Chamæmorus*, *Lycopodium Selago*, *L. alpina*, *Sisymbrium Sophia*, *Parnassia palustris*. H. C.

Pinus sylvestris.

Botanists in these modern critical times are *always* careful to inform us that the Scotch Pine is not a native of England; and possibly they may be right in their judgment. But they might, with about as much truth, assert that it is not a native of Scotland; for in many, if not in most parts of the northern portion of our island, it is planted. It would be more correct to describe it as a native of Great Britain, though in most places, like other useful plants and trees, it is cultivated. Simplex.

Rowan-Tree. (*Pyrus Aucuparia*, Mountain Ash.)

Miss Kent, in her 'Sylvan Sketches,' makes the following remarks:—"In former times this tree was supposed to be possessed of the property of driving away witches and evil spirits;" and this property is alluded to in one of the stanzas of a very ancient song, called the "Laidley Worm of Spindleton's Heuglis,"—

> "Their spells were vain, the boys returned
> To the queen in sorrowful mood,
> Crying that 'Witches have no power
> Where there is Rowan-tree wood.'"

Loudon, in his 'Arboretum,' says, "The last line of this stanza leads to the true reading of a stanza in Shakespeare's tragedy of 'Macbeth;' the sailor's wife, on the witches requesting some chestnuts, hastily answers, 'A rown-tree, witch!' but many of the editions have it, '*Aroint* thee, witch,' which is evidently a corruption." Nares and Halliwell say "Aroint thee" is correct. If your readers can say anything in support of Loudon, I wish to hear what it is. S. B.

ERYNGIUM MARITIMUM.

Is this the plant which in Drayton's 'Polyolbion' is described as

"Aiding to perform
The Cytharæan game"?

Were the candied roots called in Shakespeare's time "kissing-comfits"? "The later writers," Dr. Turner states, p. 88, part 1, "use to gyve it to bothe men and wymen that are desyres to have chylder," etc. In Dioscorides, p. 461, Matthiol. 1570, there are figures of three species, viz. *E. maritimum*, *E. campestre*, and *E. planum*.

BERBERIS ILICIFOLIA.

In a paper by Captain Thomas Hardwicke, in the 'Asiatic Researches,' vol. vi., occurs the following passage:—"*Berberis ilicifolia* grows in plenty in the valley through which the Koa-nullah has its course, now full in flower and green fruit. The fruit, when ripe, is black, and eat by the natives. The wood is of a deep yellow, and used in dyeing, but under the management of the natives the colour is not permanent."

HYPERICUM ANDROSÆMUM.

(See 'Phytologist' for July, 1862.) I found this plant at a low elevation on the banks of the lake, just above the water; not very abundant, but not scarce. I have also found it in several other places here, as Ardgowan, Inverkip, Lochlong, and some others. GEORGE J. COMBE.

KENTISH BOTANY.

As you invite the co-operation of all interested in local botany, I have forwarded a few specimens of our less common native plants, collected in the neighbourhood of Lee, Kent:—*Geranium pyrenaicum*, *Galeopsis versicolor*, *Hypericum Elodes*, *Linaria minor*, *Chenopodium olidum*, *Erigeron canadense*, *Ajuga Chamæpitys*, *Medicago maculata*, *Turritis glabra*, *Jasione montana*. JAMES CRACKNELL.

2, *Smith's Cottages, Church Street, Lee.*

HERBE ALYSSON, *or Wilde Gollon Grass.*

Those learned in the ancient nomenclature of plants are requested to tell the subscriber the current scientific name for the above-named herb, which Topsell, in his 'History of Beasts, Sheep, etc.' says, "is good to plant near the sheep-cotes, for it is very wholesome for sheep." S. B.

Communications have been received from

John Sim; Sidney Beisly; J. S. M.; F. Crépin; John Peers; Dr. Windsor; W. Winter; W. Robinson; T. Stansfield; Charles Howie; W. Pamplin; F. Walker; T. W.; John Gibbs; T. Martin.

RECEIVED FOR REVIEW.

Alpine Plants.
The Canadian Naturalist and Geologist.
Stansfield's Priced Catalogue of Ferns.
Elodea Canadensis. Par Fr. Crépin.
Un Coup d'œil sur la Florule des Environs de Han-sur-Lesse. By the same.
Petites Annotations à la Flore de la Belgique. By the same.

LANCASHIRE AND CHESHIRE BOTANY.

A List of the less common Plants found about Warrington. By the MEMBERS *of the Warrington Field Naturalists' Society.*

(*Note.*—The numbers prefixed to the names are those of the London Catalogue.)

On the northern border of Cheshire, and at the distance of about three miles to the south of Warrington, there stands a New Red Sandstone eminence, called Hill Cliff, from which, on a clear day, a good view may be obtained of the surrounding country, including many of the localities mentioned in the following list:—

Standing on the summit of the northern slope, with our faces turned northwards, we see spread out beneath us a valley of some twelve miles wide. The horizon is bounded by the higher lands about Sutton and St. Helen's, with Billinge Hill and beacon, while to the right of these appear Rivington Pike and the famed Two Lads.

Along the horizon to the left, we may see the neighbourhood of Prescott, Rainhill and Peckshill, below which and nearer our station, the tall chimney shafts of Runcorn and Runcorn Gap are pouring forth their fleecy cloud-like vapour. Beyond this, but not visible from the place where we stand, is Hale, on the bank of the Mersey, opposite its confluence with the Weaver.

Cuerdley Marsh extends from Runcorn Gap to Fiddler's Ferry, a distance of about four miles. Inland from this lies the barren common called Greystone Heath.

Directly beneath us, and seemingly within a stone-throw, lie the Duke's and Old Quay Canal. Beyond these again, winding among green and level meadows, the result of his own overflowings and deposits—

> "Mersey's gentle current, which too long
> By fame neglected, and unknown to song,
> Between his rushy banks (no poet's theme)
> Had crept inglorious, like a vulgar stream,
> Reflects th' ascending seats with conscious pride
> And dares to emulate a classic tide."—*Mrs. Barbauld.*

Close to the town, and surrounded on three sides by a loop of the river, lies Arpley, a large and level track of rich meadowland.

Casting our eyes over the towers and chimneys of Warrington, we see the tall and taper spire of Winwick, one of the richest rectories in England. This portion of South Lancashire appears like a well-wooded country, owing to the number of trees, chiefly oak, grown in the hedgerows.

The township of Kenyon lies to the right of Winwick, and that brown, scorched-looking patch of land in the same direction is Woolston Moss, a botanical Paradise in August and September, the resort of bees and botanists.

Lymm, famed by the geologist as one of the places where the footprints of the Batrachians occur in the New Red Sandstone, may be seen almost due east from where we stand. Out of sight, and about three miles to the south, stands Stretton Moss, and formerly, Whittley Reed, now under cultivation.

The range of which the hill we are standing on forms part, extends along the course of the Mersey to Helsby, and includes Hill Cliff, Keckwick Hill, with Runcorn, Overton and Helsby Hills, the latter of which, strange to say, bears in some aspects, considerable resemblance to the profile of a living statesman.

The Dingle and the Denna are formed by the steep, wood-covered banks of two upland rivulets, the former on the east side of Hill Cliff, and the latter on the west, its waters supplying the reservoir of the Warrington Water-works. The overflow from the latter, in wending its way towards the river, passes through Lower Walton, and to the right of Acton Grange and Morley Common.

As to the character of the soil, it is in the bed of the valley alluvial, gradually passing southwards, to sandy. Crossing the Sankey Canal, and passing the Moated Hall of Bewsey, we come into Burtonwood, where the soil is a stiff clay. Orford is situated on the verge of the Borough northwards, and the soil is a rich black loam. Dobbie's Locks is where the Old Quay Canal enters the Mersey, a little above Warrington.

The localities here enumerated are included within a radius of about twelve miles around Warrington.

4. Thalictrum flavum, *L.* Arpley, Acton Grange, scarce.
16. Ranunculus Lingua, *L.* Sankey, in Lancashire, and Lower Walton, in Cheshire, plentiful where it occurs.
18. Ranunculus auricomus, *L.* Dutton Bottoms, Cheshire.
21. Ranunculus bulbosus, *L.* Arpley.

36. Nymphæa alba, *L.* Bewsey.
37. Nuphar lutea, *Sm.* Plentiful in the Old Quay Canal.
43. Papaver somniferum, *L.* Cornfield, Acton Grange.
45. Chelidonium majus, *L.* Waste places, near houses.
48. Corydalis claviculata, *DC.* Hedges in Cheshire.
58. *Coronopus Ruellii*, Gært. Bank Quay.
65. Teesdalia nudicaulis, *Br.* Sandy places, Hill Cliff, Cheshire.
70. Lepidium campestre, *Br.* Orford, etc.
79. Draba verna, *L.* Hill Cliff, and Hollin Hedge, Cheshire.
84. Cardamine amara, *L.* Dallam, Old Quay Canal bank. The flowers of this species are very fugitive, wherein they differ from *C. pratensis*. Specimens of this last were in flower in September of this year.
88. Arabis thaliana, *L.* Orford, etc.
95. *Barbarea vulgaris*, Br. River-side.
99. Nasturtium terrestre, *Br.* Arpley.
106. *Erysimum cheiranthoides*. River-side, near Dobbie's Locks.
125. Reseda Luteola, *L. Hale.*
133. *Viola odorata*, L. Aston.
138. Drosera rotundifolia, *L.*
140. D. anglica, *Huds.*

Woolston and Chat Mosses in Lancashire, and on Stretton Moss, in Cheshire.

150. Dianthus deltoides, *L.* Hale.
173. Honckeneja peploides, *Ehrh.* Hale shore.
175. Spergularia rubra, *St. Hil.* Sandy soils in Cheshire.
182. Arenaria trinervis, *L.* Moist places.
184. Stellaria nemorum, *L.* Bank of the Mersey, near Dobbie's Locks.
191. Cerastium aquaticum, *L.* With the above.
204. Malva moschata, *L.* Banks of the Chester and Warrington Railway.
205. *M. sylvestris*, L. Aston, Cheshire.
215. Hypericum perforatum, *L.* Arpley, etc.
217. H. quadrangulum, *L.* Morley Common.
218. H. humifusum, *L.* Hill Cliff.
220. H. pulchrum, *L.* Sankey and Burtonwood.
238. Erodium cicutarium, *Sm.* Roadside near Tom Paine's Bridge.
231. Geranium pratense, *L.* River-side, about Warrington.
236. G. dissectum, *L.* Higher Walton.

238. G. lucidum, *L.* Higher Walton.
243. Oxalis Acetosella, *L.* Dingle; Denna.
247. Rhamnus Frangula, *L.* Burtonwood, etc.
248. Spartium scoparium, *L.* Cobbs; Daresbury, etc.
249. Ulex europæus, *L.*
251. Genista tinctoria, *L.* Kenyon and Hale.
252. Genista anglica, *L.* Greystone Heath and Highfield Moss.
257. Ononis arvensis, *L.* Sankey.
258. Medicago sativa, *L.* Arpley.
264. Melilotus officinalis, *L.* Woodend.
275. Trifolium arvense, *L.* Acton Grange.
280. Trifolium fragiferum, *L.* Hale.
284. Lotus major, *Scop.* Morley Common.
291. Ornithopus perpusillus. Appleton, Cheshire.
305. Lathyrus Aphaca, *L.* Kenyon.
316. Prunus avium, *L.* Appleton, Cheshire.
321. Geum urbanum, *L.* Latchford; Winwick.
322. Geum rivale, *L.* Appleton, Cheshire, 1857.
323. Agrimonia Eupatoria, *L.* Hale, Kenyon; etc.
334. Comarum palustre, *L.* Old Quay Canal, etc.
335. Fragaria vesca, *L.* Appleton, Cheshire.
336. *Fragaria elatior*, Ehrh. Vale Royal.
356. Alchemilla vulgaris, *L.* Arpley, etc.
357. Alchemilla arvensis, *L.* Orford, etc.
366. Pyrus Aucuparia, *Gært.* Appleton.
367. Epilobium angustifolium, Chat Moss.
368. Epilobium hirsutum, *L.*
369. Epilobium parviflorum, *Schreb.* The height and general appearance of this plant is exceedingly variable, it being sometimes only three inches, and sometimes five feet high, with the stem erect or procumbent, and the leaves petiolate.
370. Epilobium montanum, *L.*
372. Epilobium palustre, *L.*
373. Epilobium tetragonum, *L.*

} Moist and shady places, frequent.

377. Circæa lutetiana, *L.* Cuerdley, and Appleton, Cheshire.
380. Myriophyllum verticillatum, *L.* Arpley.
390. Lythrum Salicaria, *L.* Pits, frequent.
391. Peplis Portula, *L.* Greystone Heath.
393. Bryonia dioica, *L.* Behind Bank Hall.
394. Montia fontana, *L.* Morley Common, etc.

399. Scleranthus annuus, *L.* Hale.
409. Sedum Telephium, *L.* Hale.
434. Chrysosplenium oppositifolium, *L.* Appleton.
437. Adoxa moschatellina, *L.* Appleton.
439. Cornus sanguinea, *L.* Bewsey.
441. Hydrocotyle vulgaris, *L.* Morley Common.
442. Sanicula europæa, *L.* Denna; Appleton.
450. Apium graveolens, *L.* Salt marshes, Ditton.
454. Helosciadium nodiflorum, *Koch.* Plentiful.
455. Helosciadium inundatum, *Koch.* Greystone Heath.
457. Ægopodium Podagraria, *L.* Dobbie's Locks.
461. Bunium flexuosum, *Writh.* Appleton.
470. Œnanthe fistulosa, *L.* Burtonwood and Cuerdley.
473. Œnanthe crocata, *L.* Sankey, Arpley.
474. *Œnanthe Phellandrium*, Lam. Old Quay, Latchford.
475. Æthusa Cynapium, *L.* Waste places.
493. Torilis Anthriscus, *Gærtn.* Hedges. Stem, and the rays of the umbels, hispid with rigid points, those of the stem pointing downwards, those of the ray upwards.
498. Anthriscus sylvestris, *L.*
506. Viburnum Opulus, *L.* Appleton, etc.
514. Galium cruciatum, *With.* River-side, above Warrington.
526. Sherardia arvensis, *L.*
527. Asperula odorata, *L.* Dingle; Appleton.
531. Valeriana dioica, *L.* Kenyon.
532. Valeriana officinalis, *L.* Ditches.
534. Fedia olitoria, *Vahl.* Appleton.
554. Tragopogon pratensis, *L.* Pastures, abundant.
546. Helminthia echioides, *Gærtn.* Hale.
549. *Apargia hispida*, Willd. Kenyon.
557. Lactuca muralis, *Less.* Stretton.
594. Serratula tinctoria, *L.* Kenyon.
598. *Carduus marianus*, L. Sankey.
600. Carduus eriophorus, *L.* Hale.
619. Eupatorium cannabinum, *L.* Lower Walton.
622. Tanacetum vulgare, *L.* Arpley, etc.
641. Aster Tripolium, *L.* Salt marshes.
642. Solidago Virgaurea, *L.* Park-side.
647. Senecio erucæfolius, *L.* Hale.
650. Senecio saracenicus, *L.* River-side (introduced?).

658. Pulicaria dysenterica, *Gærtn.* Bewsey, etc.
667. Anthemis nobilis, *L.* Hale.
678. Campanula latifolia, *L.* Lower Walton; Bewsey.
687. Jasione montana, *L.* Hill Cliff.
690. Erica Tetralix, *L.* Woolston Moss, etc.
699. Andromeda polifolia, *L.* Woolston Moss.
703. Vaccinium Myrtillus, *L.* Cobbs, Cheshire.
706. Vaccinium Oxycoccos, *L.* Woolston Moss.
716. Vinca minor, *L.* The Denna. It has not flowered with us this year.
719. Gentiana Pneumonanthe, *L.* Greystone Heath and Highfield Moss.
724. Erythræa Centaurium, *Pers.*, δ, latifolia, *Sm.* Kenyon, clay soil.
725. Chlora perfoliata, *L.* Kenyon, Hale.
727. Menyanthes trifoliata, *L.* Pits, Burtonwood, etc.
729. Convolvulus arvensis, *L.* Sankey, etc.
730. Convolvulus sepium, *L.*
740. Verbascum Thapsus, *L.* Hale.
754. Veronica Anagallis, *L.* Arpley.
757. Veronica montana, *L.* Dingle; Appleton.
777. Scrophularia aquatica, *L.* Arpley.
778. Digitalis purpurea, *L.*
781. Linaria Cymbalaria, *Mill.* Orford.
801. Lycopus europæus, *L.* Arpley.
814. Calamintha officinalis, *Angl.* Roadside, Cheshire.
827. Lamium Galeobdolon, *Crantz.* The Denna.
835. Galeopsis versicolor, *Curtis.* Plentiful in potato fields.
836. Stachys Betonica, *Benth.* Stretton.
846. Scutellaria galericulata, *L.* Arpley, etc.
847. Myosotis palustris, *With.*
856. Lithospermum arvense, *L.* Orford.
859. Symphytum officinale, *L.* Burtonwood.
861. Borago officinalis, *L.* Burtonwood.
862. Lycopsis arvensis, *L.* Overton, Cheshire.
872. Pinguicula vulgaris, *L.* Stretton Common.
875. Utricularia vulgaris, *L.* Dallam; Acton Grange.
885. Hottonia palustris, *L.* Acton Grange, plentiful.
886. Lysimachia vulgaris, *L.* Acton Grange.
888. Lysimachia nummularia, *L.* Arpley; Orford.

889. Lysimachia nemorum, *L.* Denna.
890. Anagallis arvensis, *L.*
891. Anagallis tenella, *L.* Greystone Heath.
894. Glaux maritima, *L.* Hale, Cuerdley Marsh, etc.
895. Armeria maritima, *L.* Cuerdley Marsh.
897. *Statice Limonium*, L. Salt marsh, Hale.
904. Plantago maritima, *L.* Cuerdley Marsh.
905. Plantago Coronopus, *L.* Hale.
931. Polygonum Bistorta, *L.* Black Brook; Orford.
960. Empetrum nigrum, *L.* Overton, etc.
971. Euphorbia exigua, *L.* Burtonwood, etc.
983. Humulus Lupulus, *L.* Arpley, etc., common.
1028. Myrica Gale, *L.* Woolston and Stretton Mosses, common.
1033. *Spiranthes autumnalis*, Rich. Speke.
1038. Listera ovata, *Br.* Sankey.
1045. *Orchis Morio*, L. Westy Barn, Latchford.
1070. *Crocus nudiflorus*, Sm. Howley.
1081. Allium Scorodoprasum, *L.* Sankey.
1104. Tamus communis, *L.* Acton Grange, etc.
1107. Hydrocharis Morsus-ranæ, *L.* Latchford, etc.
1107*. Anacharis Alsinastrum, *Bab.* Is very plentiful in the ponds in Arpley.
1108. Stratiotes aloides, *L.* Latchford, planted.
1110. Alisma ranunculoides, *L.* Acton Grange.
1113. Sagittaria sagittæfolia, *L.* Plank Lane, Lancas.
1114. Butomus umbellatus, *L.* Arpley; Bewsey.
1115. Triglochin maritimum, *L.* Cuerdley Marsh.
1116. Triglochin palustre, *L.* Greystone Heath.
1119. Potamogeton *pectinatus*. Old Quay Canal.
1120. Potamogeton *pusillus*. Ponds, Arpley Meadows.
1124. Potamogeton crispus. Ditches, Dalam Meadows.
1130. Potamogeton *lanceolatus*. Ditch near Old Quay Canal.
1135. *Ruppia maritima*. Norton and Cuerdley Marshes.
1136. Zannichellia palustris, *L.* Cuerdley Marsh.
1139. Lemna gibba, *L.* Cuerdley plentiful.
1140. Lemna polyrhiza, *L.* Arpley.
1141. Lemna trisulca, *L.*
1142. Arum maculatum, *L.* The Dingle; Appleton.
1143. Acorus Calamus, *L.* Longford Meadows.
1145. Sparganium simplex, *Huds.*

1146. Sparganium ramosum, *Huds.*
1147. Typha latifolia, *L.* Burtonwood; Arpley.
1148. Typha angustifolia, *L.* Morley Common.
1152. Juncus glaucus, *Sibth.* Called the Wire Rush in Lancashire.
1160. Juncus compressus, *Jacq.* Sankey.
1169. Luzula sylvatica, *Bich.* Keckwick Hill.
1170. Luzula pilosa, *Willd.* Appleton.
1175. Narthecium ossifragum, *Huds.* Woolston and Stretton Moss.
1178. Cladium Mariscus, *Br.* Stretton Moss. Has not flowered this year.
1179. Schœnus nigricans, *L.* Stretton Moss.
1180. Rhyncospora alba, *Vahl.* Woolston Moss.
1183. Blysmus rufus, *Link.* Hale shore.
1184. Scirpus lacustris, *L.* Old Quay Canal; Kenyon.
1186. Scirpus setaceus, *L.* Kenyon, etc.
1190. Scirpus maritimus, *L.* Lines the bank of the Mersey, considerable distance below Warrington.
1191. Scirpus sylvaticus, *L.* Sankey, Canal banks; Carbrook, Kenyon.
1192. Scirpus palustris, *L.* Old Quay Canal, etc.
1196. Scirpus cœspitosus, *L.* Overton Hills.
1198. Scirpus fluitans, *L.* Greystone Heath.
1199. Eriophorum vaginatum, *L.* Woolston Moss.
1200. Eriophorum angustifolium, *Rh.* Woolston Moss.
1205. Carex pulicaris, *L.* Cobbs; Greystone Heath.
1209. Carex stellulata, *Good.* Greystone Heath, etc.
1211. Carex ovalis, *Good.* Arpley.
1212. Carex curta, *Good.* Woolston Moss, abundant.
1213. Carex elongata, *L.* Arpley; Longford Meadows.
1217. Carex intermedia, *Good.* Bank Quay, river-side.
1219. *Carex intermedia*, var. ? Arpley.
1218. Carex arenaria, *L.* Hale shore.
1220. Carex muricata, *L.* Kenyon, etc.
1222. Carex vulpina, *L.* A small dipterous (?) larva feeds in the fruit of this species, causing it to become almost twice its usual length, and falcate.
1224. Carex paniculata, *L.* Old Quay Canal bank, etc. Grows in clumps, usually upon mounds, caused by the successive

decay and reproduction of the roots; thus rising, Phœnix-like, out of its own ashes. These mounds, if in a favourable situation and unmolested, will rise to a considerable height. One we saw on the edge of Tatton Mere, Tatton Park, Cheshire, which had attained the height of between five and six feet. Cows eat the leaves, etc., of this species.

1228. *Carex vulgaris*, Fries. Woolston Moss, Latchford Heath.
1232. Carex acuta, *L.* Kenyon. Variable in the breadth of its foliage.
1234. Carex flava, *L.* Morley Common.
1235. Carex extensa, *Good.* Hale shore.
1238. Carex distans, *L.* Hale shore.
1239. Carex binervis, *Sm.* Greystone Heath.
1241. Carex panicea, *L.* Stretton Moss, etc.
1248. Carex pendula, *Huds.* Acton Grange.
1249. Carex Pseudo-Cyperus, *L.* Burtonwood, etc. Plentiful.
1250. Carex glauca, *Scop.* Appleton.
1252. Carex pilulifera, *L.* Cobbs, etc.
1257. Carex hirta, *L.* Old Quay Canal bank, etc.
1258. Carex ampullacea, *Good.* Do; Stretton Moss.
1260. Carex paludosa, *Good.* Orford Park. etc.
1261. Carex riparia, *Curtis.* Acton Grange.
1315. Melica uniflora, *Retz.* Dingle.
1367. Hordeum pratense, *Huds.* Sankey.
1287. Milium effusum, *L.* The Denna.
1307. Avena fatua, *L.* Arpley Meadows.
1322. Glyceria fluitans, *Br.* Arpley Meadows.
1376. Polypodium *Dryopteris.* The Denna.
1387. *Lastrea Filix-mas*, Presl.
1391. *Lastrea dilatata.*
1393. Athyrium Filix-fœmina, *N.*
1400. Asplenium Ruta-muraria, *L.* Stewart's Bridge.
1402. Scolopendrium vulgare, *Sym.* Appleton, etc.
1403. Blechnum boreale, *Sw.* Woolston Moss, etc.
1404. Pteris aquilina, *L.* Hill Cliff, etc.
1409. Osmunda regalis, *L.* Walton, Woolston Moss.
1410. *Botrychium Lunaria*, Sw. Delemere Forest.
1411. Ophioglossum vulgatum, *L.* Sankey.
1423. Equisetum sylvaticum, *L.* Orford Park.
1429. Chara flexilis(?), *L.* Lower Walton.

Note.—The two following stragglers from cultivation are entered as species uncertain in locality; they may grow accidentally in many places, though rarely established in any:—*Armoracia rusticana, Camelina sativa.*

PONDWEEDS.

History and Description of the British Species usually arranged under the Natural Order Potamaceæ.

The following monograph of the British aquatic plants usually arranged under the Natural Order *Potamaceæ*, and under the genera *Potamogeton, Ruppia, Zannichellia*, and *Zostera*, is drawn up in order to present the inquisitive reader with a comprehensive and popular, or simple and intelligible, digest of our present knowledge of the history, characters, and distribution of the species belonging to this Order, and their genera, viz. such as are of British growth, which have been found, or are now found, in the rivers, lakes, ponds, ditches, etc., of the fresh, or salt, or brackish waters of the United Kingdom.

The ancient history of the plants which constitute this Order is almost, if not quite, as obscure as are several of the species themselves.

The most ancient and venerable botanical authority, viz. Theophrastus, cannot, with safety, be quoted as having observed and described any species of *Potamogeton*. He hints that some marine *Algæ* grew on the shores of Greece, and that in the great ocean, beyond the pillars of Hercules, *i. e.* outside of the Strait of Gibraltar, there were *fuci* so large that they could not be grasped by the hand. This will not appear marvellous to marine botanists who have seen the long and stout stems of *tangle*, or sea-ware, which are frequently, in stormy seasons, strewed on our shores.*

Dioscorides, who lived at least about four hundred years

* Sprengel quotes Theophrastus as the observer of *Potamogeton serratus*, Hudson, *P. crispus* of authors, a plant which the father of botany names τριβολος εν τοις ελωδεσι των ποταμων, "the *Tribulus* which grows in marshes by rivers," or "of rivers." Almost all the commentators on Theophrastus, certainly Scaliger and Bodæus (see their folio edition, 1644), call this plant *Tribulus aquaticus*, which is a synonym of *Trapa natans*, Water Caltrops of the moderns, and well-known to the ancients, but both generically and specifically distinct from the Pondweeds.

after Theophrastus, does mention in his 4th book and 96th chapter, one species of *Potamogeton*, viz. *P. natans*, and he is followed by Pliny, who copies *verbatim* his learned Greek predecessor. The description given by the latter in his 26th book and 33rd chapter is almost identical with that of Dioscorides. Let the learned reader compare the descriptions or notices of the plants given us by these two ancient historians, and he will see their coincidence.

The following is quoted verbally from the new translation of Pliny, vol. v. p. 172, H. G. Bohn's edition:—"Potamogiton . . . is a plant similar to Beet in the leaves, but smaller and more hairy, and rising but little above the surface of the water." The eminent commentator on Dioscorides gives the following version of his author's text, *loco citato*, p. 713, ed. 1570:—"Potamogeton folium fert betæ simile, hirsutum, paululum supereminens extra aquam."

Pliny adds, "Castor has given a different description of this plant. According to him, it has a smaller leaf, like horsehair, with a long smooth stem, and grows in watery localities." (Book 26, c. 33, vol. v. p. 173, as above.)

Billerbeck ('Flora Classica,' p. 37) makes the first species *P. natans*, and the second *P. pectinatum*. It may be said that neither of these species agree exactly with Pliny's description.

This would be a puzzle to the modern readers of Pliny and Dioscorides, to learn why these authors call the Potamogetons hairy plants, hairier than Beet, if they did not know or were not told that the plant described by these eminent botanists is not a *Potamogeton*, but *Polygonum amphibium*. This is a hairy-leaved plant, whether it grows in the water, or on land not far from water; but in the latter it is remarkably hairy. We are indebted to the learned and observant Ray for the rectification of this ancient error. The floating or aquatic *Persicaria*, in early summer, ere it has thrown up its handsome spike of rose-coloured flowers, might be, at a distance, easily mistaken for lanceolate-leaved forms of *Potamogeton natans*.

Can any reader inform us if any of the more recent editors of Dioscorides and Pliny have anywhere pointed out this mistake and traced its origin?

Every botanist knows that the Pondweeds (Potamogetons) are not hairy, and also that Beet is not hairy; yet both Dioscorides

and Pliny compare it with this latter plant, and state that it is "more hairy" than a perfectly smooth plant.

When Pliny was more read and better understood than he is now, both scholars and sciolists amused themselves in hunting out and exposing his errors, while some of the great *Coryphæi* of those days, like Scaliger, Salmasius, etc., tampered with his text, and, like Procrustes, amplified or mutilated their author's language *ad libitum*.

Tragus, Cordus, Fuchsius, Dodonæus, Gerard, and other botanists of the sixteenth century, notice the Pondweeds; but very little is to be gleaned from their works to help to elucidate the history of these species.

Caspar Bauhin, in the first half of the seventeenth century, collected (see C. B., 'Pinax' and 'Prodromus') as many as ten species of *Potamogetons*, viz. 1st, *P. rotundifolium*, *P. natans*, Linn., and enumerates thirteen botanists in whose works it has a place.

2nd. *P. salicifolia*, *Potamogeton sive Fontalis et spicata* of Lobel, Observ. 174, and *P. angustifolium* of Gerard. Six authors are quoted as authorities for this species, which is no *Potamogeton*, but *Polygonum amphibium* of the modern botanists.

3rd. *Potamogeton longo serrato folio* (with long serrated leaf) is said to be *P. lucens*.

4th. *P. foliis latis splendentibus* is *P. perfoliatus*, Linn.

5th. *P. foliis angustis splendentibus*, *P. cuspidatus*, *P. compressus*, *P. gramineus*, *P. lanceolatus*, *P. angustifolius*, and other modern species, might be representatives of the ancient one. It is *P. alterum* of Dodoens.

6th. *P. crispis foliis* sive *Lactuca ranarum*. This *P. crispus* is identified by its vulgar name, "Frog's Lettuce." This is one of the utilities of common or popular names, that they are not so easily altered as the more scientific and descriptive appellations.

This well-known species has been observed and described by Tragus, Lobel, Clusius, etc. The two last-named authors have given figures of the plant. From these we know that they observed the larger form and the smaller one; or, as we moderns usually express a double but not identical form, they knew the typical species *P. crispus*, and the variety *P. serratus*. In those days type had not so extensive a signification as it has now obtained.

The 7th, *P. ramosum angustifolium,* has no name bearing the honours of its paternity. It was communicated by Dr. Frank, and is described in Bauhin's 'Prodromus.'

The remaining species or forms named in the 'Pinax,' and described in the 'Prodromus,' may be considered as unknown or doubtful; no author has identified them with recognized species of the present day.

Gerard and Parkinson did not contribute much to the knowledge of our British *Potamaceæ.*

One of our earliest botanical catalogues, viz. that of the Oxford Garden, 1651, contains five or six species; one being, as might be suspected, *Polygonum amphibium.* These are *P. natans, P. lucens, P. perfoliatus,* and *P. pectinatus* (*ferulæ folio*) or some other joined with it (*P. gramineum ramosum*), *P. gramineus,* Sm.?

In Ray's catalogue of the plants of England ('Catalogus Plantarum Angliæ') there are nine species, but only six when the *Polygonum, Ruppia,* and *Zannichellia* are deducted, for these all figure as Potamogetons in all the works of this period. In his 'Synopsis of the British Plants,' 1696, there are ten species with *Ruppia.* The increase is among the grass-leaved species. One of these is *P. compressus,* another *P. pusillus.*

In Dillenius's edition of the 'Synopsis' there are sixteen species described or named, and of these, six are generally supposed to be well-known species of the broad-leaved kinds, viz. *P. natans, P. lucens, P. perfoliatus, P. crispus, P. serratus,* Huds., *P. densus,* Dillenius's No. 5*. *P. rotundifolius,* Loesel, p. 205, and which Haller, No. 844, calls a distinct species, may possibly turn up in British waters.

The narrow-leaved species of Potamogetons in the 'Synopsis' are not determined, possibly not determinable.

In Hudson's 'Flora Anglica,' 1st ed. 1762, there are ten species described, viz. five broad-leaved species as above, omitting *P. densus,* which he appears to unite with *P. serratus.* He has an equal number of narrow-leaved forms, viz. *P. compressus, P. gramineus, P. pusillus, P. pectinatus,* and *P. marinus.* Withering, in his 3rd ed. 1796, added one species to the above, *P. setaceus,* and this eminent author also throws some doubt on Dillenius's figure of *P. gramineus,* p. 150 of the 'Synopsis,' quoted by Linnæus, Haller, Hudson, etc., and which has always been re-

ceived by British botanists as an adequate representative of this species. The verbal description in Withering, p. 214, does not agree well with the figure so often quoted, and he suspects that there may be two species under one name, like two faces under one hood, viz. Ray's figure representing one, and the 'Flora Danica,' 222, representing another.

The accurate Lightfoot, after quoting the figure of *P. gramineus* in Fl. Dan. 222, with approbation, quotes Ray's, or rather Dillenius's, with the remark, "Non bene, quoniam sine stipulis" (not good, being without stipules), and adds that it agrees better with *P. compressus*, Loesel's Pruss. Flora, p. 206, fig. 66. This author gives good distinctive characters between *P. compressus* and *P. gramineus*, viz. that in the former the leaves are four or five times longer than the stipules, and that the spike produces only six small flowers. In *P. gramineus* the leaves are pointed, and about twice the length of the stipules, which are much larger than on the preceding, and the spike has fifteen or twenty flowers. It is to be hoped or wished that the ingenious author of the 'Flora Scotica' was describing plants or specimens, and *not* figures, when he drew up these admirable, plain, distinctive characters.

Sir J. Smith's 'English Flora' followed Withering's third and best edition at an interval of twenty-eight years; and in this excellent work there are thirteen species described, and five of these are of the grass-leaved, and eight of the broad-leaved kinds. Of the latter, *P. fluitans (P. rufescens)*, *P. heterophyllus*, and *P. lanceolatus*, were new to the British flora, that is, had not previously appeared in any list of British plants.

There cannot be much diversity of opinion about Smith's species or those comprehended in his work, for he quotes 'English Botany,' the figures of which must necessarily agree with his descriptions; he also quotes the 'Flora Danica,' Curtis's 'Flora Londiniensis,' Loesel, Lobel, Gerard, etc.

P. compressus, Smith, is the same in Linnæus, the figures are Eng. Bot. 418, Fl. Dan. 203. About this there cannot be much doubt. The only figure quoted for *P. cuspidatus*, Schrader, is Loesel, 206, t. 66. Is this *P. acutifolius* of Link?

P. gramineus, it is to be feared, does not always in England represent the same plant; several Continental authorities give this name to another plant. Smith's description and reference

to Eng. Bot. t. 2253, ought to settle the nomenclature of this plant, at least in this country. *P. pectinatus* of Smith includes *P. marinus*, and probably *P. setaceus* and *P. flabellatus*.

In epitomizing the preceding history of the Pondweeds, the following results have been elicited:—First, that these plants were not separated from the marine Algæ by Theophrastus, the first genuine botanical author extant; second, that they were observed and distinguished both by Dioscorides and Pliny, who lived nearly four centuries after the age of Theophrastus; and it has also been remarked that both these ancient authors describe under the name of *Potamogeton*, *Polygonum amphibium*, and this has been the cause of much learned conjecture among their commentators, editors, and translators. Sprengel indeed quotes *Potamogeton serratus* as a synonym of *Tribulus aquaticus*, Theoph. iv. 11, but the description is far from being that of any *Potamogeton* whatever.

All British authors prior to Ray that have been consulted for this monograph, viz. Lobel, Gerard, Parkinson, etc., retain *Polygonum amphibium* among the Potamogetons, a sure proof that their knowledge of these plants was not very profound. Ray also, in the earlier editions of his works on botany, retained the ancient arrangement, but he is the first British author who put the plant in its right place, viz. among the Persicarias, and asserted that it was not a *Potamogeton*.

The modern history of these plants may be further studied in the current works on the subject; it is only their ancient and mediæval condition that is embraced in this memoir. Something about their topography or distribution in the fresh or brackish waters of our Continent will be found in the sequel.

All the species that grow in Great Britain are more or less distributed in the inland waters of the Continent of Europe, and probably some of them are not uncommon in other parts of the world; and as the number of the species which grow in the British Isles has been doubled during the last twenty years, great accessions to this Order may be expected when the botany of other and remoter territories has been as successfully investigated as that of our native country.

As before said, they grow generally in deep waters, or in shallow waters where there is a considerable depth of mud. The only one not strictly confined to such localities is *Potamogeton*

polygonifolius, Pour., better known to English botanists by the name *P. oblongus.* This grows in moory marshes, or in grassy ditches in peaty places; and this, its place of growth, is possibly one of its best and most obvious distinctive characters.

P. natans is almost ubiquitous. Few ponds or deep waters are unornamented with its floating, olive-coloured leaves. The leaves vary considerably; sometimes becoming more elongate than in the normal or common form, and somewhat approaching to the lanceolate shape.

P. perfoliatus and *P. lucens* are pretty generally found in rivers and deep ditches, and in the South of England *P. densus* is a common species. *P. prælongus* and *P. plantagineus** are plentiful enough where they occur, but they are rare species compared with the foregoing. *P. heterophyllus, P. lanceolatus,* and *P. rufescens,* are by some, not without reason, regarded as problematical species. They may be placed alongside the floating form of *P. polygonifolius* and *P. lucens;* that is, they are about equally common, and equally indefinite or undefinable or undistinguishable.

The locality of the species will be found under their respective names.

Note. The Order, genus, and species are usually defined as under.

Potamaceæ.—The plants belonging to this Order are herbaceous, and of perennial or annual duration. Their stems are either cylindrical or very much compressed, either simple or branched, often throwing out rootlets from their joints, always submersed (under water). The leaves are either broad or narrow, usually of an olive colour and with their margin entire, linear, or with a more or less enlarged limb with prominent longitudinal ribs, or with a strong midrib. These primary longitudinal ribs or nerves are connected by a series of transverse secondary nerves, which are sometimes visible to the unassisted eye, and they are sometimes only to be seen when magnified. The leaves are mostly submersed, with occasionally, in some species, the uppermost floating; they are usually furnished with stipules, and are either sessile or petiolate (have leaf-stalks). They are usually alternate, but the uppermost are not seldom (*i. e.* in some species)

* This species or variety is very abundant in Ham ponds, or rather ditches, Kent, near Sandwich.

opposite. The stipules are sometimes united to each other and sometimes are joined to the leaf-stalk and form a sheath which embraces the corresponding branch of the stem. The flowers are in axillary or terminal spikes, or solitary or clustered in the axils of the leaves. The perianth consists of four herbaceous (not coloured) processes. *Note.*—This organ is not always present; sometimes, in *Ruppia*, for example, its place is supplied by a membranous spathe or sheath. The stamens are four, or only one, inserted at the base of the segments of the perianth. The anthers are sessile, (on long filaments in *Ruppia*,) with a more or less thick connective, opening by a longitudinal fissure. Ovary free, consisting of four carpels, each bearing one ovule. Pericarp coriaceous or fleshy. Seed with a membranous covering (testa) without albumen (consisting of the germen only). Embryo folded or rolled on itself. Radicle near the hilum or opposite.

Potamogeton.—The ordinal description almost defines this the principal genus of the Order. The flowers are all hermaphrodite or perfect; style very short, with a peltate (enlarged) stigma. The carpels are normally four, but often fewer by abortion. The fruit (carpels) are more or less beaked.

The principal genus, *Potamogeton*, may conveniently be separated into two groups or sections, viz. (1) the broad-leaved, and (2) the narrow-leaved species, or the Plantain-leaved and the Grass-leaved kinds. Each of these primary groups may be naturally subdivided into (1) coriaceous, or rather opake or transparent-leaved species, leathery-leaved species, and (2) the pellucid or shining-leaved.

1. *P. natans*, Linn. The best-known and most generally distributed of the genus has round, striated, or slightly ridged and furrowed stems, which are as thick as strong pack-thread or about one-eighth of an inch in diameter. They are either, long or short, their extent depending on the distance between the surface of the water, and the bottom of the pond or other piece of water where they grow. From the joints of the stem either rootlets or leaves or branches are produced. These joints or junctions in the stem are furnished with scarious processes called stipules and sheaths; the former, viz. the stipules are from half an inch to an inch long, and lanceolate in shape, clasping the leaf-stalk; the sheaths are from three to four or five inches long, and clasp closely the branch or the fruit-stalk (peduncle).

The leaves, which are polymorphous (of many figures, from ovate to elliptical-lanceolate), are opposite, on either long or short stout foot-stalks; they have on the under side a prominent midrib, with three, four, or five less prominent lateral ribs on each side of the main one, which is the prolongation of the leaf-stalk.

The spaces in the leaf between the ribs are filled up by numerous secondary ribs more or less prominent, and the whole framework is bound together by a close network of short nerves or fibres, which appear when the fleshy part of the leaf is dissolved like a bit of very fine lace. The upper side of the leaves is flat; the margin is quite entire, and the apex, or top, is furnished with a short blunt point. The peduncle or flower and fruit-stalk is fully as thick as the stem, and is more or less tapering and of unequal length, but always longer than the spike. The spike is cylindrical, dense, one and a half to two inches in length, and the smooth fruit is furnished with a stout, lateral apex (point). This is the commonest of all the Pondweeds.

2. *P. polygonifolius,* Pourret,—*P. oblongus,* Viv.,—differs but slightly from the above. The chief distinctions are locality and size. It is the commonest *Potamogeton* of moory, moist, or springy places, and in shallow ditches, peat bogs, fens, etc., where the depressions are full of vegetation. Its colour is often reddish; its foliage is of a broader and shorter character, and the peduncles, spikes, and fruit are smaller than in the preceding species. It is *P. natans,* var. 2, of Dr. Withering's botanical arrangement. The excellent author of the 'English Flora' does not notice it even as a variety.

Note. These two species or varieties are easily distinguished when growing in their proper localities and in their normal state; but large forms of the latter, *P. polygonifolius,* when taken from deep ditches and ponds, scarcely differ from small forms of *P. natans:* in the herbarium they are barely distinguishable.

3. *P. plantagineus,* Ducroz, in some respects is more closely allied to *P. natans* than to *P. lucens.* Its leaves are broader than in *P. natans,* but not longer, and they are floating, or part of them appear above water; their colour is greenish-olive, and their longitudinal ribs are connected by more conspicuous, transverse, connecting nerves. Its spike is smaller, and it is besides a very rare species. It grows in many parts of Europe, from the Baltic to the Mediterranean.

Note. This species or variety is very abundant in Ham ponds, or rather ditches, Kent, near Sandwich.

4. *P. lucens,* Linn. This species has a very stout (thick) cylindrical, leafy stem. The leaves are elliptical, tapering at both ends, sessile or nearly sessile, ending in a small, short, sharp point; they are somewhat wider than those of *P. rufescens,* and not quite so long; their ribs, or nervation, or network, or frame, is like that of the above-mentioned. The stipules are large and winged. The peduncle increases upwards.

The colour is greenish with a tinge of red. The spike of fructification is dense and the fruit like most of that of the broad-leaved species. It is generally distributed over Europe.

5. *P. rufescens,* Schrader, is in some respects an intermediate species or form. It has a slenderer stem than *P. natans,* and a shorter spike; but it has not shining and pellucid leaves like *P. lucens.* It may be known from the former, *P. natans,* by its lanceolate leaves, which taper at both ends, and are either sessile or on short stalks which gradually dilate; the lateral ribs are connected by prominent tertiary, transverse (crossing) nerves: their colour is greenish and purplish, and they do not float on the surface like those of *P. natans,* but swim or are suspended under water like *P. lucens.* They are all uniform, and the stipules are not conspicuous, excepting those which subtend the peduncle.

This species is pretty general in Europe, being distributed from Norway to the Adriatic Sea.

6. *P. perfoliatus,* Linn. In several characters this species approaches *P. lucens,* viz. in having a round stem, pellucid leaves, dense fructification, etc. Its prominent distinctions are its ovate, sessile, clasping leaves, which are of a pale green colour and occasionally tinged with olive.

7. *P. prælongus,* Wulf, approaches *P. rufescens* in the shape and size, but not in the colour of the leaves, which are green, or green tinged with olive, and not pellucid. The stem is very long, being always (?) found in deep water. The peduncles and spike are like those in the foregoing, not always of the same dimensions, but varying with the size of the fruit.

8. *P. heterophyllus,* Schreber; *P. gramineus,* Linn.(?) Several authors,—Nyman, for example,—enter *A. gramineus,* Linn., as a synonym of *P. heterophyllus,* Schreber; and consequently the

nomenclature of two plants is thus rendered puzzling and ambiguous. It is not certain that Dillenius's figure, tab. 4, fig. 3, of his edition of Ray's 'Synopsis,' is a true representative of *P. gramineus;* but it is abundantly certain that it is not *P. heterophyllus,* Schreber.

The latter has the upper leaves *floating,* elliptical, tapering at both ends, on long leaf-stalks, green in colour, and as substantial as those of *P. natans.* The stipules are very long, and the lower leaves, if they be leaves, or if not, abortive branches, are narrow and cylindrical. The whole plant is slenderer than *P. natans.* It is more like an elongated form of *P. polygonifolius.* Its connection with *P. gramineus* is rather remote.

9. *P. sparganiifolius,* Læstadius, is one of our most recent additions to this genus. It has a long slender stem, not unlike the stem of the preceding, and it is also furnished with two kinds of leaves; the lower, like those of *Sparganium natans,* long, linear, and flaccid; the upper elliptic, lanceolate, on long stalks, tapering at both ends, like those of *P. heterophyllus* in shape, but narrower, and with a more open and delicate vascular organization. This is one of the rarest of our Pondweeds, and appears to be limited to the north of Europe.

10. *P. lanceolatus,* Sm. A specimen so named, *penes me,* i. e. *herbario in meo,* from North Wales, probably Anglesea; this has long, slender, cylindrical stalks, with few leaves except on the barren shoots; the lowermost leaves are nearly two inches long, elliptical or lanceolate, and very narrow, a little more than one-eighth of an inch in breadth; their consistency is like that of the pellucid-leaved species. The peduncles are very stout, and much longer than the leaves. The spikes are dense, and above an inch in length. The stipules are not above an inch long. *Note.* This agrees with Smith's description only in the foliage. (See 'English Flora,' vol. i. p. 283.)

11. *P. crispus,* Linn. This well-known and distinct species may be easily recognized by its crisp (wavy-edged), toothed, sessile leaves, which, though usually described as *lanceolate,* are oblong, not contracting gradually, but with an abrupt round apex; *i. e.* their margin is equally distant from the midrib from their base to their summit, and they are from two to four inches long. They are all submerged (under water), and their reticulation (network) is not so close or regular as in the above-described

species. The spikes are short, lax; fruit with a slightly curved beak, which is about as long as the fruit. A very common species, both in deep and shallow water.

12. *P. serratus*, Hudson, is by some descriptive authors entered as a variety of *P. crispus*, and by others as more fitly belonging to *P. densus*. Smith's description of *P. crispus* agrees better with this variety than it does with the common form. He besides tells us, that Clusius' figures, Pan. 713, f. 714, 715, in Johnson's emaculate (not immaculate) edition of Gerard's 'Herbal' is annexed to a description of *P. densus!*

P. serratus has lanceolate, serrated, sometimes crisp leaves, not above two inches long, oblong-lanceolate or lanceolate. It is not an uncommon form.

P. densus, Linn. Stem cylindrical, rather stout, more or less branched, very leafy. Leaves opposite, ovate-lanceolate, sessile, entire, pellucid, all submerged. Peduncles slender, short; spikes few-flowered; fruit compressed, with a short terminal beak and a prominent keel. Not rare in the south of England.

Note. It is hoped that during the ensuing season materials may be collected or contributed to furnish forth the second part of this monograph.

BOTANICAL INTELLIGENCE.

"*Society of Amateur Botanists.*"

A circular with the above-written heading has been recently sent to our office, and we gladly embrace this earliest opportunity of trying to promote its circulation.

Co-operation, or the principle of associated efforts, in the advancement of knowledge, has always been strenuously advocated in our pages; and we have several times proposed the Natural History Societies in Glasgow, Todmorden, and Warrington as models which might be imitated with success, especially in London, which is the metropolis of science as well as the emporium of commercial business.

This new candidate for scientific reputation is confessedly a great desideratum, an institution much wanted. Its location is 239, Euston Road. As our readers may not be profoundly read or learned in the modern geography and nomenclature of the streets

of London, we beg to inform them that what is *now* called Euston Road cannot be very far from St. Pancras New Church, Euston Square, nor very distant from the terminus of the London and North-Western Railway,—both cardinal points of London topography.

The object of this new society, as is well expressed in the circular, is to assist the members in the study of British plants, by organized excursions, by exchange of specimens, communication of papers, the formation of a herbarium, library, etc. etc.

The estimated cost of these great objects may be very moderate: for example, the members may soon collect a herbarium, which will cost them no more than the paper in which the specimens are kept, or on which they are mounted; excursions will cost nothing, and botanical communications may be had equally cheap; and a hundred half-crowns judiciously expended every year will soon purchase a good botanical library.

The contributions or payments of the members are on the lowest possible scale, viz. half-a-crown for entrance and the same for the annual subscription.

It is gratifying to hear that the promoters are actuated by so liberal a spirit. Their moderation guarantees success to the new association. The cost will not deter any botanist from enrolling himself as a member of a society which is to be conducted on so economic principles.

Their society will not go to pieces like the defunct Botanical Society of London, which split and foundered on the rocks of extravagance, conceit, and mismanagement. The half-crown entry-fees and the same amount of yearly payments will not tempt the society to ornament their council chamber with oil paintings of the leading or influential members. One hundred or even two hundred half-crowns would not go far in paying the artist's bill for portraits of the president, vice-president, treasurer, secretary, and curator and other patrons of the society.

Such a society as this supplies, as has been stated, a real want. The former society, which was founded about thirty years ago, did good service to the amateur members of the fraternity, and if it had not fallen into the hands of incapable managers it might be in active operation at this day.

We will not take the liberty of lecturing the members of the new association, though in past times our attention has been often

turned to these matters; and our experience of their utility has always induced us to recommend them strenuously, and to render them all the material help and encouragement which our circumstances and avocations permitted. The infant society is hereby assured that their proceedings will be observed with much interest, and that the success of the undertaking will be most gratifying.

Of their success there can be no question, if they can only agree to help each other, even although they do not *all* implicitly believe in Professor Babington, nor pin their botanical faith on the sleeves of Mr. Bentham. As the ancients said, small states become great by concord, while, on the other hand, selfishness and animosities ruin the most powerful empires.

By walking in the ways of peace and charity, by avoiding *clique*-ism, and seeking only the edification of each other, a small association may accomplish great objects, may provide a continuous supply of healthy mental pabulum for its members, and may ultimately have the honour of enlarging considerably the domains of science.

We had almost forgotten to state that the president, M. C. Cooke, offers as a prize for the best collection of British Mosses, Berkeley's work on the same family. The secretary, T. Martin, 10, Great Turnstile, Lincoln's Inn Fields, W.C., will furnish particulars both about the competition and the society. We wish they may get a hundred competitors for this prize. We are pretty confident that they will get many members to their society.

NOTES OF A BOTANICAL TOUR IN BANFFSHIRE.

(*Continued from page* 444.)

Tuesday morning broke in clouds, yet the day bade to be fair. Wofully, however, were we disappointed. A guide for Loch Avon was got, and provisions for two days were made ready by Miss Smith. Our road lay through the hills, and along the banks of the Ailnach. The distance between Tomintoul and Loch Avon is said by some to be eighteen miles, but you must bear in mind they are "Highland" miles. On a bank by the roadside, as you descend to the bridge over the Avon at Delnabo, we meet with *Gnaphalium sylvaticum*, one of the Cudweeds, "Everlastings,"

Antennaria dioica (Cat's-foot), of the same family. *Orobus tuberosus*, one of the Pea tribe, with tuberous edible roots, was also found. It is plentiful also over most of the county *Gentiana campestris*, common Gentian, one of our prettiest plants, was plentiful.

In the same spot we met with another beauty, *Trientalis europæa* (Chickweed Winter-Green). It is abundant in most parts of the county. We have gathered it in the Tor of Troup, on Gamrie Mhor, in Alvah, on the Knock, in Grange, on the Balloch, in the wood of Dinneyduff, near Keith, and around Loch Park. It is rare in England, and does not grow further south than Yorkshire.

Beside the bridge of Delnabo, grew *Cardamine sylvatica* and *Saxifraga aizoides*. The bridge crossed, we reach a Land of Goshen to the botanist. The first plant that presented itself was the beautiful *Cnicus heterophyllus* (Melancholy Plume-Thistle). Beside it grows the rare plant *Listera ovata* (Twayblade).

Geraniaceæ are here represented by *Geranium pratense* and *G. Robertianum*. The former has large blue flowers. It grows rather plentifully through the district. The latter has a small flower. It is named *Robertianum* from St. Robert, a Benedictine monk, abbot of Molesme, who died in 1100 A.D. His anniversary is on the 29th of April, and as this plant is then beginning to come into flower, it was dedicated to this saint.

The Lint family has its representative at Delnabo in *Linum catharticum*, at times employed in medicine, and said by some to be deserving of a higher place than it occupies. Here, too, we first met with *Alchemilla alpina*, although it grows at much lower elevations, and also in the lower districts. There are three species of *Alchemilla* that grow in this district:—*A. arvensis*, a small plant found everywhere in cultivated fields, *A. vulgaris* (Common Lady's-Mantle), and *A. alpina*.

Another genus of the Rose family grows at Delnabo, *Rubus saxatilis* (Stone Bramble). It creeps along the ground, has a somewhat prickly stalk, white or yellow flowers, a red berry with a stone as fruit. *Rubus fruticosus* (Bramble) is well known. Its fruit makes a most agreeable preserve. On the hills almost everywhere will be found *R. Chamæmorus* (Cloudberry). It has a large berry as fruit, first red and afterwards yellow. *Rubus* is from the Latin *ruber*, red, or the Celtic *rub*, red. *R. fruticosus* is the badge

of the clan Macnab; *R. Chamæmorus*, that of the Macfarlanes. *Solidago Virgaurea* (Golden Rod) was also found here. It grows in a single stalk from one to two or three feet high, and terminates in a long cluster of yellow heads. It is named *Solidago* from *solidari*, to unite, because of its vulnerary qualities. Among its other properties it is said that "the decoction also helpeth to fasten the teeth that are loose in the gums." *Stachys sylvatica* (Hedge Woundwort) is also found at Delnabo. Two others grow in the district, *S. palustris* and *S. arvensis*.

With the above, Delnabo was "done," so far as we could see, and we went on our way rejoicing—the wilderness now before us. Delnabo is the last house, except three huts, in the direction of Loch Avon. The route lies along the hills, between which the Ailnach runs, and the hills rise at once from the Avon side. For eight or ten miles, the Ailnach flows between banks two or three hundred feet high. At some places, they are of a bluish colour, and slope gently backwards; at other places, they are of a yellowish hue, caused by the disintegrated quartzite; and, at other places, the rocks of clay-slate, here and there with a cave, rise right up from the bottom of the river bed at least three hundred feet. One sees the stratification of the rocks well. They mostly dip S.E., and consist either of clay-slate, part of the new gneiss, or of the quartzite. In ascending from the Vale of the Avon, we meet for the last time with *Helianthemum vulgare* (Common Rock Rose). The stem is procumbent and shrubby. The flower is yellow. The stamens, when touched, spread. It grows at Gamrie, the Burn of Melrose, and the Old Castle of the Boyne.

We had not much more to look for till we reached the higher ranges, and we set out in good earnest, over, at first, ground that had once been cultivated, but is now thrown into sheep-walks, and, after a little, over heather, peat, and bent, with the river on our left, dashing along nearly black in colour from the heavy rains, and reminding one of Dante's *acqua tinta*. In "moving on," we had our eyes about us, and we picked up *Carex pilulifera*, *Pedicularis sylvatica* (Lousewort), *Polygonum viviparum*, and a few other common plants. A little above Delnabo, the common Whin disappears, as well as *Carduus lanceolatus* (Bur Thistle). We met *Listera cordata*. Of the Ferns, we marked *Polypodium Dryopteris* (Oak Fern), *Blechnum boreale*, *Lastrea dilatata* (Shield Fern). In a small ravine, the first

passed, we found *Saxifraga stellaris*—a plant that grows in abundance on most of the hills. It belongs to the Natural Order *Saxifragaceæ*. The genus is so named from its supposed power in curing the disease of the stone, and the name means "the stone-breaker." One, a native of England and Ireland, is grown in this country in gardens, *S. umbrosa* (London Pride, None-so-pretty). (*S. granulata*), *S. hypnoides* (Lady's Cushion), *S. azioides*, and *S. oppositifolia* grow in the county—the last growing only on the highest hills, and on rocks by the sea. Another genus of the same family, containing two species,—one rare, and the other plentiful,—grows in the county. The species are *Chrysosplenium alternifolium* (rare) and *C. oppositifolium* (Golden Saxifrage). The latter is used in the Vosges as a salad, under the name of Cresson de Roché.

In several boggy places we lighted upon *Epilobium alpinum*. We have gathered the same plant on Belrinnes. A somewhat rare plant is found, *Melampyrum pratense*, with the variety *montanum* (Cow Wheat). All along were growing *Juniperus communis* (Juniper), "Aitnach;" *Empetrum nigrum* (Crowberry), "Knowperts;" *Vaccinium Myrtillus* (Blaeberry); *Vaccinium Vitis-Idæa*, and *Arctostaphylos Uva-Ursi*. *Vaccinium Vitis-Idæa* is the badge of the clan Macleod, and *Empetrum nigrum* is that of the clan Maclean.

Mile after mile passed away, and we reached a bend of the river, and the scenery changed. There was nothing now before us but a wide, peaty, benty moor, wet as a sponge, and cut up by the water into hollows and ruts, leaving hillocks of peat between —the most fatiguing kind of ground to walk over. Our course still lay along the low banks of the river. Nothing was to be seen but the rounded hills behind us, gently rising on either side backed on the left hand by high hills, with Ben-na-Bynach in front of us. as if the guardian of the desolate hollow. The clouds, that had looked heavy, now began to give forth their contents. Yet a thought of returning never entered our minds. We crossed the Ailnach, and struck through a heavy piece of peat-bog, leaping from hillock to hillock, to a shepherd's bothie. These bothies are somewhat primitive in their construction. The couples are placed first, and on the ground, with uprights about four or five feet high. The wall is then filled in between the uprights with big stones; and outside the stones is built another wall of turf.

It is then covered with "divots," except a hole in one end, to allow the smoke to escape. The floor is "mother earth." It has seldom any door. The shepherd hangs up his plaid during night against the doorway. Part of the roof of the one we entered had fallen in. By the time we reached it, we were wet, soaking wet, and stood in need of a little rest. But there was no landlord. Our hearts fell, as we sat dripping with moisture. The corners of the apartment were piled with the roots of trees that had been gathered from the bog, and can you blame us if we soon had a blazing fire? Looking more narrowly, we discovered a little box. Curiosity was aroused. We were out on an "exploring expedition," and why not see everything? It was opened, and proved to be the commissariat! A cooking utensil was lying before us. A box of coffee was looking up from the small chest, and seemed to say, "You would be none the worse for a little." We fancied it spoke thus. Remember, there was no landlord. We did not think of Sheriff Gordon and "the Blues," but we thought of Rob Roy, and in the twinkling of an eye we were deep in the mystery of coffee-cooking. Remember, there was no landlord, and the Blues were invisible. We sat and warmed ourselves, and regaled ourselves with the "Good Samaritan's" coffee.

(*To be continued.*)

Reviews.

The Chelmsford Chronicle.

The following extracts from this paper, kindly sent by one of our correspondents, will gratify all our metropolitan botanists. A very laudatory review of Mr. Gibson's 'Flora of Essex' has already appeared in the 'Phytologist,' and therefore it would be superfluous to quote this paper wherein its merits are further recorded.

The following notices about the wild flowers of Essex, and the places where they are to be found, are well worth extraction:—

"*Bupleurum falcatum*, strictly an Essex species, is particularly interesting, as it is impossible to mistake as to the identity of the plant when found, or to blunder in endeavouring to find it, for it grows on both sides of the road for about a mile, at the distance of five or six miles from

Chelmsford, on the way to Ongar, and it is nowhere found in England except in that neighbourhood."

We hope that the following prediction may soon be a *fait accompli,* and not a future event, as all predictions necessarily are :—

"The appearance of the volume we are considering is a good omen, and if it is received with the favour it deserves, we shall soon see a second edition, with additions. For, notwithstanding all the endeavours of its author to make the work complete, and notwithstanding the assistance of fifty gentlemen, who have contributed more or less to it, there is still a list of fifty-seven plants which are supposed to be natives of Essex, but are not recorded as having been found there. We are much mistaken if we have not seen two or three of them a few years back, and intend, now we know how rare they are, to keep a good look-out for them.

"*Cicuta virosa* was contained in the beautiful collection of wild flowers exhibited by Miss Marriage at the Exhibition of the South Essex Horticultural Society in June, 1859; we believe it was gathered in the neighbourhood of Danbury. Poisonous plants like this are happily become very rare in the county. Cultivation of its fields, and the diminution of woods, doubtless have done much in altering its botanical features. Thrift Wood, in the neighbourhood of Chelmsford, formerly rich in rare plants, is no longer what it was, and what is left of it can hardly be traversed by a botanist, unless he is prepared to face a man with a gun, who will order him off the ground with a threat of prosecution if he venture there again. It is commonly believed that any cause which is prosecuted will prosper, and perhaps it would awaken a zeal for botany if some enterprising young gentleman were to be sent to gaol for gathering flowers in Thrift Wood. Daffy Wood, on the contrary, is so much frequented that every Daffodil is plucked as soon as it is in bloom, and *Helleborus viridis* is likely to be lost. Indeed, we could not find it there in 1861, though we saw it the year before. We suspect, nevertheless, that some plants may be found in the Chelmsford district, which are not recorded as belonging to it in the work before us. *Tragopogon porrifolius* grew abundantly for some years on a bank which formed the approach to a bridge over the railway, on the road to Writtle, out of the London Road, Chelmsford. It was found there in 1858 by E. Copland, Esq., who brought it to the botany class which then was held in the Chelmsford Institute. Of eight species of *Ranunculus* formerly confounded under the name of *R. aquatilis,* only one is recorded in the Chelmsford district. But there is a lane at Great Baddow which contains two; the flowers in the pond on one side of the way being evidently distinct from those in the ditch on the other. When we consider, however, that this is the first edition of a

work, the like to which has not appeared before, we rather wonder at its approach to completeness than at its being capable of improvement."

The Preston Chronicle. October, 1862. *Rambles by the Ribble.*

Sorry are we that there is no room for the lively, amusing descriptions of the scenery about Ribble Head, with the quaint lines from Drayton, an especial favourite of the writer's. The continuous bacon-and-egg breakfasts, dinners, and suppers, extending over long periods, would possibly cause the features of our southerners to relax into a smile; we would certainly enjoy the change, for chops and steaks are no rarities here; but a savoury rasher of ham or bacon well broiled with eggs—or perhaps it should be fried (we are not profoundly skilled in the mysteries of Yorkshire cookery)—would be a feast, for we know by experience that the viands there are toothsome and good; but fourteen breakfasts, etc., on ham and eggs, might put our liking to a sore trial.

For our part, we should like to read a specimen or example of "chaffing" with Austwick Carles. The Austwick tales, and the legends of the Clapham folks, we hope to see in a fitter vehicle for their transmission or circulation than is now at our disposal.

"In some of the later rambles there has been nothing noteworthy in botany. On this occasion we were more successful. In the meadows in the neighbourhood of Thorns Gill we found many interesting plants. The Globe-flower (*Trollius europæus*), the Bird's-eye Primrose (*Primula farinosa*), and Water Avens (*Geum rivale*) were abundant; the Frog Orchis (*Habenaria viridis*) and the Twayblade (*Listera ovata*) were frequent, and the generally scarce small White Orchis (*Habenaria albida*) almost equally so. In one meadow there was a great quantity of the Dark Plume Thistle (*Carduus heterophyllus*), which plant we also found near Horton, in Ribblesdale, from whence it was sent at the end of the last century, to Sowerby, by a Mr. Bingley. The Wood Crane's-bill (*Geranium sylvaticum*) was also abundant. The great Bistort, or Snakeweed (*Polygonum Bistorta*) we saw in many places, as well as the giant Bell-flower (*Campanula latifolia*), the last, of course, not yet in blossom. At Lynn Gill we made no botanical discoveries worth recording. We had not been long on Moughton before we saw we had got into a rich botanical district. The first plant of note that we met with was the Alpine Bistort (*Polygonum viviparum*) growing plentifully below Coom-Combs, or Culms Quarry, as it has been variously spelt. This is doubt-

less the spot from which Mr. Bingley sent the specimen of the plant to Sowerby, which is figured in 'British Botany,' and which is stated to have been 'communicated fresh from a moist spot of ground a little below the Culms, near Horton, in Craven, by Mr. Bingley, in July last' (*i. e.* July, 1799). In the same neighbourhood also grew the Cat's-foot (*Gnaphalium dioicum*), plentifully and luxuriantly. A little higher on the face of the hill we met with abundance of the common Rock Rose (*Helianthemum vulgare*) the Salad Burnet (*Poterium Sanguisorba*), the Milkwort (*Polygala vulgaris*) in all its varied hues, and the common Thyme (*Thymus Serpyllum*). In wet places, and by the sides of springs, were abundance of the Bird's-eye Primrose, the Butterwort (*Pinguicula vulgaris*), the Forget-me-not (*Myosotis palustris*), two or three kinds, the Marsh Valerian (*Valeriana dioica*), and the Wood Pimpernel (*Lysimachia nemorum*). In the woods and thickets we observed the Mountain Ash, or Rowan-tree (*Pyrus Aucuparia*), the yellow Cow-wheat (*Melampyrum pratense*), the Sweet Woodruff (*Asperula odorata*), the Wood Sanicle (*Sanicula europæa*), the Earth Nut (*Bunium flexuosum*), and the Bittercress (*Cardamine amara*). On rocks and banks, in open places in the woods, the Hairy Wallcress (*Arabis hirsuta*) was plentiful; and in one place we observed a quantity of the Hemp Agrimony (*Eupatorium cannabinum*). On the scars grew several of the Hawkweed tribe (*Hieracia*), as yet in an immature state; the Kidney Vetch (*Anthyllis vulneraria*), the Wall-rue Spleenwort (*Asplenium Ruta-muraria*), the Black Spleenwort (*Asplenium Adiantum-nigrum*) occasionally, and the Toothed Bladder-Fern (*Cystopteris dentata*). On the top of the hill there was abundance of the blue Moor-grass (*Sesleria cærulea*), and occasionally the Spring Sandwort (*Arenaria verna*), and also a few plants of the Savin-leaved Club-moss (*Lycopodium alpinum*). Near the foot of the hill where we descended is a solitary farmhouse, and at a short distance from it is a magnificent Sycamore-tree, the sight of which would well repay a divergence from the high-road, even to the tired pedestrian.

"We did not do anything at Swarthmoor in the botanical line beyond noticing several specimens of the rare Hairy Stonecrop (*Sedum villosum*) just coming into blossom. Perhaps it would not be out of place here to notice that when, on a previous occasion, we had gone to Settle from Horton, we saw, on a waste spot of ground, in the village of Little Stainforth, the Welsh Poppy (*Meconopsis cambrica*), and the spotted Dead Nettle (*Lamium maculatum*). Near them grew abundance of 'Good King Henry,' or Wild Spinach (*Chenopodium Bonus-Henricus*), and on old walls of the village the shining Crane's-bill (*Geranium lucidum*) was extremely luxuriant and plentiful, and the before-mentioned Hairy Wallcress was frequently to be seen."

BOTANICAL NOTES, NOTICES, AND QUERIES.

Vinca minor.

Allow me to call the attention of your readers to the inflorescence of *Vinca minor*. It is a plant with which I have no doubt they are familiar, and as it will flower in the ensuing month, there will be an opportunity for the observation of its peculiarities, which are characteristic and interesting. The flowers are usually said to be solitary and axillary; but in a paper which I communicated to the British Association for the Advancement of Science, and which was read at their Cambridge meeting in last October, I ventured to express an opinion that the flower of this plant is truly terminal. My reasons for this opinion are as follows:—*Vinca minor* has opposite leaves, but the flowers are not opposite like those of *Anagallis arvensis*, which are truly axillary. Sometimes, instead of a pair of opposite leaves, there is a solitary leaf, and then the flower, instead of appearing in its axil, is uniformly on the opposite side of the stem; but A. P. De Candolle says that "inflorescences opposite the leaves appear to be always formed by the real top of the stem." Professor Balfour has also shown that this is what takes place in the Vine, of which a peduncle or tendril is the true summit, and the branch which is prolonged beyond it proceeds from the uppermost axillary bud. That such is also the case with *Vinca minor* I have no doubt, having indeed seen a plant some years ago in which the flower was evidently terminal, having a branch on both sides of it. If practical botanists will only look out for similar variations, I have no doubt that they will be able to verify what I have said.

John Gibbs.

Baddon Road, Chelmsford, 6th January, 1863.

Pogles, or Cowslips. Verbascum. (*Culverkeys.*)

Dr. William Bullein, in his 'Book of Simples,' written 1562, says: "*Verbascum* is of divers kinds. The one is called Mullen, which is a long herbe like a wax-taper, bearing yellow flowers in the top, with small leaves. Another kind, black *Verbascum*. These herbs be called Dungworte among the common people. The third kind is called Pogles or Cowslips."

In a note given in the 'Phytologist' some time since, reference was made to Culverkeys, noticed by Izaak Walton, being gathered with Cowslips. If by Culverkeys he meant what we call Columbines, might he not by Cowslips have meant the *Verbascum* alluded to by Bullein? S. B.

John-in-the-Pot. (*Herb John, etc.*)

In J. Howell's 'English Proverbs,' published 1660, is the following: "Without Herb-John no good pottage."

In Osborne's 'Memoirs of James the First,' he has a phrase, "To exchange Herb-John for Coloquintida." Tomlinson, in his translation of Renodæus' 'Dispensatory,' says that many superstitious persons call Mugwort St. John's Herb, "wherewith he circumcinged his loyns on holidays." This does not agree with the herb John-in-the-Pot of Gurnall, before noticed in the 'Phytologist.'

There is a curious note by Dr. Grey, in his edition of 'Hudibras,'

which refers to Jean-Pottages as follows:—"A Buffoon, or Jack pudding. In France he is called Jean-Pottages; in Italy, Mocarome; in Holland, Pickled Herring, etc.;" and he says, Mr. Theobald, in one of his notes to Shakspeare's 'All's Well,' etc., observes, "that it was a foolery practised at city entertainments whilst the Jester or Zany was in vogue, for him to jump into a large deep custard, put on purpose to set on a quantity of barren spectators to laugh." S. B.

Sir,—It may interest some of your readers to know that that really magnificent plant *Saponaria officinalis* still grows in great profusion on the wide beach near Langley Fort, Eastbourne. This is mentioned in Turner and Dillwyn (1802), so that this plant, if not really native, has now maintained its ground for at least sixty years, and may fairly be considered naturalized at all events. *Phyteuma orbiculare* is plentiful on the Downs, towards Beachy Head. T. W.

If there be a doubt about the genuineness of the white variety of *Campanula Trachelium*, let me give evidence in its favour. I have often seen specimens of the white variety of this plant growing wild, with the typical form, in many different places at Shiplake, near Henley-on-Thames. It has occurred to me that the chalk soil has something to do with this: as, in the same neighbourhood, where chalk and clay meet, the first is decorated with Violets of all kinds, purple, blue, white, and rich claret-coloured, while the clay produces any but the common purple.

St. Peter's College, Westminster.

Meconopsis cambrica and Angelica officinalis, near Settle.

When I was botanizing in Settle, upwards of ten years ago, the first-named plant, viz. the Welsh Poppy, was observed about the roadside, at the village of Stackhouse, and a little further on, a couple of plants of the garden *Angelica*, at Stainforth. Between Stainforth and Horton, the old stone dykes and the cottage roofs were adorned with *Meconopsis cambrica*.

Aliquis.

Communications have been received from

John Sim; John Peers; J. Britten; Dr. Windsor; W. Robinson; S. Beisly; W. G. F. Phillimore; James Lothian; T. Stansfield; J. S. M.; M. A. Walker; F. P. Marrat; C. J. Ashfield; W. Winter.

RECEIVED FOR REVIEW.

James Lothian's Spring Catalogue.
The Preston Chronicle, Feb. 21st.

Errata.—Page 418, line 16, place a full-stop after 'spontaneous;' line 21, omit comma after '*E. portlandica*;' line 25, place a full-stop after '*E. variegatum*,' also after '*subrepens*.' Page 419, line 27, after 'shown' insert 'me'; line 36, for 'Powell' read 'Nowell'; line 39, for '*catophyllum*' read '*calophyllum*'; last line, for '*Kneipfii*' read '*Kneiffii*.' Page 420, line 1, for '*amplyodon*' read '*amblyodon*.'

BOTANICAL LETTERS FROM ARGYLESHIRE.

A Run to the Top of Glenramskill. By James Lothian.

"I stand upon my native hills again,
Broad, round, and green, that in the summer's sky,
With garniture of waving grass and grain,
Orchards and birchen forests busking lie;
While deep the sunless glens, and scooped between,
Where brawl o'er shallow beds, are streams unseen."

W. C. Bryant.

Lovers of the country alone can sympathize with the botanist who in the first fine week of March or April takes down and dusts his vasculum, looks at the suburban map of London, and consults Bradshaw, or, what is better, the time-tables issued by the respective railways which have their *termini* in or near this great metropolis. His prospective pleasures are to be felt, not described.

Our excellent and imaginative correspondent, the author of the "Letters from Argyleshire," asks a question which we will answer, without the formality of stating what it is.

In the fine days of March, in our youth,—when in the famous university, where Dugald Dalgetty studied the humanities, and where he complained of short commons, but not of a want of mental pabulum,—youths sometimes *trowed* the Greek class, liking a game of golf on the broad links more than the wisdom of Socrates, the descriptive simplicity of Xenophon, and the spirit-stirring eloquence of Demosthenes and Æschines. Our lively friend is hereby informed that if we could not leave home, and our avocations also, with a good conscience, or without leaving undone any service of obligation, or the relinquishing of any work of mercy or charity which we could bestow on ignorant or suffering humanity, our rural or botanical excursion would do us no good, but we should be haunted with the harassing conviction that we were not in the right place, and we could neither enjoy the finest scenery nor the richest flora in the wide world.

Our readers, if they condescend to take our counsel, will do well to consider, before going out to admire the beauties of Flora, whether or not this is compatible with a due regard to the fulfilment of their necessary social and domestic functions.

When they are at liberty from these ties, they may go where

the "Grass is greenest, and where the Lady-fern grows *sheenest,*" as Scott or some other minstrel of nature sings. The botanist may then safely air his botanizing habiliments, and ventilate his cogitations and aspirations about the beautiful and the good.

But we are always ready to accompany in spirit all who take delight in the contemplation of nature's charms; and our excellent correspondent is now to be introduced, to tell his observations, reflections, and enjoyments in his own graphic way, as with staff in hand and vasculum on his shoulders, leaving Campbeltown, he directs his course by the seawardside road, skirting the beach southwards, and has evidently made up his mind to reach the spring at the top of the hill beyond Glenramskill, some three or four miles distant. On reaching Kilkerran bridge he strikes off to the right, past the farmhouse, through the stile beyond, and he is now on the Moor Road, a mere bridle-path, surrounded with Heath and forests of Whin (Gorse) and Broom, emitting their clouds of perfume, and the mellow notes of nature's melodists. The sun now sheds its light and heat, insects of all sorts add to the chorus of joy that greets his ear on every side as he ascends this glen, deviating now and again in zigzag directions in quest of plants, most of which, however, are of common occurrence, as *Parnassia palustris, Anagallis tenella, Cardamine pratensis, Pinguicula vulgaris, Pedicularis palustris, Eriophorum angustifolium, Empetrum nigrum, Scabiosa succisa, Polytrichum commune* in immense masses; Sweet Gale, the little Eyebright, *Euphrasia officinalis,* large patches of the pretty *Lotus corniculatus, Galium verum, G. palustre, G. saxatile,* and a host of others too common and numerous to mention. In his deviations proceeding up the glen, he had gone a short way off the path to examine one of our umbelliferous plants, the *Cicuta virosa,* growing in a damp hollow, beside a small grassy rivulet, —a plant possessing poisonous properties, by eating the roots of which, mistaking them for parsnips, several of the men belonging to one of her Majesty's men-of-war lost their lives some years ago at this very spot. In returning again to the path, he had to pass through a small thicket of *Salices, Alnus glutinosa,* etc., through which no sooner emerged than our rambler was face to face to a large black Highland bull, with horns at least a yard asunder. He stood confounded, as did the animal for a few moments, looking at each other; recovering himself, however,

at a moment before the animal, he pulled from his pocket a small German musical instrument, sounded it aloud in all its variations, when the bull, as if cowed and frightened, took to his heels with some half-dozen cows, with tails erect, never looking behind until they got among some trees and brushwood at the bottom of the valley. Our pleasure-seeker and botanist hastened with all speed to gain the top of the glen, which as he reached, he sat down on a bank to have a full view of his enemy, which now, as if ashamed of his cowardice, had come out of the thicket, and was roaring and bellowing, and tearing a mound of earth with his horns, lifting his head now and again, and taking a long look towards the top of the valley, where our friend was now seated, quite composed, rather thankful that he had escaped a bull-fight, and now enjoying a magnificent view as well as a refreshing breeze. Right before him was the Campbeltown harbour, with all its shipping, and villas skirting its north bank, with all the undulations and variety of hill, dale, and homesteads beyond, as far as the distant mountains of Cowal, as also the Sound of Kilbranson; the island of Arran itself, a splendid field for either botanist or geologist, as well as the dark, heathy hills of Glenlussa. The sun was high, and the day now warm, while the beautiful sky above presented pure serenity itself. Our hero could not get the effect of his instrument on the bull out of his head. It was so sudden as to be more a matter almost of instinct. The effects, however, of sounds upon insects and animals is sometimes as varied as the sounds themselves. It is something on this principle old apiarians used to beat a girdle or a tin vessel, with the view of stopping the flight of bees hiving, —whether with effect in that respect I cannot pretend to affirm.

Our rambler had now rested himself, and saw that he was quite beyond the reach of his adversary, who seemed now to have expended his rage and fury on the mound of earth; so rising from his seat, he was soon on the ridge of the hill, leaving Glenramskill in the rear, and treading on new ground, moor, heath, and bog. He felt buoyant and light, and although the day was warm, the cool mountain-breeze tempered the heat of that summer noonday. He shortly reached a conical knoll covered with heath, forming the highest spot at that point; and as he stood to breathe for a few moments, he was captivated by the expansive river and scenery now before, bounding in the ex-

treme distance on the brown hills of Antrim, with the coast-line from beyond Rathlin down below Belfast, as well as the Scotch coast of Galloway and Wigtonshires, the Irish Sea and North Channel, and the extremity of the Firth of Clyde, where Ailsa's lone craig sits in solitary grandeur, lashed by the ocean waves. Numbers of ships, with their snowy sails, are boated outwards and inwards, with several large steamers, one of which he recognizes as the 'St. Andrew,' North American steamer, passing up the Sound of Sunda for Glasgow. Among the hills and valleys more immediately beneath him, he hears the joyous sounds of rural labour and rustic toil. Sheep are browsing around him, and a covey of birds hastens past, intent on escaping the sportsman's rifle, now and again heard sounding from glen, heath, and corrie,—perhaps the first and public day of the sportsman, the memorable 12th; but what are they all, compared to that beautiful bird the lark, whose song, as it ascends and descends over that bog, rivets to the spot?

The spring is reached. There it is, an oblong orifice, something about three feet by two wide, in the face of that grey rock, shaded by Heath, its sides and roof green, beautifully green, by an embroidery of nature's workmanship, clad with one or two *Bryums, Marchantia,* and *Chrysosplenium,* while a small eye of pure clear water flows on continuously.

> "The mountain air
> In winter is not clearer, nor the dew
> That shines on mountain blossoms."

Cold as ice, clear as the purest crystal, there it rolls out continuously into a small basin-like cavity with pebbly bottom, a blessing to the wandering naturalist, or whoever may chance to tread afar on this distant mountain-top,—never dry, ever cold, and refreshing summer and winter. No stagnation is here. The water rises to its level, and the water flows onwards, trickling down the *brae,* or inclined, if you please, in form of a fan, spreading as it reaches a bog some thirty yards distant; while every inch of the ground over which this waste water spreads, is ever in one mass of verdure.

Our friend, buckling on again, commences to search in its tract on to the bog, where he meets *Veronica Beccabunga* and Watercress in great profusion; *Cardamine, Polygala, Polytrichum, Sphagnum, Hydrocotyle,* and as he reaches the little bog, *Nar-*

thecium ossifragum, Drosera rotundifolia, and *D. longifolia;* but time getting on, he wheels round, and turning to the left he passes to the spring again, making, in an eastward direction, along the ridge of the hills towards Kildalloig shore. A little beyond the spring, he halts to examine the long wreaths of *Lycopodium clavatum* among the heather, and some beautiful patches of the *Calluna vulgaris alba,* with its snowy blossoms and light-green foliage. In a small marsh between two conical knolls, he meets the *Menyanthes trifoliatus* and *Comarum palustre* in immense quantities, the former one of the most valuable plants in the British Pharmacopœia; but resuming his steps, he soon reaches Kildalloig Glen, and the shore,—a spot by far too important to talk about on a mere hasty ramble, we must devote a regular field-day to it. Suffice it to say in the meantime that our botanist picked up here *Asplenium marinum, Hymenophyllum tunbridgense,* and Corn Cockle abundantly in a field at hand, with many other pretty forms. But time and tide wait on none; pulling out his timepiece, he finds he must bid good-day to those thousands of nature's lovely things, and make once more for town, for duty and business, which he reaches, charmed by the linnet's song, refreshed by the fragrance of the wild flowers, delighted by the beautiful appearance of the sun's rays, as dipping in glory in the great Atlantic, and gilding the distant Islay hills. He felt, in fact, lighter, freer, with a greater flow of spirits, and, like all nature's students,—

> "Not a breeze
> Flies o'er the meadow, not a cloud imbibes
> The setting sun's effulgence, not a strain
> From all the tenants of the warbling shade
> Ascends, but whence his bosom can partake
> Fresh pleasures unreproved."—AKENSIDE.

ON THE ODOURS OF PLANTS.

By JOHN SIM, A.B.S.Ed.

The vegetable kingdom, from the earliest annals of the human race, has more or less been the subject of study and admiration.

Apart from the intrinsic value of plants as affording food, medicine, and clothing, properties and qualifications possessed by numbers, many of them are peculiarly attractive by their hand-

some forms, beautiful colours, and in numerous instances delightful perfume. It is to this latter principle of their character that we shall at present invite attention. But although some are remarkable for their aromatic odours, others are not less repulsive by their disagreeable smell; while the fragrant effluvia emanating from others court our regard, the great offensiveness of others is almost unbearable. On the other hand, a number, and I believe the greater part, of the vegetable tribes is totally devoid of any appreciable odour whatever; with these scentless plants we shall in the meantime have nothing to do. It is to those species, and those alone, whose odours produce an agreeable or offensive impression on the olfactory nerves, that the following remarks are devoted.

As far as my own experience is concerned, the odours of plants and flowers have never been employed as a means for the determination and distinction of closely allied species. Some botanists have employed one character, some another, as peculiar to this or that species; but never have I read of any appealing to the odour as a means of determination. It is however only in closely allied species that recourse to this property is really necessary.

From several years' practical experience and observation, I have satisfactorily ascertained that the odours peculiar to certain plants are permanent and unchangeable, under all ordinary circumstances of vegetable life, whether such individuals are wild or cultivated. What I mean to assert is, that the odours of plants are co-extensive with the life of the individual, and prior to maturity in some, and during the period of decay in others, is more or less powerful in different species.

The common Woodruff of our woods and plantations is nearly scentless until dried, when the odour becomes agreeable and peculiar, resembling in no small degree that of the Tonka Bean, the fruit of the *Dipterix odorata*, a member of the *Leguminiferæ* and an inhabitant of the umbrageous forests of Guiana.

A very remarkable and prominent example of odoriferous plants is supplied by the genus *Melilotus*, one of the genera of this great Order. All the Melilots smell strongly in the herbarium, and this odour is very permanent. One of them, *M. cæruleus*, is employed by our Continental neighbours in the manufacture of snuff; others of this species are used for the colouring and flavouring of cheese. The powerful odour of Fenugreek is notorious.

Everybody knows the exquisite scent of a bean-field, when in flower; and the popularity of the Sweet Pea is partially due to its smell, and partly to the beauty of its blossom.

Everybody knows the Violet by its powerful sweet smell; and it is about equally well known that the other Violets, viz. the Hairy Violet, and the Dog Violet, are quite scentless. Is not this the reason why the popular mind has applied the ungracious name of 'dog' to the scentless Violet, as the same generally unerring authority has bestowed the title of Dog Mercury on the unedible kind which grows in our woods and hedges; while the eatable sort, which grows as a weed in our gardens and fields, is dignified by the name of French Mercury?

Some botanists of considerable reputation have conjectured that the two Violets *V. odorata* and *V. hirta* form but one species. This has been shown by a Stratford correspondent of the 'Phytologist' to be a groundless conjecture. I demur to the doctrine of their specific identity, and assert that they are two species under all circumstances and conditions whatever.

I have long cultivated both plants taken from their natural location, and though grown side by side they have hitherto remained without change. The Hairy Violet has not yet selected nor borrowed the exquisite scent of her near relation, nor has the sweet-scented assumed the more elongated leaves of her less fortunate sister. They do not manifest any tendency to avail themselves of the Darwinian principle of natural selection.

It is quite marvellous that the odour of plants and flowers has never been taken advantage of as a means of determining the specific distinction of closely allied species in these days of species-splitting. I am quite at a loss to account for it. To me it appears that an odorous plant is as certainly known by its scent, either good or bad, noxious or wholesome, as a tree is by its fruit; cultivation may, and often does, produce luxuriance and monstrosity, but seems incapable of exerting any influence on the odours of plants, whether such odour be pleasant or repugnant.

Several families have the unenviable notoriety of yielding plants of fetid, poisonous odours.

The *Stapelias*, a well-known genus of South African plants, smell when in flower somewhat like excrementitious *rejectamenta*.

The Chestnut-tree, when in blossom, has the smell of the he-goat, a smell not gratifying to delicate noses.

Some of the Orchids, beautiful though they be, have smells that are absolute contrasts to ottar of roses, lavender water, etc. Some of this family, as *Conopsea*, smell very agreeably, especially in the evening. Every one is sensible of the proximity of Sweet-Briar in the evening or after a shower: the air is then capable of conveying the exquisite odours of leaves and flowers.

Chenopodium olidum has a smell which has often been compared to that of putrid fish; and our Gladwin Iris has been called the roast-beef plant, because its smell has been compared by some to that which is surely very savoury and agreeable to the hungry man. Why the same smell should be called offensive (stinking), and at the same time compared to the smell of good meat, dressed in the most natural method, is one of the inconsistencies of science.

The common Wallflower, *e.g.*, smells as sweet on the rugged and inaccessible cliffs of Kinnoul Hill, as it does when it occupies the cottager's garden or the rich man's parterre. In either condition its scent is neither increased nor modified, neither improved nor impaired. In a cultivated state, double or monstrous flowers may be produced, and a greater luxuriance of growth attained, but the odour is unchanged and unchangeable.

Some Orders of plants are characterized by their aromatic odour in an eminent degree,—the *Labiatæ*, or Mint family, in particular; but as no general rules appear to exist without exception, exceptions in this fragrant family also occur. The genus *Stachys* may be cited as an example, *S. sylvatica*, the flowers and foliage of which give out a heavy, sickening smell; while Balm, Mint, Thyme, Origanum, Hyssop, and Rosemary, etc., are remarkable for their agreeable perfume, whether in a dried or recent condition. On the other hand, some families are equally well characterized by their intolerable scent.

The *Scrophulariaceæ*, an Order in many instances closely resembling the preceding in external appearance, but possessing very different qualities, are as remarkable for their nauseous odour and delcterious properties as the former for their innocent nature and aromatic odour. Besides, as a means of the specific determination of closely allied plants, odour may in my opinion in general be successfully and advantageously employed as an index in a great measure indicative of their proprieties, innocent or noxious, wholesome and good for food, or poisonous and productive of disease and death.

This view seems to be well supported in the *Solanaceæ, Umbelliferæ,* and *Scrophulariaceæ,* on the one hand, and the *Labiatæ* and *Rosaceæ* on the other; many individuals in the former families, distinguished by their strong repulsive odour, are poisonous in an eminent degree, *e.g.* among the Umbellifers we find *Conium maculatum* and *Œnanthe crocata,* both well-known toxicants, but happily, as far as Scotland is concerned, neither is very common; the latter plant however abounds along the Tay, below Perth. So very noxious is the effluvium emanating from this plant, that its inhalation by the author of this paper produced a severe headache, and almost prevented him from procuring and preparing a dried specimen for his herbarium. Among the Figworts are found *Scrophularia vernalis* and *S. nodosa,* the smell of neither being inviting, that of the former positively disgusting.

The Nightshade family possesses many heavy-scented plants of very poisonous qualities; *Hyoscyamus niger* and *Atropa Belladonna* may be quoted as examples, both of which are highly venefic and unfit for human food, yet valuable as medicines. We here observe the goodness and benevolence of our great Creator, who has imparted to vegetable tribes certain odorous properties agreeable or otherwise, to serve as a guide to his intelligent offspring, *Man,* by which he may be guided in his selection, according as their odours are pleasing or disagreeable to his senses.

In this case, as in all others of a general nature, exceptions will and do occur, but these exceptions are very disproportionate to the rule.

From the foregoing statements and remarks, we thus see that the good or bad odours peculiar to certain plants, furnish a pretty safe criterion by which we may be enabled to distinguish their species and determine their qualities. This principle appears to hold good throughout the entire vegetable kingdom.

In Malta, the prevalence of the *Labiatæ* is remarkable; the aromatic odour arising from plants of this family on the arid and rocky knolls of that island, is peculiarly agreeable. On the contrary, the heavy, sickening odour of many plants and flowers inhabiting the jungles and ravines of the West Indies is no less singular. The reason is obvious; Malta abounds in the *Labiatæ,* while St. Lucia is equally prolific in those Orders containing heavy-scented and deleterious species.

The cause of the aromatic odour in many plants can with faci-

lity be determined, in others it cannot be ascertained by the closest scrutiny. The sweet scent of the Eglantine, or Sweet Briar, evidently proceeds from the numerous minute glands with which it is invested. This may be proved by inspection with a pocket lens of even moderate power. The same holds true in the case of several others of the Rose family. Some plants contain an aromatic oil, as *Origanum*. The *Hyperica* have their leaves in most cases perforated or pitted by transparent dots, which become visible to the unassisted eye when held up against the light. *Hypericum pulchrum* in a great degree possesses a strange odour, quite different from anything with which I am acquainted. The peculiar perfume of this genus undoubtedly proceeds from the numerous punctures on the leaves, which appear to be pellucid cells containing an odoriferous, volatile essential oil. The fragrance of the *Aurantiaceæ* is evidently traceable to a similar source; indeed, the *Hypericaceæ* and *Aurantiaceæ* claim a close affinity in numerous points of structure. It is unnecessary for me further to trespass on the reader's time and patience; what I have endeavoured to unfold will, I trust, at an early period be far better treated and elucidated by others whose extensive knowledge and qualifications greatly surpass my own.

Bridge End, Perth, October, 1862.

REMARKS ON THE BOTANY OF GREAT YARMOUTH.

(*From a Correspondent.*)

The plants of this part of the county of Norfolk were probably better known during the latter part of the eighteenth century and the earlier portion of the nineteenth, than they are in our own days. The late Mr. Dawson Turner, of Great Yarmouth, the author of the 'Botanist's Guide,' and Mr. Wigg, both his contemporary and predecessor (?) in this field of research, also Mr. Dillwyn, of Swansea, made the botany of this district eminent.

Since that period, some changes have imperceptibly taken place; for example, the Denes have been enlarged, drainage and cultivation have introduced some new plants, while other species have disappeared. It is now nearly sixty years since the publication of the 'Botanist's Guide,' and upwards of twenty since the

last list of Yarmouth plants appeared in Paget's 'History of Yarmouth,' of which a new edition is now in the press.

The following remarks refer exclusively to a few plants which are presumed to have disappeared, or which have not been recently reported from this part of the country, and to a few which have recently been reported, but whose existence as Yarmouth plants has been questioned.

Frankenia lævis, on the authority of the 'Botanist's Guide,' and on that of a Yarmouth living correspondent, grow by the river's bank, near the ferry adjoining the Nelson monument. Another correspondent wrote only a short time ago that he had collected it on the Gorleston, or Suffolk, side of the river. It has not been recently observed on either of the banks. Another correspondent informed the writer of these remarks that he saw it on the bridge which spans the river about a mile above the harbour's mouth. Any information about this plant, as a native of Norfolk or Suffolk, will be very acceptable.

The author of the articles on East Anglian Botany suspects that there has been a mistake about the appearance of *Stellaria nemorum* in the 'Phytologist' as a Yarmouth plant. That it may grow in Norfolk is not very improbable; but that it grows on Yarmouth Denes, he, the aforesaid writer, doubts, because he never saw it, but chiefly because it was unobserved and unrecorded by Mr. Wigg and Messrs. Dawson Turner and Dillwyn, and especially by the Rev. Mr. Paget. Of course, any trustworthy notice or report of the occurrence of this northern plant is most desirable, and, above all, of its having been seen near Yarmouth.

The rare *Lepidium latifolium* surely grows both in Norfolk and Suffolk, though our Yarmouth correspondent who contributed the articles on East Anglian Botany does not report it. But as this plant has disappeared in Kent, if we may trust to two recent local Floras of Faversham, it is not improbable that some of the localities given in the 'Botanist's Guide' may produce it no longer. At all events, it would be worth while to ascertain, as exactly as possible, the precise location of this species.

Œnanthe peucedanifolia is a species which has been often confounded with *Œ. Lachenalii*, and the latter species may have been mistaken for the former. Both species may grow in Norfolk and in Suffolk also, but the latter is a common salt-marsh

plant, while the latter grows rather in inland localities than very near the sea.

Œnanthe Lachenalii is far, very far, from being as frequent in Norfolk as it is in Kent. In the latter it contends for the mastery with Marshmallow and wild Celery. About Monkton, in Thanet, and in the ditches near Sandwich, and everywhere in Romney Marsh, these three are the common ditch-plants. They are not so common near Yarmouth.

One of the great *desiderata* among the Norfolk plants is *Senecio palustris*, once known as *Cineraria palustris*. This very scarce plant, which used to be found at or near the Bure river, which flows through Caistor marshes, also in the Waveney, near St. Olave's, etc., has not recently been reported from any part of East Anglia, nor from the Eastern Lowlands, *i. e.* the contiguous parts of Cambridge, Norfolk, Lincoln, etc.

Any information about the locality of this rare plant will be thankfully received.

Sonchus palustris, as all readers of the 'Phytologist' know, has been very recently observed in Mr. Paget's locality, viz. near Burgh Castle, and in two or three other parts of the basin of the Waveney, but on the Suffolk side. Some years ago, the present Professor of Botany in Cambridge sent a note to the 'Phytologist,' which contained the evidence of its being found at Burgh Castle, in Norfolk. This is quite as likely as its growth on the Suffolk side, and hence all the three counties of the East Anglian kingdom may still possess, or did possess till very recently, this rare species.

I will now explain, as briefly as I can, the reason why strangers are sometimes viewed with suspicion, and are occasionally warned off in not very courteous language, even when their pursuits are of the most harmless kind; and also offer certain information, help, and suggestive hints as may aid them in surmounting those hindrances and obstacles which your correspondent so pathetically describes.

That the farmers, or graziers, or land-occupiers, or land-owners should be very shy of strangers, is not a strange thing. These fenny tracts are very extensive, and are partly grazed, partly kept for hay, and partly cultivated. The broads, or large sheets of water, are either rented or occupied by those who preserve the game and fish, or who employ them as decoys for wild fowl.

Upon the whole, however, I can testify from experience that as a general rule, permission will be willingly given to real students of nature who do not simulate a love for plants while in fact they indulge a love of mischief,—for example, leave open gates, and sometimes swing on them till they break down under the weight of three, four, or half-a-dozen young men, ay, and young women too, who try the hinges of the gate, and its posts also, by moving it thus loaded as rapidly as they can drive it against the post, and so shake it to pieces.

Strangers who take the liberty of walking where there are neither roads nor paths, sometimes unconsciously do much harm, by trampling down grass about to be mown, and by letting cattle stray into shut-up pastures, by making gaps in hedges; and there are, or may be, other damages done by the young and thoughtless. But besides all this, such stragglers are not seldom guilty of aggravating their trespass by abusive language.

The following notification is hereby given to all botanists, and to all who are engaged in the pursuit of natural science; ichthyologists and ornithologists, or, in the common vernacular, poachers, are the sole exceptions. If any genuine lover of nature has a wish to visit the Fens of Norfolk during the season next ensuing, he should intimate his intentions to the humble individual who undersigns this article.

He has the pleasure of informing all such intending visitors that an application has been made to some of the owners and occupiers of the most extensive portions of the Fens; and also that the latter will give free access, and afford all needful information. He is not at liberty to publish the names of these generous favourers of science. All naturalists will in future meet with civility and attention, and will no more, as your correspondent was, be intimidated by threats of fine or imprisonment.

It is not, however, to be assumed that these graziers, farmers, reed-cutters, fish and game preservers, give a free passport to every one who has a sturdy pair of legs under him, or who is even provided with a vasculum slung over his shoulders or in his pocket, or is provided with an insect-net like a game-bag. Those who go without an introduction are likely to be requested to retrace their steps, or to be handed over to the care of one of the guardians of the lives and properties of her Majesty's liege.

The under-writer will not only ensure civil treatment for such

visitors as go into these parts with the above-mentioned honest intentions, but he will give them the necessary information about reaching the most productive parts of these Fens, and the routes and other locomotive appliances which may be most convenient, and the names and addresses of the persons to whom they will have to apply.

I fully agree with your correspondent that Norwich is the best and the most central locality in the county. Beccles, in Suffolk, will be another good centre for the collector. From both of these places he will find a great variety of localities, rich in novelties and easily accessible. I am, etc.,

ALIQUIS.

45, *Frith Street, Soho Square, London.*

Note.—In justice to our Yarmouth correspondent who supplied the articles on East Anglian Botany, it should be stated that he has no real doubt about *Lepidium latifolium* being a native of all the three East Anglian counties, Essex, Suffolk, and Norfolk; nor that anybody could mistake or confound the two species, *L. latifolium* and *L. ruderale*. But after all, the very best botanist might by inadvertence write the one when he meant to write the other.

The other two doubtful species, viz. *Frankenia lævis* and *Stellaria nemorum*, are not so easily disentangled from the confusion in which our excellent correspondents have involved them.

Frankenia lævis was not to be found easily or plentifully about Yarmouth at the period of the publication of Paget's Flora, say twenty years ago; or if it had, it would have been recorded in that work as still to be found there.

In the 'Phytologist,' vol. vi. p. 227, this species is stated to be "abundant in salt-marshes on Breydon Water, near Yarmouth, and all over the marshes at Caistor." This is a flat contradiction to what our correspondent saw in July, 1862, and we must leave the matter to be settled between those two learned pundits. The one says that the plant is ABUNDANT on the shores of Breydon, and all over Caistor marshes; the latter asserts that it is so far from being abundant that it is not there at all; not a trace of it was to be detected on either of the assigned localities. Salt-marshes are not the usual localities of this plant, which rather prefers the sand or sandy shingle, or overhanging banks close by the sea.

Next, *Stellaria nemorum* was never recorded as a Norfolk plant prior to 1861, when it was entered on the authority of our most estimable Aldeby correspondent. That this latter-named plant does not grow in the many places above mentioned, our Yarmouth correspondent will not aver, for he has never been there to look for it. But an inveterate sceptic would surmise that probably *Cerastium aquaticum* was mistaken for it. This plant is not so unlikely to be confounded with its rarer and more northern cousin as the two *Lepidiums*.

The Editor does not, and ought not to doubt the fidelity and accuracy of either of his Norfolk correspondents; for if he did, all confidence in testimony would be shaken; but he cannot refrain from stating that his other correspondent botanized about the North Battery on Yarmouth Denes, and saw all the plants with which *Stellaria nemorum* is said to be associated, without seeing the plant in question.

Our correspondent's assertion that he intended only to enter in his list the rarer plants of the seashores and salt-marshes, must be somewhat modified when it is considered that he enters *Galium verum* and *Sium angustifolium*, plants which are quite as common, or commoner in most localities, than are the two species *Lepidium ruderale* and *Glaux maritima*.

ROMAN OATS ON ENGLISH FARMS.

By James Binks.

In a field on a farm occupied by Mr. Binks, at Pepper Moor, near Alnwick, some ancient encampments long existed which tradition ascribed to the Romans. The lapse of time, and the spirit of agricultural improvement, gradually obliterated almost every trace of them; and about a year ago, the last of the whins, which time out of mind had covered the ground where the Roman legionaries had trodden, were cut down, and the land ploughed and sown with barley. When the barley was ready for the sickle, Mr. Binks was astonished to observe several heads of strange-looking oats amongst it. Some of them were unusually tall and strong, with long branching stemlets, whilst others had globular heads, resembling the head of the onion. Mr. Binks collected no less than seventy-five varieties never seen in the district before.

He has sown the seed, and intends to exhibit a collection of them at the next show of the Alnwick Horticultural Society. The place, as it has been conjectured, has been a cavalry camp, and the oats, which were perhaps ripened under other skies, after lying covered with the *débris* of the camps for probably fifteen hundred years, will again shoot into cereal beauty, and may add one or more permanent varieties to the stock of the English farmer.

Mr. Binks has kindly furnished additional particulars in a letter, a portion of which is subjoined. If the varieties, or indeed any one of the varieties of the oats now growing under the superintendence of Mr. Binks, differ from the varieties in cultivation in Great Britain, it will be strong presumptive evidence, and evidence of a most important character, in support of the opinion of those who assert that the seeds of the cultivated cereals retain their vitality for very long periods, when the seeds are placed in conditions favourable to their preservation. Whether the encampment was formed during the Roman occupation of the country or not, is for antiquarians to determine. If the camp was formed during the period of any of the invading inroads which have taken place in England—Roman, Scandinavian, or Saxon,—the fact may be established that, since the period the camp was occupied, the grains of the oat buried in the soil have retained their vitality unimpaired. It is well known that the seed of the wild oat retains its germinating powers for centuries, but there is no instance of the seeds of the cultivated varieties of the oat germinating after a few years.

It is worthy of notice that Mr. Binks can speak to the state of the camp ground for the very long period of sixty-three years; and he writes that it has been covered with whins during that period.

"*Pepper Moor, May* 5, 1861.

"Sir,—The land the oats grew upon is an ancient encampment, enclosed with a mound. The space sown with barley was two acres. I have been on the farm sixty-three years, and I never saw anything on the land but whins. The oats were never sown by me. There were many sorts in the field which neither myself nor any who inspected them ever saw the like of before.

"It is not in my power to send you any samples at this time. as both my friends and myself were anxious to preserve every

oat. I have sown them in a small garden, where I hope to be able to preserve them. I have sown seventy-five varieties. I don't say there is that number of distinct kinds; but often last winter, when examined by eminent farmers, they scarcely could compare two ears together, however much alike, but there was always found some slight difference. There are many sorts in the collection as fine grain as I ever saw, and some were very prolific. I counted one ear for curiosity, and the yield was 161 corns.

"I have sown every kind by itself. They are at this time looking very healthy, although the weather is very cold and frosty. I have been solicited to exhibit samples at the Horticultural Show at Alnwick, which takes place in September. I am, etc.,

"JAMES BINKS."

COLEWORTS, FROM TURNER'S 'HERBALL.'

"There are yit ii kyndes of wyld cole, whereof I fynd no mencion in any wryter. The one is a wonderful great cole; and hath leues thrise as thike as euer I saw any other cole have; it hath whyte floures, and round berryes, like yuy (Ivy), where in the sede is conteyned. This herbe groweth at douer, harde by the see syd. The other kynde of wyld cole groweth euer by water sydes with a leafe indentyd, as rokket is; in taste, smelle, fashione of floure, and sede, lyke unto the gardyne cole. Of these I name in latyne brassicam dobricam, in Englyshe dover cole: because I found it fyrst besyde dover. The second kynde I cal brassicam fluviatilem; and in english 'water kole,' because it groweth euer by water sides."

NOTES OF A BOTANICAL TOUR IN BANFFSHIRE.

(*Continued from p.* 475.)

Refreshed with our repast, we looked more cheerfully at the portion of our journey that yet lay before us. About half was yet to be done. Rain was now at times pouring down in torrents. Still on we toiled, and by-and-by reached hard ground —the granite. Had the afternoon been fair, we might have crossed Ben-na-Bynach, but as the hills were covered with mist, we had to take the route round the base. We spoke little: the

rain had dulled our spirits somewhat. Mile after mile was left behind. The ground was granite, covered with a thin sprinkling of heather, mixed chiefly with Reindeer Moss, and variegated by the Club Mosses (Tods' Tails). The one most common in these parts is one very rare in England—*Lycopodium Selago*. This species grows also on the Knock and on Belrinnes. The other species are *L. clavatum*, *L. alpinum*, and *L. selaginoides*, the smallest of them, and found growing from the sea-level to the tops of the hills. We also met with a few Fir-trees about three feet high. They were struggling for life. The soil was barren; the climate was uncongenial; everything was against them. Yet they were struggling bravely against every disadvantage. They were poor stunted, twisted things—miserable pigmies when compared to their more fortunate brothers, that rise up in their dark-green symmetry and splendour. Yet there was a beauty in them,—the beauty of fighting against adversity, and prevailing. There is an indescribable feeling when we look on beauty in the human form that has been nursed in all the refinements of high-bred life. There is a music in such beauty, and every one who has a heart at all feels that music, and delights in it, and is refined and cheered by it. But there is also a music, grand and terrible, in the beauty of that man who has gone down to the pit of hard toil for an honest living, or of adversity, or of sorrow, and come out, his frame bent and his face seamed. It is the music of the storm, and one feels the strength rush to the arm, and the heart beats faster, and life looks bright.

By-and-by the river Avon was gained, and we toiled along its banks through broken peat-bogs—the most fatiguing part of our journey. At last the loch, with Cairngorm on one hand, Ben-Main on the other, and Ben-Macdhui in front, burst upon us. It was a wild and wondrous sight. Evening was gathering fast; heavy clouds were rolling along the hills, and the sky was one mass of black. Heaven and earth seemed to meet. The streams were tumbling in white foam over the precipices, as if they were poured out of the hands of the storm-spirit. The loch lay calm below, fringed with yellowish-red sand, in some parts of a light blue, in the shallow parts of dark blue, almost black in the deeper parts. All was dark except the foaming torrents and the patches of snow on the hillsides. The wind was howling at times down the gullies, at other times there was not a breath;

the rain was falling heavily. Every sound was dead at times but the rush of the waters. It was like the noise of the sea in a storm—deep calling unto deep. At last the "Shelter Stone" was reached, and we laid ourselves to rest on a scanty bed of heather, and were soon asleep. Morning dawned gloomily, and having resolved to return to Tomintoul at once, we breakfasted, and then fell to and burned our bed. We had qualms of conscience in doing so, because other travellers might arrive in a storm, and then they would have no bed at all. But adversity often makes us selfish. We returned by the Cairngorm side of the loch, and this is the side the traveller should take for reaching the "Shelter Stone" with most ease when he comes from Tomintoul. The morning was calm, the hills were cleared of mist, the sky was covered with clouds. The streams from the hills were smaller than when we reached the loch the night before. Still they were pouring down through the masses of broken stones, their waters clear as crystal and cold as ice. Not a sound was to be heard but the noise of many years, hastening back to their parent sea. The hills stood calm in their mighty grandeur, here flushed with a bloom of heather, there throwing up their bare ribs, crusted over with Lichens (for nature here, as elsewhere, "abhors a vacuum"), there broken into splinters, and the masses heaped together in every variety of form,—

> "Crags, knolls, and mounds, confusedly hurled,
> The fragments of an earlier world."

Such a lonely scene calmed and cheered the heart.

Our route lay over a ridge of the Cairngorm range, and in passing along we noticed among the plants formerly spoken of, a beautiful little Willow, *Salix herbacea*. It grows only on the hills, and at considerable elevations. Among the Ferns we observed *Lastrea Oreopteris* (Mountain Shield-fern). On the higher ground *Carex rigida* makes its appearance, as also *Luzula spicata* (Spiked Hairy Rush), a genus of plants resembling the Grasses. Several other species grow in the county,—*L. sylvatica*, *L. campestris*, and *L. pilosa*. The generic name *Luzula* is derived from the Italian word *lucciola*, a glowworm, from *lucco*, to shine, and this idea has its origin in the following way. The leaves are fringed with long hairs, and these, when carrying a globule of dew each on its tip, glittering in the sun, suggested the name of 'glowworm plant' to the poetic Italian.

Having reached the top of the ridge, we took our bearings, and made for the top of Ben-na-Bynach. This mountain is composed of red granite, and reaches the height of 3530 feet above the sea-level. A small stream flows between it and the Cairngorm range, over a kind of clay-slate rock. On its banks grow *Gnaphalium supinum* (Dwarf Cudweed) and *Polypodium Phegopteris,* the latter in small quantity. The top was soon reached, and there were found two plants not met with before—*Silene acaulis* and *Azalea procumbens. S. acaulis* belongs to the Chickweed family. It has little or no stem, and hence its specific name. The flower is purple or white, upon solitary stalks. Another species grows by the seaside. *S. maritima* (Sea Campion), a large plant with white flowers, very unlike its brother of the mountain. *Azalea* is of the Heath family, remarkable for the beauty of their flowers. Some of them have poisonous and narcotic qualities. Though the genus *Azalea* is numerous in all parts of the world, in Britain there is but this species. The Rhododendrons are merged in this family.

From Ben-na-Bynach we looked down on the whole length of our journey, over one wide waste of greyish Heath. It was a lonely scene. In the distance we saw our bothie, and we made for it, and again acted landlord for ourselves. As evening came down, we reached Tomintoul, and Miss Smith did everything to make us comfortable. Our drenching was soon forgotten. Next day (Thursday), it rained incessantly, and our journey had to be broken off. Yet, before starting for Dufftown in the afternoon, we made an inroad into Craighalkie, a place described to us by a man travelling on the road as "containin' a' kin's o' flowers that grows o' the face o' the earth." Within the space of half an hour, we had collected *Gymnadenia conopsea, Epipactis latifolia* (very rare), *Listera ovata, Primula veris, Pimpinella Saxifraga, Saxifraga aizoides, Sanicula europæa, Vicia sylvatica, Origanum vulgare* (Marjoram), *Calamintha Clinopodium* (wild Basil); and of Grasses, *Melica nutans;* and of Ferns, *Asplenium Ruta-muraria* (Wall-rue). We now started for Dufftown. It did not cease raining till we reached our destination. Next morning (Friday), we took train for Banff, which we reached in the forenoon. We were unfortunate in the weather, but we made the best of it, and the readers of the Journal have now the fruits.

Reviews.

Un Coup d'Œil sur la Florule des Environs de Han-sur-Lesse. Par François Crépin, Membre de la Société Royale de Botanique de Belgique.

This district of the kingdom of Belgium, in the neighbourhood of Rochefort, has been accurately investigated by M. Crépin, whose botanical labours have already enriched the literature of his native land, and also considerably increased our acquaintance with Belgian plants.

The small *brochure* of which the title is given as a heading to this article, contains only a couple of sheets of octavo, thirty-two pages, and yet it tells us succinctly what are the topographical, geological, and botanical characteristics of this not extensive tract. The surface, as in most calcareous countries, is very uneven, having many scars or rocks elevated above the soil, from two hundred to three hundred feet. The highest altitude may be about eight hundred feet above the level of the Meuse.

"About the end of March, or at the beginning of April," our author writes, "the hills and sunny banks are yellow or blue with the thousands of spikes of *Carex humilis* and *C. montana*, and of *Sesleria cœrulea*, species which constitute the turf; and this is mixed here and there with the pretty cups of *Anemone Pulsatilla*, soon replaced by the long feathery processes of their fruit. At the same period appear *Thlaspi montanum*, with masses or patches of flowerets which emulate the whiteness of April snows. By degrees the little coronals of *Hippocrepis comosa* appear, like golden chaplets fitted for the tiny heads of some of Queen Mab's handsome retinue. *Fragaria collina*, which produces delicious fruit, the grand *Geranium sanguineum*, *Veronica prostrata*, *Globularia vulgaris*, and *Cerastium brachypetalum*, help to beautify the scene."

About the end of May, and in the first half of June, M. Crépin continues, the flora is diversified with *Polygala comosa*, a species very distinct from *P. vulgaris*, also with *Brunella* (Prunella) *alba*, quite as remote from *B. vulgaris;* here is also *Lactuca perennis*, *Phalangium Liliago*, *Polygonatum vulgare*, *Melica nutans*, and *Rosa pimpinellifolia*, the smallest and the most elegant of our Roses.

From the 15th to the 30th of June, the vegetable carpet is still

further enriched by the following Orchids, viz. *O. muscifera, O. apifera,* and *O. arachnites,* and the rare *O. Simia; Rosa coronata, R. sepium, Trifolium montanum, Verbascum Lychnitis, Campanula glomerata, C. persicæfolia, Stachys recta, Allium sphærocephalum,* the very rare *Avena tenuis,* the humble *Festuca rigida,* and *Botrychium Lunaria.*

In the beginning of July the spring flowers are replaced by those of summer, a rather meagre collection on these open plains and slopes, now scorched by the solar heat. The most remarkable species are *Hypericum montanum, Althæa hirsuta, Bupleurum falcatum, Libanotis montana, Gentiana cruciata, Digitalis lutea, Serratula tinctoria, Podospermum laciniatum, Melica ciliata.*

In the month of September the only fresh accession to the scanty flora is a profusion of *Linosyris vulgaris* and *Gentiana germanica* (*G. Amarella ?*).

The flora of the rocks and rocky *débris* is, in addition to several of the above-mentioned species, *Thlaspi erraticum, Arabis brassicæformis, Cardamine impatiens, Turritis glabra, Alyssum calycinum, Cotoneaster vulgaris, Veronica prostrata, Stachys alpina* and *S. recta, Hieracium fagicolum, Rumex scutatus, Daphne Mezereum, Polypodium calcareum, P. Dryopteris,* etc.

The following grow in groves and thickets, in addition to several of the before-said, viz. *Geranium lucidum, Malus acerba* (Crab), *Sorbus Torminalis, S. Aria, Sambucus racemosa, Dipsacus pilosus, Cirsium lanceolatum* var. *nemorale, Lappa pubens, Ornithogalum sulphureum, Loroglossum hircinum, Orchis fusca, O. Simia, Cephalanthera ensifolia, Carex polyrrhiza,* etc.

The following plants are most common in the woods, viz. *Anemone ranunculoides, Aconitum Lycoctonum, Actæa spicata, Stellaria nemorum, Impatiens Noli-me-tangere, Acer platanoides, Monotropa Hyopithys, Corydalis solida, Dentaria bulbifera, Ribes rubrum, Chrysosplenium alternifolium, Pulmonaria tuberosa, Atropa Belladonna, Lathræa Squamaria,* and many other species already noted under the preceding divisions.

The meadow plants are *Polygala comosa, Polygonum Bistorta, Gagea lutea, Trifolium ochroleucum, Fragaria collina, Scorzonera humilis, Orchis coriophora, O. ustulata, Gymnadenia viridis, Carex tomentosa, C. hornschuchiana, Eleocharis uniglumis, Crepis paludosa, Epipactis palustris, Poa serotina,* etc.

The rarer agrarial species are *Myosurus minimus, Fumaria Vaillantii, Gagea arvensis, Adonis æstivalis, Gypsophila muralis, Spergularia segetalis, Papaver Lecoqii, Erysimum orientale, Camelina sylvestris, Lathyrus tuberosus, L. hirsutus, L. Nissolia, L. Aphaca, Lythrum hyssopifolium, Bupleurum rotundifolium, Carum Bulbocastanum, Orlaya grandiflora, Turgenia latifolia, Centunculus minimus, Orobanche Picridis, Stachys annua, Linaria arvensis, Filago neglecta, Barkhausia taraxacifolia, Euphorbia platyphylla, Polycnemum arvense, Ornithogalum umbellatum, Bromus arduennensis.*

The following grow in rivers or ponds, or near water, or in inundated places, *Limosella aquatica, Scrophularia Ehrharti, Mentha rubra, Salix seringiana, S. rubra, Triglochin palustre, Cyperus fuscus, Leersia oryzoides, Ranunculus trichophyllus, R. fluitans, Myriophyllum alterniflorum,* and others already mentioned.

Upwards of thirty of the plants in this little tract are quite foreign to the flora of Britain, and about as many of them are either very rare plants on this side of the German Sea, or they are suspected aliens or certainly introduced species. The following list will show both the plants that are absent here and those common to both countries. *Note.*—The former are in italics, the latter in the common character.

Gypsophila muralis.	Gentiana germanica.	*Ulmus effusa.*
Spergularia segetalis.	*Pulmonaria tuberosa.*	*Salix seringiana.*
Malva Alcea.	Verbascum thapsiforme.	*Ornithogalum sulphureum.*
Polygala comosa.	*Veronica prostrata.*	Loroglossum hircinum.
Papaver Lecoqii.	*Linaria arvensis.*	Orchis Simia.
Arabis brassicæformis.	Scrophularia Ehrharti.	Orchis incarnata.
Camelina sylvestris.	Orobanche Picridis.	*Orchis coriophora.*
Thlaspi erraticum.	*Stachys alpina.*	*Cephalanthera pallens.*
Thlaspi neglectum.	Stachys annua.	*Epipactis atrorubens.*
Trifolium montanum.	*Stachys recta.*	Epipactis palustris.
Trifolium ochroleucum.	Stachys ambigua.	*Carex polyrrhiza.*
Lathyrus hirsutus.	*Sambucus racemosa.*	Carex hornschuchiana.
Fragaria elatior.	*Galium sylvaticum.*	Eleocharis uniglumis.
Rosa coronata.	*Cirsium oleraceum.*	*Scirpus compressus.*
Rosa sepium.	Cirsium lanceolatum.	*Avena tenuis.*
Circæa intermedia.	Lappa pubens.	*Melica ciliata.*
Bupleurum falcatum.	*Filago neglecta.*	Festuca rigida.
Carum Bulbocastanum.	Linosyris vulgaris.	*Poa serotina.*
Turgenia latifolia.	*Scorzonera humilis.*	*Bromus arduennensis.*
Centunculus minimus.	*Hieracium fagicolum.*	Anemone ranunculoides.
Gentiana cruciata.	*Polycnemum arvense.*	Actæa spicata.

This Florula of Han is a very agreeable addition to our

botanical literature, and the Belgian botanists may well be congratulated on their possession and appreciation of its excellent author.

The British authors on local botany might imitate the example of their Continental *confrère,* and classify their phytogeographical monographs, as M. Crépin has divided his *Florula,* into spring, summer, and autumnal plants,—species that inhabit the pastures, the woods, the rocks, the marshes, and rivers.

Petites Annotations à la Flore de la Belgique. Par François Crépin. Premier Fragment.

The following three species, new to the Belgian flora, are described and localized in a half-sheet, issued last year, 1862, viz. *Polygala calcarea,* F. Schultz; Gren. and Godr. Fl. Fr. i. 196, Coss. and Germ. Atlas, t. vii. f. 4–6.

This species, our author observes, page 2, is distinguished from *P. vulgaris,* though many authors unite them, possibly without cause, by the following characteristic marks:—1st, by the lower leaves being arranged in rosettes, and in being longer than the upper leaves; 2nd, by the nervation of the wings (calyx); 3rd, by the elongated lateral lobes of the aril. A comparison of the species or form which grows on our chalk-downs, with that of our moist meadows and pastures, is the surest means of settling this question. The characters given by M. Crépin, though not all very obvious, yet if constant will be sufficient to separate the two forms or species. This is a more satisfactory way of proceeding than a comparison of the descriptions with each other, or even of the examples with the descriptions.

On page 3 there is a long note or observation on the three kindred species or forms of *Veronica agrestis, V. polita,* and *V. opaca.* The latter has not hitherto been observed in England. M. Crépin believes that they present characters which will keep them distinct. This discriminative observer lays stress for distinguishing the last-mentioned species, on the equal dimensions, both in length and breadth, of the leaves, also on the elliptical sepals not overlapping at the base; on the insertion of the stamens, on the depth and width of the notch in the ovary, the length of the style, etc. A careful examination of numerous

specimens may be rewarded by the discovery of *V. Apaca* in England.

Scirpus carinatus, Sm., is another recent discovery made by our author. From his remarks on this species, compared with the kindred forms of *S. lacustris*, and *S. glaucus*, or *S. Rothii*, he does not appear to be very sanguine about the distinctness of these species.

Spartina stricta is another new discovery in Belgium; also *Polystichum cristatum*, Roth, and *Lycopodium Chamæcyparissias*. Botanists are requested to overhaul their stores of *L. complanatum*. It is worth while to look at our hoards of *L. alpinum*, and try to discover among them *L. Chamæcyparissias*, and *L. complanatum*, and *L. alpinum*,—or more than two single gentlemen rolled into one, as the comedian told us in our juvenile days.

Elodea canadensis (*Anacharis*, Bab.). M. Crépin has very obligingly sent us the result of a careful study of the above recent introduction into (we should not write British, but) European waters. From this succinct memoir, our author tells us that it was seen for the first time in Europe by John New, (any relation of our excellent correspondent, Wm. New, curator of the botanical establishment of Bangalore?) in a piece of water at Warringtown, Ireland. Possibly some of our readers, whose geography is more extensive and of a more recent date than than ours, will tell us where this place is.

British botanists know that it was discovered in the Grand Junction Canal by a fair botanist, and subsequently, by the late Dr. Johnston, in a pond at Dunse Castle, Berwickshire, at a considerable elevation, whence it descended the White Adder, which it filled; and it now threatens to fill the Tweed.

M. Crépin does not state when he first observed this pest in Belgium, but merely informs us that it was detected by one of the gardeners in the Botanic Gardens of Brussels, in 1860. In Utrecht, Holland, it was seen in 1861.

The means of its introduction into Belgium are as mysterious as those whereby it was conveyed to Scotland, and established in the lakes on the spurs of the Cheviots, near Dunse.

Our author intimates that its dispersion has been promoted (*facilitée*) by the floating wood. It might have reached the Tweed from the Cheviots on chips or bits of trees, but it could

not have crossed the Atlantic and scaled and descended the Scottish mountains on such craft, if its original home be the Canadas. It could not have reached the ponds of Clapham and Wandsworth on the wooden floats, for there are none, nor any water to float them. Have any geographical botanists investigated the question of its nativity? Has it a home, or is it like the wise philosopher described by Horace, who, when overtaken by the storm, entered wherever he could find an open door, "*ubi tempestas rapit deferor hospes.*" Where was it first seen?—in Ireland, or Scotland, or Canada? Who can tell whether it be a subject of the ancient Scandinavian floral kingdom, or whether it existed in the glacial period? Is it a new species,—one of Dr. Darwin's *protégés?* We can answer for its ability to keep its own in the great struggle for existence. It is not very particular about its quarters. Its property is to exterminate every competitor in the life-battle; not to select any of the good qualities to be found in any of its contemporaries, but to kill them all outright.

M. Crépin's paper professes to be a *rédaction* or adaptation of Mr. Professor Babington's description of this troublesome visitant, a paper which was published in Annals and Mag. of Nat. Hist., 1858, p. 81, and Ann. Sc. Nat., 1849, t. 11, p. 66; and of Dr. Caspary's article "Die Hydrilleen," in 'Jahrbücher für Wissenschaftliche Botanik,' 1858, pp. 378, 513; Ann. Sc. Nat., 1858, t. ix. p. 323, etc.

Our author's paper may be considered as a more detailed account, or as an amended description of this curious and strange plant.

M. Crépin observes, page 9, that Professor Babington and Mr. Salter (*qu.* the late Dr. Bell Salter?) failed to describe the fourth leaf, in the axil out of which the flower is developed, and also states that Dr. Caspary omits it. "In all the works which I have seen," writes M. Crépin, "the prefoliation and the prefloration (the state of the leaf and flower-buds) are not mentioned. The lower leaf of every verticil (whorl) slightly overlaps the borders of its right and left associates; the latter in its turn slightly overlaps the right hand-one. The third leaf (the whorl rarely consists of more than three leaves) has both its borders slightly overlapped. The flower-bud is, according to this minute observer and scrupulous describer, also imbricated; or the segments of the perianth overlap each other, as above related?"

Practical Hints on the Culture and Management of Rock Plants. By James Lothian, of Campbeltown, Argyleshire.

This pretty little volume, as our obliging correspondent informs us by private letter, was printed or published by W. H. Lizars, Edinburgh, some years ago. As the author has kindly presented it to the editor of the 'Phytologist,' the latter believes that it will be acceptable to many readers who admire rock plants, but who may neither know what plants to select for a rockery nor how to treat them.

This manual, by a practical cultivator and botanist, will give them all necessary instruction on both these points. In a sensible brief introduction, Mr. Lothian truly observes, that "a taste for flowers universally prevails among the poor as well as the rich, from the highest peer in the land down to the humble cottager, who possesses a small patch of ground around his dwelling.

"The alpine or rock-garden should consist of a rockery, a pond, or piece of water of any size, and at one end a small artificial bog, for plants requiring this mode of treatment.

"It is necessary," the author continues, "to divide the subject into two parts: 1st, situation and formation of the rockery, pond, and bog, general arrangement of the plants on the same, etc.; 2ndly, culture and general management of the collection, etc."

After discussing these points, there follow directions for the formation of the rockery, the pond, the paths, the figure, dimensions, situation, etc., subsequently the materials most suitable for the different parts, and for the various kinds of plants which are to be cultivated, either among the stones, or in the pond, or along the margins of the walk, in the bog adjoining, etc.

For information on these separate heads, the reader of this notice is referred to the work itself, which, although now out of print, probably a second edition may be ready ere this announcement appear before our readears.

This part of the book is illustrated by four very pretty cuts, showing the shapes, dispositions, etc., of the several constituents of a rockery.

Those who are interested in the collection, preservation, and enjoyment of a collection of alpine plants, may consult this as a safe and practical guide.

This treatment of alpines is twofold:—

1st. The management of the hardier sorts in winter, spring, summer, and autumn. The hardier kinds are Pinks, Saxifrages, and other succulent or half-succulent species, *Azaleas, Andromedas,* and others which need not be mentioned here as there is a list of them in Mr. Lothian's treatise.

2nd. On the treatment of the tenderer and rarer kinds of alpines.

In an appendix the author has entered a list of plants suitable for the rockery, pond, etc. This list amounts to upwards of a thousand, and it might easily be enlarged. It will be easy for the amateur to make a selection from the Nurseries, where such plants are kept for sale. The neatest, the loveliest, and the best adapted for this purpose will be found among the Primrose family, the *Crucifers, Campanulas, Leguminifers* (*Astragalus,* etc.); the Crowfoot tribe (Anemones, Ranunculuses, etc.); Thrift, Gentianas, Pulmonarias, and other genera and species of the Order *Asperifolia;* Pinks, Silenes, and other members of *Dianthaceæ;* several Veronicas, and a few composite plants, Orchids, etc. The Pinguiculas, and some exotic species of *Pedicularis* are very suitable as bog plants, and to these many Ferns may be added.

The American shrubs, affording both shelter and shade as well as ornament, are indispensable in any extensive or permanent collection of this nature.

It should not be forgotten, that besides the diagrams or cuts for illustration of the rockery, pond, etc., there are handsome coloured drawings of *Azalea procumbens, Dryas octopetala, Menziesia, Andromeda, Asplenium, Woodsia,* etc.

A Catalogue of Stove, Greenhouse, and Hardy Exotic and British Ferns. By A. Stansfield and Sons, Vale Nurseries, Todmordon.

The varieties of British Ferns are daily (it may be said) increasing; for example, the new Ferns, or rather the new and old varieties of *Asplenium Adiantum-nigrum,* are now six; those of *A. marinum* just as many.

The varieties of *Athyrium Filix-fœmina* are as numerous as they are strikingly beautiful. The more recent productions are *Fieldiæ,* one of the most valuable of the recent additions to this

tribe. Of this there is a subvariety, named Pritchard's form, "one of extreme elegance and beauty." "*Athyrium Filix-fœmina grandiceps*, a recently-discovered variety, throws into the shade all the other crested and corymbose forms of the Lady-fern, beautiful as many of them are. Its habit is very dwarf; the terminal tufts or crests of the fronds are very dense, and are frequently several inches in breadth at their rounded tops."

The varieties of *Blechnum Spicant* are now forty-four; and if their prices, as estimated by Messrs. Stansfield,—good judges certainly,—be any proof of their value, they are very scarce, as well as beautiful. Their prices range from 10*s.* 6*d.* to 2*s.* 6*d.*, and the average is from 5*s.* to 7*s.* 6*d.*

Lastrea Filix-mas has now a progeny of more than fifty children, some of them (many of them?) distinguished for their beauty and rarity. But of all the British Ferns, *Scolopendrium vulgare* still sustains its pre-eminence in being the most prolific. Its varieties are now upwards of fourscore.

The hardy exotic and British Ferns named and priced in this list are above eight hundred. This is probably the largest collection in the kingdom.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers to Correspondents, Notes, Queries, etc.

Earliness of the Season.—For some years, our daily and weekly organs of intelligence have supplied their readers with proofs of the extraordinary mildness of the months of the waning year, viz. October, November, and December. Our correspondents have supplied us with several statements about the earliness of the present season, 1863.

Our Warrington correspondent, in a letter dated the 18th February, gives the following information:—"In addition to such plants as Gorse, Daisy, Chickweed, Shepherd's Purse, and other species which are always in flower when the weather is mild, we had in January, *Lychnis diurna*, and in February, *Anthriscus sylvestris*, *Chrysosplenium oppositifolium*, *Mercurialis perennis* in bloom, while the hedges are already getting their verdant vernal livery. Let us hope that this precocity may not be productive of subsequent premature decline."

A few days later, the same kind correspondent sent another longer list, as follows:—"In addition to our early-flowering plants already sent, I may mention as now in flower, *Potentilla Fragariastrum*, *Stellaria media* in fruit, *Senecio vulgaris*, *Eriophorum vaginatum*, *Primula vulgaris*, and *Galanthus nivalis*, in a dingle near the ruins of Rock Savage Castle, Cheshire. Did I mention *Lamium purpureum* as growing under the walls of

the above ruins? This was a week ago, and some of the corollas had fallen. As I have just returned from the Moss, I enclose a bit of *Andromeda polifolia*, to show you its state. *Ranunculus Ficaria* is also in flower."

Our Preston correspondent wrote the following on the 21st February:—"As a proof of the earliness of the season here, I enclose two specimens of *Gagea lutea*, gathered by myself, in our only Preston habitat (this afternoon, Feb. 21st). I have observed the plant for eight seasons in succession in the habitat referred to, and it is earlier in blossoming this year, by at least a month, than I have ever yet known it. I have observed the common Primrose in blossom for several weeks, and a fortnight ago I observed the Snowdrop, apparently wild, in great abundance and in full blossom, in a wood about four miles from Preston. To-day I have gathered, for the first time this year, *Ranunculus Ficaria*."

About London the Mezereon has been in blossom for at least a week (Feb. 28th), the *Pyrus japonica* for probably as long, and the tips of the buds of the Almond-tree are assuming their pink colour.

Mr. Britten has very kindly sent a communication about the locality of *Anemone apennina*. Would he be so good, either in person or with the help of his Wimbledon friends, as to give us a guide to its locale in Wimbledon Woods?

A good and accessible station for *Anemone ranunculoides* is wanted.

To the author of the "Letters from Argyleshire," our most grateful thanks are due, and are hereby tendered. It is hoped that the printer will find room for some more of his communications in our next month's issue.

Our obliging correspondent at Campbeltown, Argyleshire, has sent a newspaper, the 'Argyleshire Herald,' in which the locality of a rare Fern is announced, viz. *Asplenium Ruta-maria*, growing at Kildalloig, in that district (*Kintyre*). Will Mr. L. be so kind as to tell us on what medium this rare Fern grows,—on a wall, roof, or on a rock? We should be obliged to him for any information about the localities of the much rarer *Adiantum Capillus-Veneris*, the true Maiden-hair Fern, on the western coasts of Scotland.

Our estimable correspondent who lives at Rouen has sent us seed of a *Verbascum*, which, with the foliage of *V. Lychnitis*, has flowers of a deep-yellow colour, and larger than those of *V. thapsiforme*.

To "E. M. A.," the same correspondent. We have received answers to the following queries, viz.,—"Are there any localities for *Villarsia nymphæoides* near London?" It grew not long ago above Hammersmith Bridge, on the left-hand side of the towing-path; it probably grows there still. Also between Shepperton and Walton Bridge, in several places. In the latter places it is still to be found.

"At page 337 of the November number of the 'Phytologist' for 1862, you ask—'Where is the natural Kentish locality of *Buxus sempevirens*?' Abundance of Box grows at Box Bush, in the parish of Barming, near

Maidstone; it is in the wood, above the house at Barngit, and in a line between that house and the lane that goes from Barming Heath through the wood to the 'North Pole.' The Box has been there many years, but it is probable it may have been planted as a cover for game, as it is not more than a quarter of a mile from the park palings of Teston Court. It is sometimes gathered and dried by the natives for some use of which I am ignorant."

Carr Hill, Mossley, near Ashton-under-Lyne,
Lancashire, March 2nd, 1863.

To the Editor of the 'Phytologist.'

Sir,—Will you have the kindness to allow me the privilege of appealing to the numerous readers of your valuable journal on behalf of the members of our Botanic Society at Mossley, who, through the stopping of our mills for cotton, are now undergoing the most severe privations. I need not tell you how long the cotton famine has existed, nor of the dreadful ordeal through which we have so far passed, as the various newspapers have made you acquainted with these things in a great measure. If some of our wealthy friends, in those parts of the country, where the stagnation of trade has not reached, will kindly lend us their assistance, we shall feel exceedingly grateful. Anything they may have to spare, either in money or clothing, will be very thankfully received, and shall be glad to make any return that lies in our power. Parties wishing for specimens of such things as grow within 20 miles of Mossley, shall be served to the best of our power. We have got a very fair share of Mosses, and Ferns: among the latter, *Botrychium Lunaria*, *Ophioglossum vulgatum*, *Cystoperis fragilis*, *C. dentata*, and *Polypodium vulgaris*, *P. Phegopteris*, *P. Dryopteris*, *P. calcareum*, *Asplenium ruta-muraria*, *A. Trichomanes*, etc. These and others grow in such profusion, that as your Barmouth correspondent observes, there is no fear of them being destroyed. Parties willing to contribute anything to our assistance, or in want of any specimens we can furnish, will please send to the above address, and they will be cheerfully attended to, or any gentleman coming our way will be accompanied to any part of our neighbourhood. Fully relying on the kindness of the brethren of our craft, I remain, on behalf of the members of the Mossley Botanic Society, yours truly,

JAMES WALKER, *Corr. Member.*

Reference: D. H. Buckley, Esq., J. P., of Carr Hill.

ANEMONE APENNINA.

It may be interesting to your readers to learn that *Anemone apennina* is an inhabitant of the North Wolds of Lincolnshire, whence I received specimens at the end of April last. Its locality is in Brocklesby Park, the seat of the Earl of Yarborough, where it covers several acres of ground in the immediate vicinity of the mausoleum, and is thoroughly established. Brocklesby Park is near the small town of Caistor, in the neighbourhood of which several rare plants are to be found, *e.g. Drosera longifolia*, *Corydalis solida*, *Oxalis stricta*, *Trifolium arvense*, *Spiræa Filipendula*, *S. salicifolia*, *Epilobium angustifolium*, *Gentiana Pneumonanthe*, *Atropa Belladonna*, *Linaria minor*, *Galeopsis versicolor*, *Pinguicula vulgaris*, *Anagallis*

tenella, *Alisma ranunculoides*, and very many others. The Rector of Caistor, the Rev. H. Maclean, possesses an extensive and handsome fernery; his extreme kindness to visitors I can vouch for, having myself received proofs of it. J. Britten.

A New Substitute for Cotton.

(*From the* '*Independence*,' *Nov.* 8, 1862.)

The Governor-General of Canada has communicated to the Botanical Society specimens and seeds of a new fibre-plant from the Rocky Mountains. This plant, commonly known as the Silk-weed, has been determined to be an *Asclepias*, and is now under experiment in the Botanic Garden at Kensington, C.W. Dr. Hart, the discoverer of the plant, in a communication addressed to Lord Monck, explaining the mode of cultivation of the plant, says: "Its fibre or staple is longer and firmer than cotton, and of a gloss no silk or satin can match. During ten years I have planted cotton in Yazoo, Mississippi Valley. My brand was sought by the Liverpool and Manchester speculator, and brought the highest prices; and on that practical experience I ground my convictions with regard to the Silk-weed." The 'Kingston Whig,' in recommending its cultivation in Canada, says: "Who knows but this fibre-plant, Silk-weed, or Asclepias, may, from its hardiness, glossiness, or fibrous texture, yet take the place of cotton, which could not grow in Canada, lying so far north as it does. But this plant, borne from the heights of the Rocky Mountains, may find a more congenial home in the less rigorous climate of Canada."

To Guernsey Visitants.

Those who intend going to the Channel Islands, either for a holiday, short excursion, or as permanent residents, should procure a small tract of about thirty pages, on the climate, productions, statistics, economics, etc., of Guernsey and Sark.

A more detailed notice of this useful handbook will appear in some subsequent number. It is entitled, 'A Handbook for Invalids, Geologists, Naturalists, Archæologists, and others.' S. Barbet, Printer and Publisher, 25, High Street, Guernsey. Price 6*d*.

Communications have been received from

John Sim; W. Winter; T. B. Flower; James Walker; J. S. M.; Sidney Beisly; W. Pamplin; William Mitten; Charles Howie; Rev. W. R. Barnard; W. T. Dyer; G. Wolsey; W. P.; E. M. Attwood; F. Crépin.

RECEIVED FOR REVIEW.

The Banffshire Journal.

Notes on Books.

The Canadian Naturalist and Geologist.

The Flora of Wiltshire, No. 6, *continued.*

Guernsey, Sark, etc. A Handbook for Invalids, Geologists, Naturalists, etc.

Notes sur quelques Plantes Rares ou Critiques de la Belgique. Troisième Fascicle.

SEAWEEDS FOUND AT BRIGHTON.

List of Marine Algæ found at Brighton and in the Vicinity, with Observations on a few of the most remarkable Plants. By Mrs. Merrifield.

The two principal features of the seacoast at Brighton are its extreme shallowness and the absence of freshwater streams; each of these conditions has its influence on the marine botany of the district.

Such is the shallowness of the coast, that at the distance of three miles there are only six fathoms water; at six miles there are eleven or twelve fathoms, while off Worthing, to the west of Brighton, there are only nine or ten fathoms. Extensive beds of seaweeds exist between Shoreham and Worthing, in from three to four fathoms water, and also south of Worthing, four or five miles from shore; the adjacent soundings being five fathoms. Along the shore lie, at various distances, groups of rocks covered with Algæ, whose position can be recognized in calm, clear weather, at extreme low water, by the purple hue which they (apparently) communicate to the water above them. Algologists will understand that this shallowness of the coast prevents (except to the dredger) access to the rocks on which many of the finer seaweeds grow. For the supply of these we are, therefore, indebted to the tidal influence, and are obliged to be contented with such as are washed ashore; the condition of such waifs being of course dependent on the length of time they have been exposed to the influence of sun and air.

Immediately adjoining the beach of Brighton are low, flat rocks, on which grow *Enteromorpha intestinalis* and *E. compressa, Ulvæ, Porphyræ,* and *Cladophoræ, Polysiphonia nigrescens, P. atro-rubescens, Ceramium rubrum, Rhodymenia palmata, Scinaia furcellata, Bryopsis plumosa, Taonia atomaria, Chorda filum, C. lomentaria,* and *Laminaria Phyllitis.* At Black Rock, on the eastward of Brighton, the water deepens, and in addition to the above-mentioned plants may be gathered *Griffithsia setacea, Gracilaria confervoides, Ceramium Deslongchampsii, Gymnogongrus Norvegicus, G. Griffithsiæ, Ahnfeldtia plicata, Cladostephus spongiosus, Gelidium corneum* var. *crinale* and var. *clavatum, Spha-*

celaria radicans, *Cordylecladia erecta*, *Laminaria saccharina* and *L. digitata*, *Fucus serratus*, and *Desmarestia aculeata*.

No freshwater stream runs into the sea within five or six miles of Brighton. At this distance, on the west, the Adur flows through Shoreham Harbour, where the tide rises about eighteen feet. On the east there is no fresh water nearer than Newhaven Harbour (nine miles off), which is the mouth of the river Ouse. The saltwater ditches and marshes communicating with these estuaries supply weeds peculiar to such situations.

The following list of Algæ, in which I have been careful to include those only which I have myself found, or which I have seen and know to have been collected on this coast, will show that we have in this locality a fair share of these beautiful productions of nature. The number of British species, exclusive of the varieties, included in this list, amount to 192. The list comprises two plants new to England. On these I have to make a few observations.

The first-mentioned Alga is pronounced by Dr. Harvey to be *almost* identical with *Dasya punicea*, from which it is said to differ only in the length of the articulations of the *ramuli* (small branches). It seems to have been first found by Mrs. Gray, who met with a specimen bearing *stichidia*, at Bognor, in October, 1858. Since that time I have found at Brighton several specimens, with both kinds of fruit. A brief description of the plant will be found in the Appendix to Mrs. Alfred Gatty's recent work on British seaweeds.* As the plant is new to this country, the following more particular description may be acceptable to the reader.

Dasya punicea.

Stem much and irregularly branched, beset with whorls of long, many times dichotomous jointed *ramuli* (branchlets), tapering upwards to a point; articulations 4 to 6 times as long as broad. *Ceramidia* (spore cases) urceolate; stichidia linear-lanceolate, tapering to a fine point.

Dasya punicea, Agardh.

Habitat. Bognor, Mrs. Gray, October, 1858; Brighton, Mrs. Merrifield, July and August, 1859–61.

* 'British Seaweeds,' by Mrs. Alfred Gatty. 4to. Bell and Daldy, London. Dr. Harvey's last classification has been adopted, and this work contains a carefully-compiled "amateurs' synopsis," which will be found extremely useful.

Geographical distribution. Mediterranean.

Description. *Root* a small disk. *Frond* 2 to 5½ inches long; about half a line wide; irregularly much-branched. *Principal branches* widely spreading, especially in the specimens bearing ceramidia, where they are almost at right angles with the main stem; *axils* spreading. The lower part of the stem naked. The lesser branches, which are numerous, are set throughout with *whorls* at intervals of about two diameters of the branches, with very slender, soft, many times dichotomous *ramuli*, tapering to a fine point; the tips of the branches are crowded. *Articulations of ramuli* 4 to 6 times as long as broad. *Ceramidia* sessile, with a narrow cylindrical neck (shorter than in *D. arbuscula*, but of the same shape), spores densely crowded in a spherical mass. *Stichidia* very numerous, borne on the ramuli, narrow, lanceolate, gradually tapering from the middle to an acute apex, straight or gracefully curved, marked with transverse bands at short intervals. Tetraspores numerous, dark-red, contained in the upper divisions of the stichidia. *Colour* a rosy red, frequently varied with more or less of a brownish-yellow tint. Stems brownish. *Substance* tender and gelatinous.

Remarks. In the *form* of the branches the plant is nearer to *D. arbuscula* than any other British species; but it is a larger plant. In specimens bearing ceramidia, the branches are more divaricating than in those with stichidia. The ramuli, which are softer and more flaccid than in any other British species of *Dasya*, are nearer in their form and mode of growth to those of *D. ocellata*. The stichidia also resemble in form those of *D. ocellata*. They are very numerous. Ceramidia are also numerous, but much less so than stichidia; they are sessile, with a narrow cylindrical neck, which is shorter than in *D. arbuscula*, although of the same shape. The spores seem to be ripe early in August; in some of my specimens it may be seen that the drying process has caused them to be discharged from the neck of the capsule.

The plant has not yet been found growing in this country. My specimens, consisting of single fronds, were found floating near the shore at low water. Altogether I must have found from ten to twelve specimens.

Dr. Harvey states that our plant differs from *D. punicea* in the length of the articulations of the ramuli, which in the latter are

short. Mrs. Gatty's work contains a notice of a barren specimen of *Dasya* found by Miss Mary Catlow at St. Aubyn's Bay, Jersey, 1858, which, as Dr. Harvey thinks it may prove a distinct species, has been named provisionally *D. Cattloviæ*. Mrs. Gatty mentions that externally it bears some likeness to the Australian species *D. Gunniana;* but that its characters come nearest to *D. punicea,* though it is a more robust plant. As the specimen found by Miss Catlow was not in fruit, its identity with our plant could not be proved.

The other plant referred to is a PHYLLOPHORA, which Dr. Harvey thinks is a well-marked variety of *P. rubens,* if not a distinct species. The Professor suggests that intermediate specimens should be sought for. At present there are scarcely sufficient data to settle the question. The new variety has the midrib like that of *P. rubens,* which it also resembles in both kinds of fruit, and in colour.

The general outline of the frond is fan-shaped, but it is subject to many variations. Some specimens bear a close resemblance to *Rhodymenia palmata,* for which it might, when not in fruit, be mistaken, were it not for the constant presence of the midrib. Some fronds are finely laciniated, others are broadly fan-shaped, but more or less laciniated at the margin. Others, again, have the crisped margin of *Rhodophyllis bifida* var. *marginifera,* and of some specimens of *P. membranifolia.*

Like *P. rubens,* the new plant is frequently prolific from the upper end of the midrib, never from the extremity of the frond.

The prettiest and best-marked specimens occur in the summer (I think not earlier than August) and in the autumn. They are cast ashore after gales. Later in the year *P. rubens* begins to appear, though sparingly, and some of the specimens found seem to present a mixed appearance, though they may generally be ascribed to *P. rubens.* From January to March, the normal form of the last-named plant abounds in full luxuriance.

I shall conclude these observations with a few remarks on that curious plant *Codium bursa.*

CODIUM BURSA is most common here in the autumnal and winter months, from September to March. I have, however, found it in every month except June and July.

The specimens are generally washed ashore after storms. During the heavy gales which prevailed from the 26th to the

31st of October, 1861, many fronds, considering the general scarceness of the plant, were thrown on the beach. The plant is known to grow both to the east and west of Brighton, but the habitat is seldom accessible to the algologist. A few years ago, Mr. Pike tells me he waded out as far as some *Codium bursa* which he saw growing; the fronds were then about the size of nuts. Being so small, he would not gather them then, hoping to return for them when sufficiently grown. In the meantime heavy gales came on, and loosened and dispersed the plants, and he thinks broke up the habitat. After that, *Codium bursa* was scarce for some time.

Codium bursa grows on chalk rock, on barnacles, mussels, oysters, *Pecten opercularis*, and pebbles. It is generally entangled with *Rytiphlœa pinastroides*, and I have found growing on it young plants of *Sphacelaria Sertularia* and *S. plumosa*,* and also the zoophyte *Sertularia argentea*.

The plant grows sometimes in single fronds; sometimes two, three, and even seven and eight in a group, and adhering to each other; only one of the fronds being immediately attached to the rock. Hence we learn that every part of the frond is prolific. The appearance of one of these *heaped* specimens is somewhat like the figure in the 'Phycologia Britannica' of *Leathesia tuberiformis*, except that the point of attachment is smaller. In no case have I ever seen a specimen with a wide base like the figure of *Codium bursa* in the 'Phycologia.'† The point of attachment is always small. When one frond grows upon another, which is often the case, the junction is formed by interlacing fibres, so strong that it requires some force to separate them.

In form, *Codium bursa* is generally spherical, and always hollow. In young and fresh specimens the substance is thick, firm, and crisp; with age it becomes thinner, and at last an opening is made; hence its name *bursa* (a purse). After exposure, specimens are frequently found collapsed; at other times they are much lacerated, and acquire a flat shape; hence another common appellation, *sea flannel*, which gives a very good idea of the occasional appearance of the plant.

* Now *Chætopteris plumosa*.

† I believe that what appears to constitute the wide base in the figure, is merely a collapsed frond.

In size *Codium bursa* varies considerably. Some specimens are not larger than a nut, others are so large that one found by Mr. Pike, when folded, covered his head, and hung down his back like a "sou'-wester."

The following list of Algæ has been drawn up in accordance with Professor Harvey's last arrangement, as set forth in Mrs. Gatty's new work, before referred to. Some genera, such as *Ceramium, Cladophora,* and *Ulva,* appear to be still unsettled. It is to be hoped that this classification will be final. The changes that are perpetually occurring in botanical arrangement and nomenclature are most puzzling to the student, who has no sooner made himself master of one system of classification than he has to unlearn that, and to learn another.

LIST OF MARINE ALGÆ FOUND AT BRIGHTON, AND IN THE VICINITY.

Explanation of Symbols.—1. Single specimens only. ! Common. !! Very common. R. Rare. R R. Very rare. † Found growing.

Melanospermeæ.

Halidrys siliquosa !!!
Cystoseira granulata. February to April, occasionally found.
Cystoseira fœniculacea. October to end of June, occasionally found.
Cystoseira fibrosa. Principally during winter.
Fucus vesiculosus ! †
Fucus vesiculosus, var. β. spiralis.
Fucus ceranoides R. Sometimes with tips of fronds inflated.
Fucus serratus ! †.
Fucodium nodosum !
Fucodium canaliculatum R.
Himanthalia lorea !
Desmarestia ligulata R.
Desmarestia aculeata !! *Note.*—Students should be aware that the feathery filaments of this and some other plants of this series owe their green colour to decomposition. Their true colour is citrine.
Desmarestia viridis !
Arthocladia villosa ! In some seasons, as in 1861, at others rare.
Sporochnus pedunculatus. Same.
Laminaria digitata !!! †.
Laminaria saccharina !!! †. I gathered at Black Rock a remarkable form of this plant, with another frond growing along the centre, thus becoming trilaminate.
Laminaria Phyllitis ! †. In some seasons.
Chorda filum !!! †. More frequently washed ashore.
Chorda lomentaria.
Cutleria multifida R.
Taonia atomaria ! †.

Dictyota dichotoma R R.
Stilophora rhizodes R. Plentiful in 1861.
Striaria attenuata. Same.
Punctaria plantaginea R. One or two specimens only.
Punctaria tenuissima R. Same.
Asperococcus compressus ! †. In 1861.
Asperococcus Turneri R., but plentiful in August, 1860.
Asperococcus echinatus R. †. Black Rock.
Mesogloia vermicularis R. In 1861 only.
Mesogloia Griffithsiana. Same.
Mesogloia virescens, var. R. In 1860.
Elachista fucicola !
Elachista scutellata !
Elachista velutina !
Myrionema strangulans !
Myrionema Leclancherii !
Cladostephus verticillatus !
Cladostephus spongiosus ! †. Black Rock.
Chætopteris plumosa R. Young plants on *Codium bursa*, and at root of *Laminaria digitata*. The root of *C. plumosa* is described as a disk ; but when growing on *C. bursa* the root consists of straight, articulated, hyaline fibres, which extend vertically downwards through the substance of *C. bursa*, as if to secure a tighter hold.
Sphacelaria Sertularia R. At roots of *Zostera*, and on *Codium bursa*.
Sphacelaria scoparia !
Sphacelaria cirrhosa !
Sphacelaria radicans ! †. Black Rock.
Ectocarpus siliculosus ! ! †.
Ectocarpus fenestratus R R 1.
Ectocarpus fasciculatus.
Ectocarpus Hincksiæ.
Ectocarpus tomentosus.
Ectocarpus pusillus ! R.
Ectocarpus littoralis !
Ectocarpus granulosus ! !
Ectocarpus Mertensii ! ! Rocks below Crescent.

Rhodospermeæ.

Chondria dasyphylla ! †. More frequently washed ashore.
Chondria dasyphylla β. slender variety.
Chondria dasyphylla, var. with recurved ramuli. See 'Phycologia Britannica.'
Chondria tenuissima R. Very fine, with fruit of both kinds.
Rhodomela subfusca †. More frequently washed ashore.
Rytiphlæa pinastroides ! ! !
Polysiphonia formosa ? 1.
Polysiphonia pulvinata R R. June, 1859.
Polysiphonia fibrata, var. fœtidissima. I have found specimens with tetraspores, but never with capsules.
Polysiphonia elongella R.
Polysiphonia elongata ! !

Polysiphonia violacea. Frequent in 1858 and 1859; absent in 1860; rare in 1861.

Polysiphonia Brodiæi 1. June, 1859.

Polysiphonia variegata R R, without fruit.

Polysiphonia nigrescens ! ! ! †. In summer small specimens, delicately pinnated, without fruit, and which become very black in drying, are cast ashore.

Polysiphonia atro-rubescens ! ! ! †.

Polysiphonia fastigiata ! ! !

Polysiphonia byssoides ! ! !

Dasya coccinea ! ! In the early spring, young ramuli may be seen sprouting from old fronds of the preceding year.

Dasya coccinea var. squarrosa.

Dasya punicea? R R. Specimens with both kinds of fruit, July and August, 1859 and 1861.

Laurencia obtusa! In October and November, 1858 and 1859; very scarce since; also in January and March.

Laurencia pinnatifida R R 1. December, 1861, cast ashore, parasitic on *H. lorea*.

Lomentaria ovalis R. Growing parasitically on *H. lorea* in winter. No fruit found.

Lomentaria kaliformis ! ! !

Lomentaria kaliformis, var. β. patens !

Lomentaria kaliformis, var. γ. squarrosa.

Lomentaria reflexa 1. November, 1858.

Champia parvula ! ! !

Wrangelia multifida R. Occasionally very rare.

Wrangelia multifida, var. β. pilifera, R R.

Naccaria Wiggii ! ! ! Very fine.

Corallina officinalis ! ! ! †.

Jania corniculata. } I have united these because I have scarcely ever found a spe-
Jania rubens. } cimen in which the horned processes were altogether absent.

Melobesia polymorpha ! †.

Melobesia calcarea. Occasionally brought ashore by fishermen.

Melobesia membranacea.
Melobesia farinosa.
Melobesia verrucata.
Melobesia pustulata. } ! On the smaller Algæ.

Delesseria sinuosa R R 1. Autumn, 1861.

Delesseria alata 1. September, 1860; growing on *Cystoclonium*.

Delesseria Hypoglossum ! ! †. More frequently cast ashore, often in very dense tufts.

Delesseria ruscifolia R. August, November, February.

Nitophyllum punctatum R R 1. Young plant of var. *ocellatum*, growing at the root of *Zostera*.

Nitophyllum Gmelini R R. July, September.

Nitophyllum laceratum ! ! !

Nitophyllum laceratum, var. uncinatum R.

Sphærococcus coronopifolius R. In the autumn and winter of 1859–60, abundant after stormy winter; specimens large, and dried dark. I obtained about seventy specimens.

Gracilaria compressa R R 1.

Gracilaria compressa R R 1.
Gracilaria confervoides ! ! ! †.
Gelidium corneum.
Gelidium corneum, var. latifolium 1. Young specimen.
Gelidium corneum, var. crinale †.
Gelidium corneum, var. clavatum. Growing on woodwork submerged each tide. Western aspect.
Polyides rotundus ! ! ! †
Scinaia furcellata ! ! ! †. Rocks below Crescent.
Helminthora divaricata R R 1. June, 1859.
Helminthocladia purpurea R R 1. A remarkably fine specimen, in August, 1859.
Wormskioldia sanguinea R. After storms, generally much lacerated.
Plocamium coccineum ! ! ! †. Finest plants washed ashore.
Plocamium coccineum, var. uncinatum R.
Rhodymenia palmata ! ! ! †.
Rhodymenia palmata, var. marginifera. Also broad palmated forms, but none narrow varieties.
Rhodymenia palmata, var. simplex.
Rhodophyllis bifida ! ! ! July to December, normal form !.
Rhodophyllis bifida, var. ciliata.
Cordylocladia erecta R †.
Spyridia filamentosa R 1. June, 1861.
Phyllophora rubens ! ! Very common in 1860.
Phyllophora rubens, var. or new species, 1858.
Phyllophora membranifolia ! ! A very variable plant, also var. stellata.
Gymnogongrus Griffithsia R †. Black Rock; July to autumn.
Gymnogongrus norvegicus ! ! ! †. Black Rock; September to March.
Ahnfeldtia plicata ! †. Black Rock.
Cystoclonium purpurascens ! !
Gigartina acicularis 1. On *H. lorea;* December, 1861.
Chondrus crispus ! ! ! !
Halymenia ligulata !
Halymenia ligulata, var. *α.* dichotoma R.
Halymenia ligulata, var. *β.* ramentacea !
Chylocladia clavellosa ! ! ! A slender variety also.
Chylocladia articulata R R. Two specimens (young) only, one growing at Black Rock, the other on *H. lorea*, June, 1860.
Furcellaria fastigiata !
Schizymenia edulis ! †. More frequently cast ashore.
Ceramium rubrum ! ! ! !
Ceramium rubrum, var. botryocarpum.
Ceramium rubrum decurrens.
Ceramium Deslongchampsii R †.
Ceramium diaphanum. Abundant, and of large size, in autumn of 1861.
Ceramium nodosum ! !
Ceramium fastigiatum R. August, 1861.
Ceramium echionotum. Occasionally cast ashore.
Ceramium ciliatum R R 1. January, 1861; a young specimen, growing on *Fucus.*
Dudresnaia coccinea. Frequently abundant, and in fine condition; at other times rare.

Ptilota plumosa R R 1. Young plant, growing on *Halurus equisetifolius*; March, 1861.
Ptilota elegans R R 1. August, 1861.
Halurus equisetifolius R. December to March and May; Never found in fruit.
Griffithsia barbata R. End of June to October; generally rare.
Griffithsia devoniensis R R. July and August, 1861.
Griffithsia corallina ! ! †. More frequently cast ashore; often in dense masses.
Griffithsia setacea ! ! ! †. Black Rock; very fine.
Corynospora pedicellata ! !
Corynospora pedicellata, var. ? One form of the plant differs so much in appearance from the normal form, that it seems to be entitled to be called a variety.
Seirospora Griffithsiana R. Very fine; I possess a specimen which measures five inches in length.
Callithamnion plumula R.
Callithamnion cruciatum R R 1. September, 1858.
Callithamnion Turneri.
Callithamnion Hookeri R 1. October, 1858.
Callithamnion pluma R.
Callithamnion brachiatum. February, 1863; on *Desmarestia aculeata*.
Callithamnion roseum. Very fine on oyster-beds at Shoreham Harbour.
Callithamnion roseum, var.
Callithamnion Borreri R R. Parasitical on *H. lorea*; January, 1860.
Callithamnion byssoideum. On Algæ.
Callithamnion polyspermum var. Grevillei ! ! ! †. Growing on west, north, and south (never on east) sides of woodwork, submerged every tide. The normal form is rare.
Callithamnion thuyoideum R R 1. In 1862.
Callithamnion corymbosum. Occasionally found.
Callithamnion mesocarpum R R. On smaller Algæ; June, 1861.
Callithamnion sparsum R R.
Callithamnion Daviesii, and var. virgatulum. One of the most beautiful specimens I have ever seen was growing on a knot of tow, the fibres of which were studded with the beautiful little tufts.

CHLOROSPERMEÆ.

Codium bursa R †. August to March inclusive; generally washed ashore after storms.
Vaucheria †. Shoreham Harbour; not in fruit.
Bryopsis plumosa †. Rocks below Crescent.
Porphyra laciniata ! ! ! †.
Porphyra vulgaris ! †.
Bangia fusco-purpurea †. On a groyne at Black Rock.
Enteromorpha intestinalis ! ! †.
Enteromorpha compressa ! ! ! †.
Enteromorpha erecta ! ! ! †.
Enteromorpha erecta, var. clathrata ! †.
Enteromorpha percursa †. Salt-marshes and ditches; Lancing.
Cladophora Hutchinsiæ.
Cladophora diffusa.
Cladophora rupestris ! †.
Cladophora læte-virens ! ! †.

Cladophora flexuosa.
Cladophora gracilis !
Cladophora refracta ! †.
Cladophora albida !
Cladophora lanosa ! †. Rocks below Crescent.
Cladophora glaucescens.
Cladophora flavescens †. Saltwater ditches at Lancing.
Chadophora fracta †. Saltwater ditches at Lancing.
Hormotrichum Cutleriæ ! With *Lyngbya ferruginea*.
Conferva littorea. Saltwater ditches at Lancing.
Conferva Linum. Saltwater ditches at Lancing.
Rivularia atra.
Calothrix confervicola !
Calothrix pannosa ?
Lyngbya ferruginea. Saltwater marshes, Lancing.
Oscillatoria littoralis.
Oscillatoria nigro-viridis. With *Lyngbya ferruginea*.
Spirulina tenuissima. Developed in saltwater tank.
Sphærozyga Carmichaeli. With decaying Algæ, in pools near the shore.

BOTANICAL LETTERS FROM ARGYLESHIRE.

A Seat on the Shore at West Port. By James Lothian.

Sir,—Sweet as a ramble is through the woodland glade,—light, joyous, and free as one feels roaming over mountain and valley in quest of nature's charms and treasures,—there are scenes and objects that delight the eye and make the heart glad as well, whether we look at them during the cool breezes of spring, or when fanned by the more balmy winds of summer and autumn; whether the great deep lies stretched before us calm and placid as the bosom of the mountain lake, or when, agitated by the wintry blast, raises the great crested waves forming mountain and valley before us, and making a noise like distant thunder upon the rocky shore. Then there is something awful and sublime—something that delights the student of nature or disposes him for either delights or reverential thoughts. I never take the fields, whether on a botanical excursion or otherwise, without my companion—a small pocket portfolio, which serves the twofold purpose of a note- and sketch-book. On my return, I very generally put it aside in a drawer, where it lies until something or other brings it in course again. Just now, in rummaging a drawer lately, I met my silent companion, and on carelessly opening it my eye alighted on some notes, which, for lack of leisure for

something better, I string together for your amusement, courteous reader!

During last summer, business had led me, in company with a friend, to visit the neighbourhood of West Port, where we were engaged most of the day. But where is West Port?—is a question you may probably ask. Well, West Port is a point on the west shores of Kintyre, five miles from Campbeltown, on the road leading to Inverary, and about one mile beyond the primitive hamlet of Kilkenzie, where there is an old rural burying-ground with the ruins of an ancient chapel in the centre of it, with a few scattered cottages, a smithy, a public-house and a school-house,—and is certainly a fair specimen of a Scotch hamlet; situated in a sheltered hollow, with a small burn, or prattling rivulet, flowing in a tortuous course through the clachan.

Part of the land at this rural spot is the property of a gentleman, a native of Cambria's rugged hills and sunny vales, where he chiefly resides; but most of the land at this point, as well as the chief portion of the whole district, is the property of his Grace the Duke of Argyle. About a mile beyond this rural hamlet, at West Port, can be obtained perhaps the most magnificent views on this coast, and which, on a fine summer or autumn afternoon or evening, are beautiful beyond description; where—

> "No gale but the balmy Favonian is blowing,
> In coral groves resting, the winds are asleep;
> And rich in the sunbeam, yon pennants are glowing,
> That tinge with their colours the silvery deep."

My friend and myself having had a good deal of walking through cultivated fields and meadows, and heathy uplands, during the heat of the day, felt ourselves getting rather tired, if not somewhat fagged, as the afternoon was gliding towards evening; and having completed our business, the delightfully cool breeze tempted us to take a seat on the top of a grey lichen-covered rocky ridge, overhanging the sea, and commanding some charming views. The cool breeze rolled in most refreshingly towards the land, mingling with the perfume of the flowers around us, and cooled our faces, which the powerful beams of the sun had overheated.

What a glorious splendour is displayed in that setting sun! descending as it were into the ocean in the far west, like a ball of fire or the most richly burnished gold, its rays gilding the

dark headlands of the Irish coast south-westwards towards Sligo, as well as the western shores of the Mull of Kintyre, the Mull of Oa, in Islay,—nay, the very ocean itself, partaking of the same fiery refulgence. Yonder is a large ship from the North Channel, with all her snowy sails spread out to catch every breath of wind, to enable her to clear the land and get onwards to the breast of the ocean. The clear blue sky is still partaking of the golden tinge reflected by the rays of the setting sun.

Immediately beneath, are the bast hills on the shores of West Port, consisting of peat-hills, covered with bast.

Stretching away southwards towards the wide curving Bay of Machrihanish and Salt Pans village, on the south side of the bay, cows and sheep are grazing among the long bent, and one or two specimens of humanity, wanderers, are slowly pacing along the beach.

Just as we are conversing about the beauties of the landscape before us, and upon the eve of rising from our seat, we observe a tall, middle-aged individual coming towards us, who, upon our closer examination of him, I recognize as an enthusiastic amateur botanist, who is very soon seated upon the green grass beside us, admiring the gorgeous splendour of the evening, and the scenes around. Our new acquaintance informs us that he too has been rambling among the hills and glens all day, in search of wild flowers. The names of those he informed me he had met with, I then noted down, many of which, although only in passing hastily, I observed myself during this day; and if opportunity be granted me this season, I mean to test the accuracy of the whole, which is but a tithe of the plants to be found about West Port and neighbourhood; and as I am preparing a special catalogue for our Peninsular Flora, I hope ere long to be able to enumerate a greater array of plants and their habitats. Meantime I subjoin the names noted:—

Gentiana campestris.
Armeria maritima.
Lithospermum maritimum.
Sedum acre.
Aster Tripolium.
Convolvulus Soldanella.
Cakile maritima.
Crambe maritima.
Asplenium marinum.
Asplenium Trichomanes.
Asplenium Adiantum-nigrum.
Scolopendrium, 1 *sp. and* 2 *vars.*
Botrychium Lunaria.
Rubus saxatilis.
Salix nigricans.
Salix Forbesii?
Galium saxatile.
Galium palustre.
Vicia sylvatica.
Vicia Cracca.
Habenaria bifolia.
Habenaria alba.
Habenaria viridis.
Pinguicula lusitanica.
Orchis mascula.
Orchis maculata.
Orchis latifolia.
Solidago Virga-aurea.

—the last waving like golden feathers in the clefts of the rocks, which are crowned by the *Anthyllis Vulneraria*. I had hardly noted down those plants, when our attention was arrested by an immense number of wild pigeons issuing from some caves to our right, where our companion informed us they were in hundreds, bringing out their young in the caves and fissures of the rocks. They were chiefly of a beautiful silver-grey, neck and breast of some white, others with a white ring round the neck, and the rest of the body of a dark slate-colour. Farmers complain that they do them great injury, but they do not consider the service those beautiful birds render them.

After many kind invitations from our friend to accompany him to his beautifully-situated retired cottage about a mile distant, which time prevented our accepting, we took our respective ways homewards. We had still three miles before us.

We had now reached the public highway, and my companion, who was first, had got over the fence, when he was saluted by a little thin-visaged, elderly man, dressed in what is commonly termed shabby black. From the glance I had of him, I observed the expressions of the face rather peculiar, partaking of a sort of sober, serious, sombre cast, and I thought he might be an itinerant preacher, or perhaps a schoolmaster in some remote upland district, on his way homewards from town. I had just got over the fence, and had a few specimens carrying in my hand, not having a vasculum with me, and having stood for a moment, he looked round, addressing himself to me, "I understand you are a botanist." I replied that I wished I was more worthy of the name. "I see you have got some wild flowers," he further remarked; "they are very beautiful, but not to be compared to the flower of renown. What I dislike of you naturalists and men of science," said he, "is that you are not so careful as you ought to be, allowing yourselves to be too much engrossed by the allurements and fascinations of science, too often placing it in the place of revealed religion." I acknowledge I was rather surprised at this onslaught against men of science, and was nigh being tempted to resent; however, I merely answered by saying, "You are aware, I presume, that it is one of the injunctions of our Saviour to consider the Lilies of the field, how they grow; and I must say that in my own experience the greatest error I find is in the fact that the theologian and naturalist have stood

too long apart; that every true Christian could read both the 'book of nature' and revelation, and ever found them in strict harmony. Both were given to erring men for great ends, and I trusted the day had already dawned when all would read and study both; and sure I was that every genuine botanist and naturalist, while he studied nature, found in his own experience that while he studied nature, it enabled him to look up with faith, humility, and gratitude to nature's wise and beneficent Author.

"And, oft with her communing thus,
A higher joy is given,
From nature up to nature's God
Our thoughts are wing'd to Heaven."

This little, singular man, however, shook his head, and appeared to have allowed the one small idea to nestle in his brain, that all naturalists and botanists were a tribe handed over to infidelity. Time would not permit a continuance of our discussion. We parted, but, before doing so, I invited him to do me the honour of a call when he next came to town, when I felt confident I could convince him that naturalists were not what he represented them to be. My companion, a shrewd business-man, laughed heartily at this man's notion, which he attributed to a certain amount of ignorance and wrong-headedness. I understood that this singular individual was a Chartist, connected with a religious sect, who kept him constantly travelling, to sow the good seed and to root up the *natural weeds*.

The shadows of evening were now fast closing around us. The dew was forming on the vegetation of both field and meadow. The *landrail*, or *corn-crake*, was busy; though unseen, he was not unheard, among the leafy green corn. Once or twice we tried to catch it, but in vain; it ceased uttering its singular croak, which was soon heard in the remote distance. The odours of the Honeysuckle and Queen-of-the-Meadow (*Spiræa ulmaria*) made amends for the harsh music wherewith the corn-crake tried to cheer our walk; and as we reached our homes the evening star, with countless companions, glistered in the western sky.

ADDITIONAL PLANTS AT STOKE POGIS.

Additional Plants observed near Stoke Pogis, Bucks., July, 1862. *By* W. T. Dyer.

(Vide 'Phytologist,' vol. v., pp. 168–171, and 366–368.)

Ranunculus Baudotii? Growing in great plenty on the margin of a pond near Stoke.
Ranunculus arvensis. Fields.
Helleborus fœtidus. Near Windsor.
Papaver dubium. Near Windsor.
Fragaria vesca, fructu albo. Near Stoke Common.
Rosa rubiginosa. Stoke Common. Gerard's Cross.
Ægopodium Podagraria.
Œnanthe Phellandrium. Thames side, Eton.
Angelica sylvestris. Burnham Beeches.
Torilis infesta. Slough Railway Station.
Viburnum Lantana. Near Stoke.
Galium Mollugo. Hedges.
Anthemis Cotula. Fields.
Vaccinium Myrtillus. Stoke Common.
Pyrola minor. Burnham Beeches.
Vinca minor. Lane near Stoke.
Vinca major. Lane near Stoke.
Villarsia nymphæoides. Still parts of the Thames at Eton.
Antirrhinum Orontium. Plentiful in cornfields about Stoke.
Orobanche minor. Clover-field at Windsor.
Mentha sativa. Fields.
Orchis maculata. Stoke Common.
Allium vineale. Near Maidenhead Bridge.
Scirpus fluitans. Pools near borders of Burnham Beeches.
Triodia decumbens. Stoke Common.
Brachypodium sylvaticum. Lanes and hedges.
Polystichum aculeatum var. *β. lobatum.* Black Park.

Reviews.

Vegetable Morphology; its history and present condition. By Maxwell T. Masters, F.L.S., M.R.C.S., etc.

(*From a Correspondent.*)

This *brochure* on vegetable morphology is an additional proof

of our continuous progress in literary erudition, and also of the truth of the trite remark made by the wisest man, "that there is nothing new under the sun. Is there anything whereof it may be said, See this is new; it hath been already of old time, which was before us?"

The simple or unlearned portion of humanity naturally infers that "as new names are imposed only on new things," *nova nomina in res novas imponenda*, the modern term *morphology*, or the doctrine of the formation, configuration (shape), adaptation, position, etc., of the organs of vegetation was a novelty first discovered by a celebrated German poet, and gradually adopted by the hard-headed, unimaginative sons of science. It will be gratifying, especially to the orthodox, to be informed that this new learning about the formative energies of nature does not contradict Solomon's adage, a saying of the wisest of men.

If our readers will take the trouble to read this tract on Morphology, or even this notice of it, they will learn, as we have, to our great contentment, that "there is nothing new under the sun." The present age has made so great strides in learning, that it is a question whether our literary and scientific attainments have not advanced *pari passu*, with equal rapidity. We do not know who can answer the question—who is the original discoverer of morphology? but we can now tell those interested in these and similar inquiries, that the modern doctrines about the simplicity of organization, unity of type, organic similarities, etc., included under the scientific word MORPHOLOGY, was not *first* discovered by Goethe, nor by Linnæus, nor by Wolff, nor by Jung, nor by Albertus Magnus, nor by Theophrastus, nor by Aristotle,—though this eminent sage, the earliest and the most systematic of the ancient philosophers, was the first who clearly enunciated this principle. For it may be inferred that it was no discovery of his, but that he received it from his contemporaries, and fixed it as one of the canons of his philosophical system.

May it not be concluded that this, and many other discoveries claimed by modern *savants*, descended to these illustrious ancients and moderns from the first man, the original parent and founder of the human family?

May it not be inferred that it was no discovery of Aristotle's, but that he derived this fact, among many other equally important

scientific discoveries, not from the first man, the original parent of the human race, but from his contemporaries and predecessors, the sages of ancient Greece?

It has been said, not in banter, but in sober seriousness, that the binary and ternary systems of classification, or the Linnæan system of Cryptogamous and Phanerogamous plants, and also the threefold classification, the more recent inventions of Jussieu, Decandolle, Endlicher, Fries, etc., are to be found in the first chapter of the first book of Moses, called Genesis. And hence the *vulgus profanum*, the illiterate and the unphilosophic, are emboldened to surmise, and *proh pudor*, "shame befall them," are not afraid to insinuate that there has been no great discovery after all.

Several years ago, Dr. Drummond published a spicy little book on natural systems of botany, containing many caustic remarks on classification, terminology, and especially on MORPHOLOGY, a work which several of our friends and correspondents have read and enjoyed. If we understand the gist of the Doctor's treatise, he does not give the morphologists much credit for their discoveries and inventions. He shows with considerable force and acuteness, certainly with much jocularity, mingled with sarcastic poignancy, that these so-called systems and discoveries are inconsistent and vague, or that their expositors have not been happy in the selection of the terms whereby they express the *new learning*.

That there is some truth in what Dr. Drummond advanced, may be inferred from the mutability of the new phraseology. It is possible that some of the newly invented words were causes of grief to their original inventors. The terms *morphosis, morphology, metamorphosis* are not exactly synonymous; they mean respectively *formation* (the act of forming), the *law or doctrine of form* (figure, shape), *change of form*. Do any of these words express exactly what botanists mean to express when they speak or write about the formative and structural energies of vegetation? Unhappily, the scientific investigators despise the niceties of language. They rarely condescend to state the precise import or sense in which they understand and apply these terms. Hence the mystification of science, and the ridicule thrown on the logic of its professors.

It may be asserted that Nature is no bungler; she does not

fail, either for want of ingenuity or of materials, in accomplishing her original intention. Who will maintain, for example, that she intended to make a stem, but failed for want of formative energy in the plant, and could only produce a leaf, or it may be only a spine? Nobody will assert this.

The examples of such accidental aberrations from what is called the normal or common type, like degeneration, multiplication, etc., are very unfrequent; and when they do occur, their occurrence is owing, not to a latent or mysterious cause, but to some accidental change in circumstances which affect or modify the normal development of the plant. In botany, and in zoology also, there is and there can be no change nor alteration, nor modification of one organ into another. When botanists write and say that the pistil or pericarp is only an altered leaf, they either state what is not true, or they misapply the words. They may be acquitted of the former, but may they not be justly charged with altering or modifying the usual sense of the Queen's English?

The recent researches and discoveries in physiology, both vegetable and animal, (thanks to the inventors of powerful magnifiers, and a thousand benedictions on the patient and ingenious observers,) have taught us that there are but a very few primordial types or forms which by subsequent growth (development is not the right word, though commonly used) produce so many complicated organisms, varying quite as much in their utilities as in their multiform appearances. All this amazing variety of qualities, structures, forms, sizes, durations, etc., is naturally produced without the change of any one organ into another, and also without any suppression of parts.

How, it may be asked, can an organ—say, for instance, a leaf—be changed into an apple, or into a peach, or even into a pistil? The latter, viz. the fruits or the carpels, never had any previous existence in a foliaceous embryonic condition. They always existed in the state wherein they are manifest to our senses. Surely a thing cannot be changed which never existed, never became a thing, *i. e.* a leaf; and never was intended by nature to become a leaf. Again, how can parts be suppressed which never existed?

The writer knows by experience the difficulty of persuading the curious inquirer that there is a suppression of a petal, and

the augmentation of a stamen in the Crucifers. Also of the *vice versâ* process in the *Labiatæ*, where one stamen is usually deficient, and sometimes three. The doctrine is frequently received with considerable reluctance, and sometimes with unmistakable tokens of unbelief.

Morphology does not *now* present so glaring absurdities as passed current among its votaries in the earlier stages of its progress towards maturity. We hear no more about the identity of a grain of wheat and a single leaf in a state of degeneration. What would be the consequence if this so-called degeneration were to cease? That we should have no bread, nor biscuits either.

The extreme views of the original modern propounders of the principles of morphology are now somewhat modified, if their language be taken as the exponent of their opinions. They have probably abandoned their theory that the carpels, seeds, ovules, etc., were originally leaves. For this concession to popular opinion, the less scientific part of mankind should be grateful. But there is another class of inquirers who will persist in giving utterance to the ancient query, *Cui bono?* This is an eminently practical and utilitarian age; and those who propound novelties, either simple or complex, abstruse or obvious, should be able to tell us what we may expect to gain by the adoption of their discoveries.

Physiological investigations must of necessity always dip deeper and soar higher than common observations. They must descend below the surface, and sometimes they may be excused if they take a flight into the airy regions of generalization and hypothesis. But it is certain that they should never contradict experience and common sense. The change or suppression or duplication of hypothetic or only possible organs is too transcendental a subject for the comprehension of ordinary minds. It cannot possibly engage much of their concern, interest, or sympathy.

Besides this, the science of morphology, as expounded by its professors, appears to offer only minute advantages, either to the systematic or to the descriptive or utilitarian students of vegetation. Perhaps these unbelievers in the potentiality of the new doctrines look at them through the wrong end of the telescopic tube; but what the most learned of its advocates advance in its behalf does not help to solve many practical difficulties. The morphologists indeed profess to explain certain anomalies in the

number and position of organs, on what they are pleased to call morphological principles; but are these explanations successful? When we are told that the abnormal situation of the stamens in the Primrose is due to a *suppression*, or, as it is now called, a non-development of an outer series of stamens, which, if present, would have occupied an alternate position, both in relation to the lobes of the corolla and to the existing series of stamens, we may receive or reject the hypothesis. This may be true; but a possible truth is not one on which a prudent person would like to place implicit reliance; but, granting its truth, the advantage to science by this discovery is infinitesimally small.

A Primrose with ten stamens would be about as aberrant a form as a Pink with five. Who would establish a law on such a fact, even if it were one? That there are laws to which all diversities of structure, position, number, and form can be referred, no observant naturalist will dispute. Also, every impartial and candid student will admit the obligations of science to those patient observers who have recently added so much to our knowledge of structure and physiology. But when morphology is obtruded on us, as a distinct department of knowledge, to which it is asserted that we owe much, our curiosity is excited to learn the extent of our obligations. When the vegetable physiologist asserts the principle of unity of type, intrinsic identity of leaf and fruit, he may be expressing morphological, but not logical truths.

But, granting the absence of all inconsistency and obscurity, and assuming that the congruency of the entire science of morphology is as patent as the symmetry of the plant whose structure it professes to expound, what have we gained from its adoption? Utility is the practical test whereby all judicious people estimate novelties or discoveries in natural or experimental philosophy. Therefore, as the logician would say, if every invention, or discovery, or system is to be valued on this principle, what is the worth of morphology? Can it tell why one Carrot is strong or rank, unfit to be eaten, and another tender and delicately flavoured? Does morphology account for some stems being straight, others bending at the base and then erect, and a third class flexuous or zigzag? Why does the Hop, the Honeysuckle, and the Bindweed climb around certain plants, and in one certain direction? Why does the Vine clasp the Elm and shrink from the

Ivy? Why is the Apple-tree "uneasy seated by funereal Yew or Walnut"?

Morphology cannot answer these apparently simple questions; the laws of deduplication, degeneration, suppression, and non-development solve no difficulties. Idiosyncrasy, the individual peculiarity originally given by the Almighty Creator to the humblest as well as to the highest created being, is the key which opens all the mysterious natural and intellectual tendencies of organized and intelligent creatures. What a simple organization! what complex results! Individual, vital, formative energy enables a simple cell, or a small organic entity, which we call a spore or a seed, to elaborate and assimilate from the earth, or the water, or the atmosphere, substances necessary for its own vegetative and reproductive purposes, and when these are accomplished, it ceases to exist, or it continues for a season in a dormant condition.

There is no real, nor actual, nor palpable metamorphosis nor change, neither in animals nor in plants. A leaf never becomes a stem nor a pericarp. No physiologist nor morphologist makes this assertion; he only means to state that the material or tissues which under one series of causes would have produced leaves, under another will produce stamens, or petals, or pericarps. Every plant, and animal too for that matter, is composed of certain tissues which in the seed or spore are of a very simple uniform character.

If the morphologist does not mean this, it may surely be permitted us to ask what he does mean. The physiologist tells us that the simplest of the tissues, the CELL, is so modified by idiosyncratic energy that all the tissues are referable to it; and, by the modification of these tissues, roots, stems, leaves, flowers, and fruit are produced. It surely needs no ghost to tell us this! for of what else could they be produced? Has the morphologist any mystic or latent sense lurking under his terminology? People may be excused for wishing to know what is the esoteric doctrine. They know the exoteric. All tissues are analogous in vegetables derived from the primordial reproductive matter and from the various materials which it absorbs and assimilates, as animal nutriment taken into the stomach is converted into blood, etc., undergoing a chemical change, and becoming fluid, solid, fibrous, gristly, osseous, integumentary, carneous, etc. These may be

called all modifications of the same original tissues; but who will say that they are identical organs?

From analogy, but not from morphology, it must be inferred that leaf and pericarp are as distinct as horns, hide, and bone are from blood, fat, and fibre.

Considering the almost infinite number of plants that exist and have existed since time began, the paucity of aberrant forms, numbers, and positions,—not their multitude,—is marvellous. It is a greater miracle, because it manifests a larger display of wisdom and goodness, that the sun rises every day, than that the same luminary stood still in the times of Joshua, and retrograded in the days of Hezekiah. It is a greater marvel that plants preserve a sort of uniformity in species, genera, and orders, than it is to find a leaf or a plant where there should be a carpel, as we sometimes see in the White Clover, and in the Alpine Sheep's Fescue. These are but like unity, or one, compared with the myriads of millions of normal forms.

Where was the organic unity, the belauded discovery of Goethe, in the Garden of Eden, when the trees yielding fruit were created bearing fruit? and where was the transition stage or passage from a leaf to a carpel, and from a petal to a stamen, when the herb yielding seed first sprang from the bosom of the bounteous earth at the command of the Creator?

This unity of organization and progressive development savour not a little of certain doctrines which were promulgated above twenty years ago, and which their author never has acknowledged, although they met with a flattering reception, and the work on which they were expounded was one of the most popular of that period.

We cheerfully admit our obligations to the amiable author of this essay or article on the History of Morphology, especially for telling us that the science was discovered above two thousand years before it got a sponsor or a name. It was a sturdy bantling many centuries ere Goethe was honoured with its paternity. It appears to have had many-dry nurses, tutors and masters since it leaped from the head of Aristotle, like Minerva from that of Jupiter; but, unlike this celestial heroine, it appeared not completely equipped. Many of it weak points have been detected and exposed. Both ancient and modern doctors have been wrangling and squabbling about the birth, the

breeding, and the utility of the babe, now more than twice as old as Methuselah.

If not asking too much in a quarter where we have no title to ask for anything, we do earnestly desire to know or learn, or be told what is the precise meaning of these words of learned length and ominous sound, viz. morphology, intrinsic identity of organs, organic unity, homologous organs, ('homologous' applied to mathematical truths is intelligible,)—who can tell what organs are so?

Would it not be worth while to explain both the nature and capabilities of the science? As a game or amusement of scientific puzzles it may be ornamental and useful to those who delight in abstruse learned or scientific trifling; but its service in explaining the history of vegetation appears to some as beneficial as an *ignis fatuus* is to the benighted wanderer in the cloudy and dark night.

Far be it from us to prejudge, much less condemn, a subject which we do not understand. We seek enlightenment; and if Morphology does throw light on our path, and help the uninstructed to thread the intricate ways of knowledge, we shall not be the last to sound the trumpet of its praise. If it be what many other abstruse investigations are, a mere jangle of wordy discussion, we will warn our readers to eschew it as they would any other profitless dispute, lest it should turn out like a bargain between a farmer and a horse-jockey. Farmer Hodge sold a steed to a horse-dealer,—as the story-book or Joe Miller tells us,—and the latter, after paying the money, requested the farmer to tell him if the animal had any faults? The farmer answered, "No he had but one." "What is it?" said the other. "If you let him out of your hand, you can scarcely ever catch him." "Oh!" said the jockey, "is that all?" "No," said the farmer, "I forgot to tell you that he is good for nothing when you have caught him."

British Museum, March, 1863.

[The Editor begs to apologize to the amiable author of the 'History and Present Condition of Morphology,' the review of which was mislaid and forgotten.]

Flora of Preston and the Neighbourhood. Part III. By Mr. Charles Joseph Ashfield.

Our readers are referred to previous numbers of the 'Phytologist' for notices of the Flora of Preston. The second and third Parts are reviewed in the 'Phytologist' for September, 1861.

The following rare species, along with more common plants, are reported in this the third part of the Preston Flora:—

Hippurus vulgaris, Crocus vernus, Dipsacus fullonum, Potamogeton rufescens, Primula farinosa, Convolvulus sepium, Claytonia perfoliata, Myrrhis odorata, Meum athamanticum, Bupleurum rotundifolium, Convallaria multiflora, C. majalis, Meconopsis cambrica, Trollius europæus, Aquilegia vulgaris, Lamium maculatum, Bartsia viscosa, Camelina sativa, Geranium columbinum, G. lucidum, Corydalis lutea, Tragopogon porrifolius, Cichorium Intybus, Senecio Saracenicum, Verbascum Thapsus, Epipactis latifolia, Carex fulva, Grammitis Ceterach, Botrychium Lunaria.

A few remarks on the above list will not be irrelevant; they are partly addressed to our correspondent, the author of the list, and partly to some of our readers, and it is the writer's wish that they may be useful to all who think them worth a perusal.

Claytonia perfoliata has been reported as a naturalized plant from many counties, and quite recently from Norfolk, Middlesex, and Lancashire. On the other hand, the perennial *Claytonia alsinoides* has been reported from Derbyshire by Mr. Baxter, from Perth by Mr. Sim, who finds it in more than one place, and by a Glasgow correspondent, who has seen it near the western metropolis. In all these localities the plant is said to be a native, or to have all the accidents of a native plant. No one has reported this as an apparently naturalized species, though the more common one, *C. perfoliata*, has always been reported as a semi-naturalized alien.

The rose- or pink-coloured variety of *Convolvulus sepium* is a Lancashire plant. It has been seen in Kent, at Aylsham, not far from Maidstone, where it was observed in 1857. It is also recorded as a variety by Sir W. J. Hooker, in his 'British Flora,' third edition, 1834.

Myrrhis odorata has been set among the aliens by a great authority on phytogeography; but those who are best qualified

to judge, viz. the resident botanists of Lancashire and West Yorkshire, have no doubt about the genuineness of this plant as a native production.

This fact teaches us, or should teach us, that it is dangerous to generalize. For example, the writer has never seen the Myrrh truly wild in Scotland, though it may be so for all that. It has been reported as once existing wild in Essex; but this is rather a wide leap for a plant to take. It is wild in the north-west of England. This example is given as a warning that though *Myrrhis odorata* be a very suspicious native in Scotland, and a suspected alien in some parts of England, it is truly wild in the Craven district of Yorkshire, Westmoreland, Lancashire, etc.; and it is not impossible nor incredible that it may have been wild in Essex.

We hope our excellent correspondent will either himself settle the nomenclature of the Lytham *Œnanthe*, or help us to identify the plant which grows on these sands.

The rare *Meum athamanticum*, the Highlanders' tobacco, has been discovered by Mr. Ashfield in a pasture-field at Piethorn, in Butterworth, very abundant. Mr. Grindon has also the honour of having published another station, viz. Whiteley Dean, a moor near Milnrow. (See Mr. L. Grindon's 'Flora of Manchester.')

A hitherto unrecorded locality for the Lily-of-the-Valley is recorded in this third part of the Preston Flora. The above hitherto unknown (?) locality is in a ravine near the Heald, Barnacre, or in a plantation in Calder Vale, near Milnrow.

A still rarer species of *Convallaria*, viz. *C. multiflora*, has been seen by our author "in a hedge near Milnrow, with every appearance of being wild." A plant of the same species was discovered many years ago in a hedge at Albury, near Guildford, Surrey, and this plant had some appearance of being wild; but appearances sometimes mislead observers. This species has been long cultivated, both for ornamental and useful purposes, and its claims to wildness are modified by circumstances. Where this plant abounds, as it does in Hampshire, it grows in woods, and its wildness is there unquestionable. But a straggler now and then appearing far from its proper site is liable to be deemed a suspected introduction.

We hope the energetic and successful author of this list of

Lancashire beauties will clear up the doubt about Dingley or Dinkley Wood, near Ribchester, Master Gerard's ancient locality for *Maianthemum bifolium*.

This is a plant which can readily be found, and as readily identified. The old cuts in Gerard and Parkinson will help any observer to satisfy himself about the identity of the species. It also, like the Lily-of-the-Valley, grows in close patches, almost excluding everything else. It may be looked for any time in May.

We grieve to hear that *Anemone Pulsatilla* is still a desideratum in Lancashire. Even Little Purton, its assigned locality, is unknown. Still, our faith in Mr. Knowlton's accuracy and knowledge is unshaken. Mr. Knowlton was a botanist as well as a gardener, a man of intelligence and observation, and an antiquarian to boot. His reputation alone would entitle him to implicit credence about a more obscure subject than the appearance of millions of Anemones near Lancaster.

Lamium maculatum is reported from several localities, viz. near Ribchester Bridge, Longridge, Bamber Bridge, Leyland Road, etc., "probably introduced." *Query*,—by whom? When a plant is introduced, the introducer has some object in its introduction; but where we have seen this plant, except in gardens, it appears to have either introduced itself in a Paul Pry-like manner, modestly hinting, by its choice of locality, that it was no intruder, like Mr. Poole's once celebrated hero, but on the principle of natural selection, took possession of a place suited to its propensities, and where it was in little danger of being eradicated.

The admirers of Gerard's 'Herball,' and they are many, will be gratified to learn that Mr. Ashfield has in more than one example verified the accuracy of the venerable author of our most popular English herbal. *Lathræa squamaria* still grows "neere Harwood, in Lancashire, a mile from Whanley (Whalley), in a wood called Talbot Bank." The ancient name of the wood is lost, but the plant is still in being,—a testimony to the fidelity of one of our earliest botanists.

Mr. George Ward, whose name appears as a voucher for several rare plants in this list, has been botanizing in this district for upwards of forty years. His observations, reminiscences, memoranda, etc., about the botany of this part of Lancashire, would be worth reading.

His knowledge, like Mr. Jordan's, of Bewdley, must be full and precise. Like a man who has read but one book, or like a musician, who has learned to play only one instrument, or like an archer who has but "one string to his bow,"—he is able to handle his arguments, his instrument or weapon, more effectively than he who, like the smith, has more irons heating that he is able to strike ere some of them get cool.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers to Correspondents, Notes, Remarks, etc.

To L. C. Miall the Editor is indebted for a new Flora of the West Riding, the Craven district, and the western tract lying to the south. A detailed notice of this valuable contribution to local botany will appear anon.

Mr. Cooke is thanked for his brief notice of the Society of Amateur Botanists. Our faith is great that something will be added to our knowledge of London botany by the young and ardent members of this Association.

Mr. Winter, of Bressingham, will receive a note from Chelsea, about his Alga, brought hither by the Gulf Stream.

The Thirsk report, *desideratæ*, etc., have been duly received, and are hereby acknowledged.

Our Arno's Grove correspondent will receive a missive on his return to Southgate.

The fair amateur botanists of the Chase, Enfield, have recently discovered a new locality for the Martagon Lily. Further particulars about the Middlesex station for this rarity are expected with considerable curiosity.

Mr. Watkins, of Ross, has sent some valuable remarks on the re-appearance of plants in coppice-woods, and their publication is postponed till this keen observer and our obliging correspondent has had an opportunity of making further observations.

We hope our good friend Mr. Galt will have received the MS. Mag. Nat. Hist. before he sees this notice. The volume was dispatched from Upper Manor Street on the 22nd ult. Many thanks are tendered for the perusal of this excellent miscellany.

S. B. is most respectfully informed that the Editor of the 'Phytologist' has a very distinct remembrance that the question—what is the "insane root which takes the reason prisoner"? was answered years ago, to the satisfaction of the inquirer. There is a difficulty about what species it is which bore the name of Culverkey in Walton's 'Angler.' Any clue to the solution of this difficult question will be highly appreciated, or, in pauper phraseology, "thankfully received."

The Editor has no difficulty in asserting that the little book "on a

great subject," kindly sent for notice by the promoters of the Wimbledon Naturalists' Club, will be welcomed by all who are stimulated to study and admire the works of the Almighty, and who are zealous in aiding any effort—however humble—to edify or amuse, or rather to elevate their fellow-men. To the amiable and zealous Treasurer of this most admirably organized and most successful institution, we, or rather our readers, are indebted for this treat. A detailed notice of the work appears, or will appear, in another part of this periodical.

Mr. Dyer, from whom we received these valuable and practical HINTS, has had the kindness to send *Anemone apennina* from the ancient Wimbledon station. He is hereby requested to receive our hearty thanks, both for the book and for the specimen. We wish we could say that the question about the wildness of this pretty plant was sufficiently answered.

It is hoped that room will be found for Mr. Ingle's list in next number.

Our notice of the ancient Roman Oats grown on an English farm was copied or extracted from a local newspaper sent to us by a very obliging correspondent who lives at Alnwick. We did not believe that these Roman oats had been lying *perdu* or dormant, or hybernating, for about seventeen or eighteen centuries, and then sprang up when the site of the old camp was cultivated. We will not answer for our correspondent's belief in this modern miracle of nature; but we may in excuse state that we are not held responsible either for the facts or the opinions of our correspondents. Several articles have appeared in our journal about the transmutation of species, and there may have been other alleged facts printed in our pages in which we had not the slightest confidence. There are still some believers in *Mummy Wheat*, or that Wheat buried in the Egyptian tombs when the ancient Hebrews were building the Pyramids, is now cultivated in Europe. The ingenious author of 'Proverbial Philosophy,' who was one of the originators of this belief, doubtless counts it a point of honour not to change his faith. We are obliged to any correspondent who will take the trouble of exposing these absurdities. We ourselves would not begrudge the labour, but we shrink from the odium.

NOTICE TO BOTANISTS.

In the current year will be published (?) what the learned author, François Crépin, names 'Revue de la Flore Belgique,' in large 8vo, on fine paper, and to consist of about 450 pages.

To this notice the following prospectus is appended:—"Since the year 1836, when appeared the third volume of 'Compendium Floræ Belgicæ,' by Dr. Lejeune, the only descriptive account we have of the plants of our native country, we have had no general work until 1860, when the author of the proposed Revue published his 'Manual of the Belgian Flora,' a work well known to the readers of the 'Phytologist,' and highly esteemed by all who are able to appreciate its merits.

"This work being purely elementary, does not give sufficiently ample details about the individual subjects of our flora.

"A quarter of a century has now passed since the appearance of the 'Compendium,' a work, indeed, of great merit, but now very incomplete,

and far behind the intelligence of the present day, and not in a condition to supply our modern wants. Science advances so rapidly in these times, that a scientific work requires revision, modification, alteration, and addition in a space of time less than the half of a quarter of a century. New materials have to be incorporated, and erroneous views and misrepresented facts have to be rectified or expunged.

"Besides, while France, Germany, England, Italy, Sweden, and Switzerland have recent Floras, we are still obliged to resort to the old treatises which were compiled when our knowledge of the subject was neither so comprehensive nor so complete as it is at the present day.

"The neighbouring kingdom of Holland has set an example to us (Belgians) in undertaking the publication of a Flora of the country, compiled from the 'Prodromus Floræ Batavæ,' 'Flora van Noord-Nederland,' etc.

"The learned Professor promises, in an introductory preface, to narrate the progress of Belgian botany from the middle of the last century to the present time; to enumerate and characterize the authors who have made the Floras of this kingdom their special study, and to show the influence which local explorers have had on the progress of the science.

"In the Systematic part of the work all the plants will be enumerated, with their synonyms, taken from general works, and from Belgian authorities. Every species will be accompanied with its census, distribution, and other phytogeographical details. Finally, a large portion of the species will be followed by critical remarks, complete descriptions, etc., and several critical species will form the subjects of extended monographs.

"The work will form a handsome volume, and the price to subscribers will be 6 francs. When published, the price to non-subscribers will be 8 francs.

"Intending subscribers should send their names and addresses to M. Mayolez, 35, Rue de l'Impératrice, Bruxelles."

The Editor of the 'Phytologist' wishes that the subscription-list may be as great as the merits of the learned author of the proposed publication.

To the Editor of the 'Phytologist.'

Sir,—I notice in 'Phytologist' for April, a description of "Roman Oats," which are said to have recently shown themselves on the farm of Mr. Binks, Pepper Moor, near Alnwick. We hope that Mr. Binks will substantiate his statements more completely, in order that they may obtain more implicit credit. I happen to have seen the oats exhibited at the Battersea Park Show, where they had a place at our stand, and were very generally inspected. The conclusion come to by every one was, that there was a very trifling distinction among all the so-called varieties, and that not one of them merited a new name. As for the globular heads, like onions, although much inquired about, they were not "within mortal ken." We wrote to Mr. Binks at the time we returned his specimens, but since then he has not vouchsafed to favour us with further manifestations, and I think that since the date of last letter as published by you, viz. 5th May, 1861, he ought to be able to authenticate his statements by the results of his trials of the oats during 1862, and to have sent you specimens of the seventy-five varieties from last year's crop.

Wm. Warter Smith, *for* Peter Lawson and Son.

Mosses of Fifeshire.

Addenda to the Mosses of Fifeshire, collected, to the number of two hundred and twenty-one species and varieties, by Charles Howie:—

Gymnostomum rupestre, Schwaegr. Growing on the north side of the crag of Drumcarro, and on shaded walls, Mountmebrell Estate.

Encalypta rhabdocarpa, Schwaegr. Growing on Largo Links. Abundant.

Encalypta streptocarpa, Hedw. Growing on shaded walls, Mount Melvell, spread out in broad patches; growing in similar situations near Collinsburgh.

Tortula muralis, var. δ *rupestris*. Growing on rocks by the sea-beach, Pitmilly.

Bryum crudum, Schreb. Growing on the east side of Norman's Law, and on the north side of the crag, Drumcarro.

Mnium subglobosum, Br. and Sch. Growing in an old wood at Chesters, south of Kenly.

Lastrea polyantha, Hedw. Growing on trees in Claremont and Balcarris Den.

Hypnum nitens, Dill. Growing on marshy ground, Largo Links. Sparingly.

Hypnum sylvaticum, Dill. Growing under trees on a crag north of Fawfield.

Hypnum giganticum. Growing by the side of Kilconquhar Loch, associated with *H. cordifolia* and *H. cuspidatum*.

Largo, March, 1863.

Change of Seeds.

(Feb. 11, 1863.) Several years ago one of the most useful and energetic of our correspondents inquired about a medium for getting seeds, especially of hardy, interesting, rare, or beautiful plants, suitable either for utilitarian or ornamental purposes. The writer of this notice is fortunately able to point out an easy channel for interchange of seeds, as well as of specimens, viz. her Most Gracious Majesty's Post-Office.

There is at present before me the list of seeds preserved in the gardens of the Royal Botanic Society of London, the *locale* of which is not far from some one of the stations of the metropolitan line of railway.

In this list there are several desirable things, viz.:—

Arenaria laricifolia. What is this,—a species or a variety? a British plant or an exotic? The interrogator should get seeds, then sow them, and ultimately he might know the plant, or at least might ascertain that it was something which he did not know.

Delphinium Staphysagria is an interesting plant to those who read the ancient botanical works of our own land and of foreign nations also.—*Staves acre.*"

Dianthus cæsius, the Cheddar Pink.

Papaver nudicaule, once believed to be a native of England or of the British Isles, but a good plant, whether it grow in Argyleshire or in Labrador.

Veronica fruticulosa, a rather dubious plant. One of our correspondents once promised us this plant, but it has not yet made its appearance here, though it was discovered more than seven years ago. It is to be

feared that its modern discovery on Ben Cruachan will be like the rediscovery of *Ranunculus gramineus*, one of the few mare's-nests discovered or made current by the 'Phytologist,' or rather by its zealous contributors.

Mr. Lothian's Catalogue of Vegetable and Florists' Flower-seeds; also of tender, half-hardy, and hardy annual, biennial, and perennial seeds. A few are here entered from the latter class:—

Stachys coccinea, of which Mr. L. kindly sent us a little packet, but we did not succeed in raising one single plant. This is still a desideratum in our herbarium.

Epilobium latifolium is also a desideratum, for we do not know what it is, whether *E. montanum* or *E. hirsutum*.

Achillea Filipendula and *A. moschata* would be desirable additions to a collection either of dead or living plants.

Impatiens glandulifera is a magnificent plant, and it manifests some inclination to be one of our spontaneous productions at probably no very distant period. I have a kind of anticipation that the *Impatiens* on the banks of the Colne, well known to mine host of the 'Swan,' at Denham, near Uxbridge, is either the above species or *I. canadensis*, if there be any such species.

Mr. Lothian, in his catalogues, does not merely inform his customers and the public that his seeds are carefully selected; he does this, but this is not all. He gives good counsel about the way of sowing, and the proper time. Like the poet, who by the misfortunes of the "finch with golden wing and satin poll," warns his readers not to be rash,

> "The lesson seems to carry,
> Choose not alone a proper mate,
> But proper time to marry."

Mr. L. tells us that we must watch the seasons, which are, in these our degenerate days, becoming so precarious that the authors of weather almanacks are at their wits' end. For example, during the last three months, viz. December, January, and February, we have had a vernal temperature; in April, May, and June, it is most piously to be wished that there be no more than the average number of bleak north-easters, cold days with showers of hail, snow, and sleet, and frosty nights.

There is no room for Messrs. Stansfield's lists; they are reserved for a more convenient season. Such of our readers as want to change seeds or specimens are now informed how these changes may be readily effected.

Communications have been received from

Mrs. Merrifield; J. S. M.; W. Galt; John Sim; Sidney Beisly; B. M. Watkins; T. W. B. Ingle; W. T. Dyer; M. A. Walker; Gorilla; Peter Lawson; J. Britten; W. Pamplin; F. Walker; M. C. Cooke; L. C. Miall; J. G. Baker.

BOOKS RECEIVED FOR REVIEW.

The MS. Magazine of the Glasgow Naturalists' Society, Vol. IV.

Hints on the Formation of Local Museums. By the Treasurer of the Wimbledon Museum Committee.

Flora of the West Riding of Yorkshire. By L. C. Miall and Dr. Carrington.

Erratum.—N.S. Vol. VI. p. 367, line 6, for "*chuck*," read *chalk*.

The Minute and the Beautiful in the Vegetable Kingdom.

By John Sim, A.B.S.Ed.

Nature, or visible earthly things, have been by scientific men usually divided into three kingdoms, called respectively the Animal, Vegetable, and Mineral. The more highly developed forms of each are easily recognizable, and can with certainty be referred to their respective divisions; but when we approach the lower and more simple forms of organic life, there is a difficulty in deciding to which of the two kingdoms (the vegetable or the animal) they belong. In some cases this is not only difficult, but almost impossible. For example, no one can confound a cow with a cabbage, or an elephant with an oak; but who has yet determined with certainty, in the lower forms of organic existence, where animal life ends, and vegetable life begins? It is true, mistakes on this point may not be very numerous, but that they do occur is certain. Naturalists say an animal can easily be known from a plant, by the former possessing a stomach, and the power of locomotion. Though this in general is true, yet to this rule there are many exceptions. The Hydra is all stomach; and, like a plant, you may propagate it indefinitively, by cuttings or slips. Death to this creature, except by heat, seems a perfect farce. Diatoms and Desmids have not as yet with certainty been determined whether they are animal or vegetable, although the latter opinion seems to be generally adopted. The two kingdoms seem insensibly to merge into each other by means of these minute but beautiful organisms.

It is my intention in the present paper to call the attention of the readers of the 'Phytologist' to the attractive forms of the minute structures of vegetable life, too minute in many cases to be seen by the naked eye, but made cognizable to the sense of sight by means of microscopic power. To such as have not a microscope, the few hints here given will be of little interest or attraction; to those who possess that valuable instrument, I trust they will in some measure be appreciated, and prove acceptable.

Among the minute and beautiful objects in vegetable nature, I know of none which more deservedly claim our attention than the members of *Diatomaceæ*. Under a microscope of moderate power their structure and symmetry is truly astonishing; a

linear power of 150 diameters being sufficient to enable the observer to see the singular geometrical forms, and strange symmetrical marking. Yet others require instruments of the highest power and clearness, to define the transverse striæ on some species of *Pleurosigma*.

These wonderful plants (if such they really be) are far from rare or few; indeed, they are the most abundant of nature's "vital birth," for they may be collected in thousands in almost every muddy ditch and stagnant pool, as the application of the miscroscope will plainly verify. Some Desmids and Diatoms are very common, others very rare; among the common forms I know of none more so than *Diatoma vulgare* and *Navicula* (several species of). The *Arachnoidiscus* is a perfect beauty.

Among the Desmids, the genus *Euastrum* and *Clasterium* will amply repay examination. These, with others, can be easily obtained by putting the hand in amongst the water and slimy mud of any peaty ditch or stagnant pool.

But to rise a few steps higher, to objects whose place in nature is plain, I shall direct the reader's attention to the humble Mosses; their leaves and capsules, when observed with a power of fifty or sixty diameters, present objects of wonderful elegance and beauty. Just let the reader test by the microscope the following:—the capsule and peristome of an *Orthotrichum*, and the leaves of the following species,—*Mnium punctatum, M. affine, M. hornum, Hookeria lucens, Sphagnum obtusifolium, Splachnum vasculosum, Fissidens bryoides*, and several species of *Jungermannia*, such as *J. asplenoides, J. bidentata*, etc.,—and I am sure he will not be disappointed. The delicate reticulations of the leaves of these Mosses and *Jungermanniæ* is truly elegant.

> "Oh, who that hath an eye to see,
> A heart to feel, a tongue to bless,
> Can ever undelighted be
> With nature's perfect loveliness?"

The spores and spore-cases of Ferns are well worthy of the naturalist's attention. A moderate power of seventy or eighty diameters will, upon trial, be found to be mostly satisfactory, at least for the spore-cases, the markings on which are highly curious and beautiful. It is really astonishing to observe the same care and exquisite workmanship adopted by our great Creator on these minims of organic life as upon the huge Pachyderm of the

tropics or *Wellingtonia gigantea* of California; so "wonderful is our Creator in counsel, so excellent in working."

The spore-cases of the following Ferns are very handsome, and may be seen to advantage with a power of about sixty:—*Polystichum Lonchitis, Aspleniumv iride, Scolopendrium vulgare,* and the chaffy scales of *Ceterach officinarum.*

The pollen-grains of Phænogams, as well as the spores and spore-cases of Cryptogams, will, by examination, be found to possess exquisite symmetry and beauty. To the unassisted eye the contents of the anthers appear only as the fine "dust in the balance," or the atom that sports in the sunbeam. But when the powers of the microscope are brought to bear upon this seemingly impalpable powder, how different is the appearance! Instead of "fine dust," we perceive miniature bodies of diversified forms and singular beauty, characteristic of the genus of plants to which they respectively belong; each genus possessing pollen-grains in figure and size peculiar to itself and to itself alone.

These grains are of almost all conceivable forms, the spheroidal form, however, being more or less preserved. Indeed, it is very singular that the spherical form seems to prevail throughout organic nature. The constituent part of plants and animals is the cell, which usually partakes more or less of the character of a sphere; yea, the great globe itself, the sun, with his retinue of planetary worlds, are circular bodies.

The Great Creator has indelibly inscribed upon His works the emblem of His own eternity, in that He has made them circular orbs,—a circle, like Himself, having neither beginning nor end.

Such of the readers of this journal as possess a microscope will, by applying it to the pollen-grains of many of our garden and wild flowers, find that these minute bodies as truly show forth the power and wisdom of Jehovah as the lofty mountain or the boundless ocean. The pollen-grains of the genus *Malva* are large and spherical, and thickly beset "behind and before" with prickles; they may be seen perfectly with a linear power of sixty diameters.

Although in general the spherical form of pollen-grains prevails, still many singular and remarkable deviations occur in different genera. The Tulip has its pollen-grains, a perfectly-formed equal-angled spherical triangle. In the Lily they are like a parabolic spindle; in the Dandelion and Sowthistle the

surface-markings resemble the carving and cutting of a "cunning workman," so strongly are they carved and ornamented; in some species of Heath they are trilobate and triangular.

Among the flowering tribes, the forms and figures of their pollen-grains are so many, diversified, and beautiful, that to attempt an enumeration would only be trespassing upon the reader's time and patience. I would just say, take your microscope, sit down, and see for yourself. To those who have not that wonder-revealing instrument, endeavour to procure one; until you do so, you can never adequately conceive of the beauty and symmetry of structure, both in the animal and vegetable kingdoms. A compound microscope may now be bought for about three guineas, which will answer the botanist and naturalist very well for most of the purposes and investigations he requires to pursue. Such an instrument will magnify, with the different object-glasses, from thirty to about one hundred and fifty diameters, assuming the ordinary focal distance of the human eye to be ten inches. With such an instrument, the corpuscles of the blood and globules of milk may be seen, and the longitudinal striæ on the scales of *Lepisma saccharina* clearly defined.

The best and cheapest work on the microscope is by Jabez Hogg, published by Routledge, and costs six shillings; but a small book may be had for a shilling, entitled 'Common Objects of the Microscope,' by J. G. Wood, and published also by Routledge. Well may the scientific man exclaim, with the royal Psalmist, "O Lord, how manifold are thy works! in wisdom hast thou made them all."

JOHN SIM.

Bridge End, Perth, June, 1862.

Remarks on the European Range of the Indigenous British Plants.

The two lists of plants common to the Azorean Isles and to the empire of Japan, have long been in our hands, and they are now offered to our readers, with the intention of inviting their remarks on this important subject.

From Greece, a specimen of the common Primrose, *Primula vulgaris*, with which we were lately supplied by the kindness of one of our correspondents, who spent the spring and early sum-

mer of 1862 in studying the botany of that charming kingdom, reminded us of the Azorean and Japanese lists of plants, put aside some time ago.

There are many remarks in hand on the Greek plants, which we hope ere long to submit to the readers of the 'Phytologist;' and as soon as M. von Heldreich, the botanist *par excellence* of Greece, has had time to study them, and to give us the results of his investigations and comparisons, they will be printed in our pages, for the delectation and instruction of British botanists.

It is confidently anticipated that several of the species of this great collection brought home by our obliging correspondent, and liberally supplied to us, are of considerable commercial value; or, in other words, will increase the stocks of nurserymen and florists, and be objects of special interest to amateur cultivators.

One of the Crucifers has already been introduced, viz. a dwarf Alyssum, with hoary foliage, bright yellow flowers, of a dwarf, bushy, erect habit, quite hardy, for it is now blossoming (May 1st) in the open grounds of the Green Park, adjoining Piccadilly. The usual bedding-stuff, viz. the Verbenas, Calceolarias, Lobelias, Heliotropes, Geraniums, and such like half-hardy things, will not bear the cold nights of April and the beginning of May; they can rarely be transferred to the open ground before Midsummer.

These hardy early ornamental plants, which are semialpine in the south of Europe, will bear our coldest nights at this season, and afford something worth looking at weeks ere the tenderer plants can bear the open air.

The list of Azorean plants which follows is arranged systematically, and the number of species in each Order common to the Azoric and the British Isles is entered. Some of the species, it may be remarked, are only doubtful natives of Britain. Some few of them are recent introductions, or have been only recently observed or published as growing on British soil.

FLORA AZORICA.

Gramineæ (13).

Holcus mollis.	Poa loliacea.	Bromus madritensis
Anthoxanthum odoratum	Poa rigida.	Triticum repens.
Agrostis verticillata.	Briza minor.	Hordeum murinum.
Polypogon monspeliensis.	Cynosurus echinatus.	Lagurus ovatus.
Cynodon Dactylon.	Festuca bromoides.	

Cyperaceæ (8).

Carex divulsa. Isolepis fluitans. Eleocharis multicaulis.
Carex stellulata. Scirpus maritimus. Cyperus longus.
Carex flava. Eleocharis palustris.

Juncaceæ (5).

Juncus bufonius. Juncus acutus. Juncus uliginosus.
Juncus maritimus. Juncus capitatus.

Naiadeæ (2).

Potamogeton natans. Potamogeton pectinatus.

Lemnaceæ (1).

Lemna minor.

Coniferæ (1).

Taxus baccata.

Callitrichineæ (1).

Callitriche verna.

Euphorbiaceæ (2).

Euphorbia Peplis. Euphorbia Lathyris.

Urticaceæ (1).

Parietaria officinalis.

Chenopodeæ (3).

Chenopodium rubrum. Chenopodium murale. Salsola Kali.

Polygoneæ (2).

Polygonum maritimum. Polygonum Persicaria.

Daphnoideæ (1).

Daphne Laureola.

Plantagineæ (5).

Plantago Coronopus. Plantago lanceolata. Plantago major.
Plantago media. Plantago Lagopus.

Compositæ (9).

Anthemis Cotula. Filago germanica. Cichorium Intybus.
Chrysanthemum segetum. Filago gallica. Hypochæris glabra.
Gnaphalium luteo-album. Carduus tenuiflorus. Sonchus oleraceus.

Rubiaceæ (5).

Galium Mollugo. Galium Aparine. Sherardia arvensis.
Galium palustre. Galium anglicum.

Gentianaceæ (1).

Erythræa latifolia.

Labiatæ (4).

Mentha viridis. Prunella vulgaris.
Mentha rotundifolia. Stachys arvensis.

Verbenaceæ (1).

Verbena officinalis.

Asperifoliæ (3).

Echium violaceum. Echium vulgare. Myosotis versicolor.

Convolvulaceæ (3).

Convolvulus arvensis. Convolvulus sepium. Convolvulus Soldanella.

Solanaceæ (1).

Solanum nigrum.

Scrophularineæ (8).

Scrophularia Scorodonia. Sibthorpia europæa. Veronica Anagallis.
Linaria spuria. Veronica arvensis. Euphrasia officinalis.
Antirrhinum Orontium. Veronica officinalis.

Primulaceæ (2).

Lysimachia nemorum. Anagallis arvensis.

Ericaceæ (1).

Calluna vulgaris.

Umbelliferæ (2).

Helosciadium nodiflorum. Fœniculum vulgare.

Araliaceæ (1).

Hedera Helix.

Crassulaceæ (1).

Tillæa muscosa.

Ranunculaceæ (4).

Ranunculus repens. Aquilegia vulgaris.
Ranunculus parviflorus. Delphinium Consolida.

Papaveraceæ (3).

Chelidonium majus. Fumaria capreolata. Fumaria officinalis.

Cruciferæ (6).

Nasturtium officinale. Sinapis nigra. Senebiera pinnatifida.
Sisymbrium officinale. Cakile maritima. Viola odorata.

Caryophylleæ (3).

Sagina procumbens. Alsine marina. Silene inflata.

Malvaceæ (1).

Malva rotundifolia.

Hypericineæ (2).

Hypericum perforatum. Hypericum humifusum.

Polygaleæ (1).

Polygala vulgaris.

Geraniaceæ (2).

Geranium dissectum. Geranium robertianum.

Oxalideæ (1).

Oxalis corniculata.

Lythrarieæ (2).

Peplis Portula. Lythrum hyssopifolia.

Rosaceæ (6).

Rubus fruticosus. Potentilla Tormentilla. Agrimonia Eupatoria.
Fragaria vesca. Potentilla reptans. Poterium Sanguisorba.

Papilionaceæ (11).

Sarothamnus scoparius. Trifolium suffocatum. Lotus angustissimus.
Medicago Lupulina. Trifolium glomeratum. Lotus corniculatus.
Melilotus parviflora. Trifolium repens. Lathyrus Aphaca.
Trifolium scabrum. Trifolium procumbens.

It is worth remarking that several of the plants in the foregoing list are such as are said to accompany man in all his migrations; or wherever the human family pitches his shanty, raises his hut, or builds his house and encloses his garden, some of the following plants spring up, viz. *Sonchus oleraceus, Galium Aparine, Malva rotundifolia, Solanum nigrum;* but *Poa annua, Alsine media,* and *Senecio vulgaris* do not appear in the Azorean list.

Primula vulgaris, a plant which, although a universal favourite, has no tendency to associate with mankind: it is as shy of his vicinity as the Orchids; and though its geographical range be very extensive, its migrations cannot be in any way traced to human agency. It is however found from the south to the north of Europe; at all events, it is both a Grecian and a British plant. Why may not the *Aremonia agrimonioides* and the *Arenaria balearica,* both plants belonging to the Mediterranean flora, and also found in Perthshire, be also natives of Britain?

That there are more species common to the British and the Japanese Islands than to the former and the Azorean, may be attributable to the greater extent of the empire of Japan, and also to the fact that it was probably elevated from Thetis' lap centuries, or possibly thousands of years, before the Azoric group emerged from the bottom of the Atlantic.

Note.—The species common to both the Azorean and the Japanese floras are printed in *italics.*

The following list is from Thunberg, compiled eighty years ago, and contains the plants common to Great Britain and Japan:—

List of Plants common to Britain and Japan.

Callitriche verna
Ligustrum vulgare.
Veronica Anagallis.
Veronica Chamædrys.
Veronica arvensis.
Fraxinus excelsior.
Lemna minor.
Salix alba.
Cypripedium Calceolus.
Valeriana officinalis.
Scirpus lacustris.
Carex vulpina.
Carex remota.
Carex cæspitosa.
Phalaris arundinacea.
Panicum verticillatum.
Alopecurus geniculatus.
Avena fatua.
Avena sativa.
Arundo Phragmites.
Lolium temulentum.
Triticum sativum.
Triticum hybernum.
Amaranthus Blitum.
Galium uliginosum.
Galium verum.
Plantago major.
Epimedium alpinum.
Cornus sanguinea.
Viscum album.
Urtica dioica.
Betula Alba.
Betula alnus.
Buxus sempervirens.
Sagina procumbens.
Lithospermum arvense.
Anagallis arvensis.
Menyanthes nymphioides.
Convolvulus Soldanella.
Polemonium cœruleum.
Campanula Trachelium.
Datura Stramonium.
Solanum nigrum.
Lycium barbarum.
Euonymus europæus.
Hedera Helix.
Chenopodium album.
Chenopodium viride.
Beta vulgaris.
Humulus Lupulus.
Hydrocotyle vulgaris.
Daucus Carota.
Anethum Fœniculum.
Apium Petroselinum.
Sambucus nigra.
Alsine media.
Tamarix gallica.
Statice Limonium.
Allium arenarium.
Scilla bifolia.
Asparagus officinalis.
Convallaria Polygonatum.
Convallaria multiflora.
Acorus Calamus.
Juncus conglomeratus.
Juncus effusus.
Juncus pilosus.
Juncus campestris.
Berberis vulgaris.
Rumex crispus.
Corylus Avellana.
Polygonum Bistorta.
Polygonum aviculare.
Polygonum Fagopyrum.
Polygonum Convolvulus.
Paris quadrifolia.
Chrysosplenium alternifolium.
Dianthus deltoides.
Dianthus Caryophyllus.
Arenaria serpyllifolia.
Sedum Telephium.
Oxalis Acetosella.
Oxalis corniculata.
Cerastium vulgatum.
Cerastium viscosum.
Ceratophyllum demersum.
Lythrum Salicaria.
Agrimonia Eupatoria.
Fagus Castanea.
Euphorbia Peplus.
Euphorbia Lathyris.
Euphorbia helioscopia.
Euphorbia coralloides.
Prunus Cerasus.
Prunus domestica.
Prunus spinosa.
Pyrus communis.
Rosa canina.
Rubus Idæus.
Rubus cæsius.
Fragaria sterilis.
Potentilla verna.
Papaver Rhœas.
Papaver somniferum.
Tilia europæa.
Poterium Sanguisorba.
Pæonia officinalis.
Aconitum Napellus.
Aquilegia vulgaris.
Zostera marina.
Thalictrum flavum.
Ranunculus auricomus.
Sagittaria sagittifolia.
Caltha palustris.
Mentha Piperita.
Lamium purpureum.
Lamium amplexicaule.
Leonurus Cardiaca.
Clinopodium vulgare.
Melittis melissophyllum.
Prunella vulgaris.
Melampyrum arvense.
Thlaspi arvense.
Thlaspi Bursa-pastoris.
Sisymbrium Nasturtium.
Sisymbrium amphibium.
Turritis hirsuta.
Brassica orientalis.
Brassica Rapa.
Raphanus sativum.
Juniperis communis.
Pinus sylvestris.
Taxus baccata.
Fumaria officinalis.
Polygala vulgaris.
Vicia sativa.
Ervum tetraspermum.
Lotus corniculatus.
Medicago polymorpha.
Sonchus oleraceus.
Leontodon Taraxacum.
Cichorium Intybus.
Arctium Lappa.
Serratula tinctoria.
Carduus eriophorus.
Carduus acaulis.

Artemisia Abrotanum.	Viola hirta.	Equisetum hyemale.
Artemisia vulgaris.	Viola palustris.	Pteris aquilina.
Tussilago Petasites.	Viola odorata.	Asplenium Trichomanes.
Solidago Virga-aurea.	Viola tricolor.	Lycopodium clavatum.
Inula Helenium.	Equisetum arvense.	Cannabis sativa.

The following genera are common to Britain and Japan, but they include no British species, viz. :—

Acer.	Chrysanthemum.	Hordeum.	Œnothera.	Saxifraga.
Agrostis.	Clematis.	Holcus.	Ophioglossum.	Scabiosa
Ajuga.	Cratægus.	Hypericum.	Ophrys.	Scutellaria.
Alisma.	Cuscuta.	Ilex.	Origanum.	Senecio.
Andromeda.	Cynoglossum.	Impatiens.	Ornithogalum.	Silene.
Anemone.	Cynosurus.	Iris.	Osmunda.	Sinapis.
Anthericum.	Daphne.	Lactuca.	Peucedanum.	Sison.
Aristolochia.	Datura.	Lithospermum.	Picris.	Sium.
Arum.	Draba.	Lobelia.	Pimpinella.	Spartium.
Asarum.	Elæagnus.	Lonicera.	Poa.	Spiræa.
Astragalus.	Erigeron.	Lychnis.	Polypodium.	Stellaria.
Azalea.	Euonymus.	Lysimachia.	Prenanthes.	Swertia.
Bidens.	Festuca.	Malva.	Quercus.	Teucrium.
Blechnum.	Gentiana.	Millium.	Rhamnus.	Trifolium.
Bromus.	Geranium.	Mespilus.	Ribes.	Valeriana.
Bryonia.	Geum.	Myosotis.	Rubia.	Verbena.
Cardamine.	Gnaphalium.	Narcissus.	Sagina.	Viburnum.
Chara.	Hedysarum.	Nepeta.	Salvia.	Vinca.
Cineraria.		Nymphæa.	Sanicula.	

A few Remarks on Native and Naturalized British Species.

By a Correspondent.

The popular opinion that all domestic animals and cultivated plants were originally reclaimed from the wild or natural state is neither founded on fact, nor even feasible as a theory. 'Natural' and 'wild' are not always synonymous terms; a production may be *natural* which is not *wild*. A few examples there have been, and are still, of domestic animals escaping from their state of domesticity, as plants cultivated extensively often escape, and sometimes establish themselves independently of man; but surely it is unphilosophical to infer from these few isolated and casual accidents that the races of animals and genera and species of such plants were originally wild. Domesticated animals exist only in a domesticated state, *i. e.* are dependent on man, and

ever have been in this condition. Cultivated plants are still more rarely found wild, and then only in the vicinity of places where they have been cultivated. Our cereal grasses, several of our leguminiferous plants, our vegetables, and probably some of our flowers, are examples of this.

Does any botanist seriously believe that our numerous varieties of wheat have all been produced from the wild species of *Triticum?* We know it is believed that the whole race of Cabbages—*drumheads, sugarloafs,* the ancient well-known *Batersea,* all sorts of Cabbage, red, white, and grey, Savoys, Scotch Kale, Broccoli, Brussels sprouts, Cauliflowers, etc.—have all descended from *Brassica oleracea. Credat Judæus Apella.* The Almighty, at the beginning, created *herbs yielding seed,* and *trees yielding fruit,* for meat to man, and gave them into his charge *to keep them and dress them.* Plants were created for delectation as well as for sustenance, and by the art and industry of man infinite varieties of these have been produced. Some of the ornamental species of which the native country has not yet been discovered may belong to this class, which may be said to be domesticated. Everybody who observes knows that there are certain plants possessing all but a cosmopolitan character. They accompany man in all his migrations; wherever he settles they find a home.

The Nettle, the Chickweed, the Shepherd's Purse, and the annual Poa (*Poa annua*) are familiar examples. The greater Celandine, the Vervain, the Borage, and the green Alkanet are less common instances, but exemplify this peculiarity. The Wallflower, the Snapdragon, our two mural Pinks—*Dianthus Caryophyllus* and *D. plumarius,*—may have this property, viz. a capability of self-dependence in the society of man. It may be assumed that the four last-named species, and we may add the Wall Toadflax (*Linaria Cymbalaria*), are natives of Europe, for this reason, that they grow spontaneously throughout the greater part of our continent. Why may they not, for the same reason, be natives of England, or of some part of it at least? We admit that England is in Europe, and moreover many believe that in bygone ages this island formed a part of the continent, and that the Strait of Dover was then an isthmus.

Even granting that plants have a centre of vegetation towards which they tend, or from which they diverge, and admitting further that they are most abundant in this their centre of distri-

bution, they will notwithstanding have a tendency to enlarge the circumference of their *locale*, to extend their horizontal and vertical range, and to embrace a larger space.

This tendency will increase with the increase or diminution of temperature, or with atmospheric changes attendant on cultivation; or it may, in certain cases, depend on the neglect of cultivation. In densely-peopled Europe, however, it is but seldom that the neglect of culture extends the range of plants; cultivation frequently does. We know that during the last three centuries this cause, the extension of tillage, has been very efficient in promoting the dispersion of plants. Our flora has increased, and is still increasing rapidly; this fact has often been held up to the notice of our readers.

The nativity of a plant is not to be ignored or denied simply on the ground that it is not found everywhere from the Lizard Point to Wick or John-o'-Groat's House. Botanists who only see a straggler, like *Senebiera didyma*, here and there about London and York, say it is not a native. Probably it is not, in their very restricted sense of the term. Yet those who see it about King's Wood, and other places near Bristol, have no hesitation in admitting its claims.

The Wallflower probably is not so common on walls in Scotland as it is in the neighbourhood of London and on the ancient castle of Guildford, but this is no sufficient reason for denying its nativity. Again, as this plant (Wallflower) is not known to grow anywhere but on such places as rocks and walls, where it grows here, and consequently there is the same objection to its admission as a native of anywhere, the *onus probandi* lies upon those who deny the nativity the plant, not on those who assert it.* It may be a native of several places, as of France and Germany, but why not that of England? The reason given for this denial is equally valid for denying its nativity in all other places, viz. its growing on walls, on artificial erections. If this principle were strictly carried out, at least one-half of the plants usually deemed British would be expunged from our national catalogues, and for what object? The maintenance of the purity of our flora.

* Our correspondent appears to have forgotten that the Wallflower grows plentifully on the sea-margin in that bleak part of the coast of England between the South Foreland and Dover Castle.—Ed.

This is like the amiable weakness of some of our linguistic purists, who will admit no word as British unless legitimately derived from the languages of our Celtic and Saxon ancestors. Words are, however, far less permanent in their character and application than plants. The latter generally remain almost unchanged, both in their properties and their localities; all attempts to trace their history to very remote periods will be vain, and especially unsatisfactory will be all endeavours to trace them either to the original cradle of the human race, or to other countries more or less remote from the places where they are now found. There is no conceivable objection to the terms native and naturalized, spontaneous and cultivated, except this sole and important one,—the impossibility of employing them with certainty and satisfaction. It may be affirmed that a plant is of spontaneous growth, or that it is only cultivated in any particular locality; but who will affirm that a plant is native in the sense applied by botanists generally? The best evidence of this difficulty is, that botanists are not agreed on this point; or if there is any agreement, it is generally ascribable to indifference. Many affirm that because a plant is spontaneous and plentiful, and tolerably well established, that it is native.

There are two plants in Surrey with which we are well acquainted, and which have been spontaneously produced for many years. *Impatiens fulva* abounds on the Tillingbourne, below Albury; there is not one plant above the gardens of this park and mansion. It also abounds more or less on the banks of the Wey, only below the confluence of the Albury stream. The gardens of Albury are the cradle of this now well-established American plant, and the country whence and the means by which it was transported are not very doubtful. *Isatis tinctoria* is another plant which occupies but a small space, but abounds in examples. Its centre is one of the chalk quarries between Guildford and Shalford. This spreads over the adjoining fields, but only to a very short distance from the chalk-pit.

Some say the *Isatis* is a native. No one says that the *Impatiens fulva* is a native; it is well known to be an introduced species. *Mimulus luteus* has been naturalized in Surrey and in Yorkshire and in Scotland, and the plant was unknown in England, even as a garden plant, forty or fifty years ago. This is a case in which we may pronounce positively, for the plant has

only been known in this country for a very short period, consequently we may say it is naturalized. But when we include under this category *Vinca minor, Chelidonium majus, Cheiranthus Cheiri, Linaria Cymbalaria,* and many other equally common and well-established plants, what value is the term alien or naturalized? The plant against which it is placed may have been the spontaneous production of the country for a hundred years or a thousand years. Nay, we have no historical evidence of its introduction at any time; it may be native, or it may have been introduced before the Flood, for anything we can tell.

Great importance is very properly attributed to the terms *native* and *naturalized;* the latter (see 'Phytologist,' p. 450, as above) is defined to have "every appearance of a native, growing and reproducing itself regularly, without the assistance of man; proved to be acclimatized by having survived for a period of years, embracing all the varieties of temperature." To ascertain if a plant be *native,* a character obviously distinct from *naturalized,* De Candolle, in his 'Géographie Botanique,' employs three tests:—1st. The old Floras are examined to see if the species in question was entered in them as an undoubted native. 2nd. The names in popular use are to be compared, to see if it had a name in the older language of the country where it is now found; and 3rd, the botanical proofs derived from the nature of the habitat, whether in the vicinity of houses, cultivation, seaports, etc.; whether spreading like *Anacharis, Veronica Buxbaumii,* etc.

The chronology of introduced plants may be said to be of two kinds, historical and *prehistorical.* Phytogeographers define these two periods as the space intervening between the Roman dominion in these islands and the discovery of America, and that from the discovery of the New World to our own times.

The ancient portion is the period assigned for the introduction of the *Narcissi,* the *Ornithogalum,* the Wild Tulip, the Clove Pink, the Wallflower, St. Mary's Thistle, Soapwort, Yellow Fumitory, etc.

It may be inferred, from the examples of plants which have been naturalized in the British Isles within the last three hundred years, and also from such as have been well established *here* as spontaneous productions, that it is impossible to distinguish between such species as are to be accounted aboriginal

natives, and such as were introduced between the Roman dominion and the discovery of America.

The writers of the most ancient Floras were not so critical as the moderns are; and as the history, geography, and statistics of the vegetable kingdom were less perfect two centuries ago than they are at present, much stress cannot be safely laid upon their authority. Besides, it cannot be safely assumed that our older botanists observed all the plants that were existing in their days. Like the older language of nations, the ancient language of science was not very precise. Ancient British botanists did not distinguish one hundred and forty species of Grasses, and about ninety Sedges and other allied genera in the Order *Cyperaceæ*.

Botanists do not lay much stress on the ancient names as aids in establishing the nativity of species. It is a principle, like the prehistoric one, which solves no difficulty.

The third test, viz. the vicinity of houses, cultivation, seaports, cannot be available, because these are the only localities where most of these plants grow in all countries whatever. For example, Borage, Melilot, Anchusa, and several Crucifers are found in all countries to select such situations as they choose in England.

Spontaneous plants (not natives nor cultivated) are divided into four classes by the greatest living authority on this subject, viz.:—1st. Aliens not yet established. 2nd. Species perfectly naturalized, but their foreign origin known, and therefore unquestioned; take *Anacharis* and *Mimulus* for examples. 3rd. Perfectly naturalized, but their foreign origin only probable; *Aristolochia Clematitis* and *Narcissus biflorus* are examples. 4th. Plants perfectly naturalized, but their foreign origin slightly suspected; examples, *Narcissus Pseudo-Narcissus* and *Vinca minor*.

There is a distinction between No. 1 and Nos. 2, 3, and 4 of the above division, viz. between species imperfectly naturalized and those completely established or perfectly naturalized. Also there is a good line of demarcation between *Anacharis* and *Mimulus* on the one hand—both introduced within historical memory—and such plants as Narcissus, Periwinkle, etc., on the other. All these might be classified either as certainly naturalized and doubtful natives. But a question would still have to be answered, What is the distinction between native plants and doubtful natives,

or, as they say, between plants perfectly naturalized, but to which there is a shade of suspicion attached, viz. that at some time or other they migrated hither, or were introduced either by human or physical agencies, and such as have never been questioned?

BOTANY OF THE KINGDOM OF FIFE.

(*Continued from page* 327.)

On leaving the old burgh of Crail, misprinted Craig, page 325, we pursued our search for plants of local distribution. Among the cluster of projecting rocks from the shore, forming a turning-point west from Crail, we took notice of the *Artemisia maritima* matted among the rocky margin of the seashore. Passing westward towards the farmhouse of Caplie, the petrified forest so named attracted our attention; it being low water, we counted upwards of a dozen specimens projecting from the rocks, some of which rose several feet in perpendicular height; some had been recently broken and carried off. In all applications of the mind, of which natural science is no exception, we have examples representing how zeal outruns discretion. These plants appear to express the features of what was known as the genus *Sigillaria*, showing the cast of the inside of the stem, from which the bark had apparently fallen off. We also found here, as also in various places round the coast, detached pieces of *Stigmaria*. The markings, however, of the two supposed genera appear from specimens to show the one running into the other; the base of the tree *Sigillaria* showing the ruptures on the bark, as in the case of trees of our own period, and the top of the tree *Stigmaria* showing the smooth bark, with the marks of leaf-attachment also observed in the growth of trees during the present age, as combining from markings of the old and new bark to form one tree. Cultivation had changed with it the surface of vegetation, except *Equisetum Telmateja*, which still retains its possession. We passed up from the seashore to the grounds of Innergellie, where the *Senecio saracenicus* was growing fifty years ago in waste, marshy ground; since then the ground has been drained and planted. Among the plantations we found several strong-growing plants. With reference to *Centaurea Scabiosa*, page 325, it grows associated with *Scabiosa arvensis*, this latter species

showing the colours referred to. We may remark, *en passant*, that the *Centaurea* has been found there with white flowers, on Kingcraig Point, west of Elie; it grows in profusion, with reduced shades of colour to that of white. Seeds of pure white flowers, when sown, produced plants with white flowers, while several plants flowered in the dark colour.

Reviews.

Manuscript Magazine of the Glasgow Naturalists' Society.

This volume (the fourth), and the first for 1863, is, as usual, a goodly-sized book of 460 octavo pages. Its contents are varied, instructive, and pleasing.

There are in the present number about forty distinct articles on the general subject of natural history, geology, botany, and zoology. A very considerable portion of the magazine is devoted to the service of the floral deity; and for the gratification and information of her devotees, there are at least a dozen contributions, both in prose and verse, on the subject of botany.

In memoriam is a genuine offering of sympathy to Mr. Small, the late editor of the magazine, who, like "many a flower" in these days, was not "born to blush unseen, and waste its sweetness on the desert air." There is this consolation for us, the children of mortality, that though "in the morning we grow up as flowers, and in the evening are cut down and withered," still the memory of the amiable and worthy is embalmed in the recollections of friends and associates. It is not the mode in our prudish times to relate how our relatives died in the odour of sanctity, but a good name is better than precious ointment, than the most exquisite perfume.

Ex Aurelia is another tribute of affection, a memorial to the same true naturalist; *requiescat in pace* is all that can be said about this last-named effusion. Poets alone can deal with poetical effusions, and our vocation and capabilities are of too humble an order to justify us in criticizing the divine gifts of poetry.

Such articles as a Tour to Apple Cross, a Flora of Cumbraë, Excursion Notes, are better suited to our simple tastes and lowly aspirations.

Many of our readers would have enjoyed the ascent of Tor Aichiltie, and the view from its summit, minus the Scotch mist, which drenched two stalwart Highlanders from head to foot, and from their outermost mackintosh or wrap-rascal to their innermost *surcoat*, provided they wear this comfortable vestment.

This hill of Ross, on the north side of the Cromarty Frith, yielded the following rare species:—*Ajuga pyramidalis*, with radical leaves; also one of the rarest of British rarities,—*Pinguicula alpina*,—*Linnæa borealis*, *Moneses grandiflora*, *Gnaphalium rectum*, *Allosorus crispus*, etc.

The frequent saturations to which the traveller is subject in these excursions, are no inconsiderable drawbacks to the enjoyment of Highland scenery and alpine vegetation.

"Contributions towards a Flora of Clydesdale, and Gleanings around Liverpool," contain ample lists of the vegetation on the banks of the Clyde and the Mersey. The following rare plants are common to both the English and Scottish western shores, viz. *Cakile maritima*, *Sisymbrium Sophia*, *Brassica monensis*, *Crambe maritima*, *Vicia sylvatica*, *Lythrus sylvestris*, *Crepis paludosa*, *Doronicum Pardalianches*, *Inula Helenium*, *Achillea tomentosa*, *Campanula latifolia*, *Lobelia Dortmanna*, *Andromeda polifolia*, *Vinca minor*, *Gentiana campestris*, *M. rotundifolia*, *M. viridis*, *Osmunda regalis*.

The paper on the Clydesdale Flora has an ample introduction, and a very sensible *finale*, containing some practical remarks on the best plan of completing the list of native plants in this fertile region.

The species themselves are well localized, with some exceptions; the latter are doubtful natives (?).

The gleanings round Liverpool are made up of a number of species set down apparently without order, or, as it may be said, at hap-hazard. This paper has neither beginning nor end, as a rhetorician might say, and no localities are appended.

The list of rare plants in this paper of gleanings might be entered in a single line, and leave some room at the end. There are only three, viz. *Osmunda regalis*, *Campanula latifolia*, and *Cakile maritima*; *Iberis* is an interloper. The visitor to South Lancashire and the Wirral will have but a very imperfect notion of the productiveness of this district, from the Liverpool Gleanings, as gleaned by a contributor to the Glasgow Nat. Soc.

MS. Mag. All the plants in this meagre list might be collected on a fair afternoon about the end of August, when such late plants as *Bidens tripartita, Lycopus europæus, Aster Tripolium,* and the like, are in flower.

The orthography of this short paper is the only originality about it, and this, like many other novelties, is "new, but not true." The following is a sample:—*Scripus* (pro) *Scirpus, Gallium* (pro) *Galium, Lonceria* (pro) *Lonicera, Centaury Cyanus* (pro) *Centaurea Cyanus, Nuphar lueta* (pro) *N. lutea, Viola lueta, Lamium alba, Molina et Arcticum,* etc.

The Clydesdale list is a good foundation for a complete enumeration of the species and localities of this very productive tract.

There are two papers on the flora of Cumbraë, the first on the 46th, the second on the 230th page. Cumbraë, it may be stated, is an island in the Frith of Clyde (?), if our geographical ken does not betray us, of very moderate superficial extent, but, judging by its productions, of considerable altitude.

From this article it appears that a Flora of Cumbraë has been recently published, but far behind the state of natural history as now studied, and quite inadequate to the requirements of the age.

As a sample of the more recent discoveries in this island, the following are quoted, viz. *Erythræa littoralis, Hypericum Androsæmum, Ligusticum scoticum, Habenaria viridis, Pinguicula lusitanica, Verbascum Thapsus, Hymenophyllum, Osmunda,* etc. Also some of the suspected species, viz. *Lavatera arborea, Valeriana pyrenaica, Tragopogon porrifolius, Hypericum dubium.*

A list of Cumbraëan plants concludes the paper, and in addition to those entered above, the following may be here presented as rarities:—*Brassica monensis, Sagina subulata, Cerastium tetrandrum, Geranium sanguineum, Cotyledon Umbilicus, Sedum anglicum, Carum verticillatum, Pyrola media, Erythræa linariæfolia, Convolvulus Soldanella, Anagallis tenella, Habenaria viridis, Allium vineale, Schœnus nigricans, Carex extensa, Lastrea æmula, Asplenium mariæmum,* etc.

In the published list of plants found in the Cumbraës there are the following doubtful species:—*Cardamine amara,* which may grow there; *Thlaspi arvense,* a plant which may grow anywhere in Great Britain; *Hypericum montanum,* a very problematical species so far north; *Geranium nodosum,* suspicious in all hitherto printed British localities; *Erodium maritimum;* this is a

catch anywhere, except on the west of Wales, etc.; *Trifolium ornithopodioides*. But what think you, courteous reader, of *Herniaria hirsuta* on the shore of the estuary of the Clyde? It is a rare find! *Sedum dasyphyllum* is not a very unlikely plant, and has been already registered as a flower of Scotland; *S. reflexum* is very problematical; *Petroselinum segetum*, another of the same kidney! *Galium spurium*, *Asperula cynanchica*, *Gnaphalium supinum*, *Senecio viscosus*, *Orchis ustulata*, *Iris fœtidissima*, *Alisma natans*, etc., are some discoveries which it would be satisfactory to have rediscovered, or to receive further authentication.

The other paper on the flora of Cumbraë is well worth reading; and we should like to visit this islet, in company with its author.

Finally, we have the pleasure of congratulating our Glasgow correspondents and friends on the success of their manuscript magazine, and we do thank them very cordially for their kindness in sending it to Chelsea. It is not a *bonâ fide* publication, and therefore cannot be perused by many of our readers; consequently, criticism of its contents would be unfair, and scarcely intelligible. But even if it were committed to the public, it would be our aim to judge it with leniency, to cherish it as an example of a genuine love of science among the industrious population of the western emporium, which appears to be as celebrated for science as for commerce and manufactorial pursuits.

If the manuscript magazine of the Glasgow society were fairly amenable to literary opinion, we should be inclined, like the poet, to "be to its merits rather kind, and to its faults be rather blind."

It is confidently believed that our Glasgow brethren are fully aware of our sincere desire for the prosperity of their society, and of our good feeling to the authors of these papers especially; otherwise we would not venture to offer them good advice.

Not a single word will appear here to intimate that less poetry and fewer flights of imagination would be agreeable to sober Southrons. These writers are young, and full of the natural energy of youth and mental vivacity. Long may they enjoy their exuberant, healthy excitement! They will pardon the old man who has practised the craft of criticism for above half a century,

when he gently remonstrates with them for introducing novelties in orthography quite unsanctioned by any authority whatever.

A genuine Anglo-Saxon is a decided foe to innovations, even when introduced on high authority; but for these already noted there are no precedents. They are pure *lapses*, but neither *lapsus linguæ* nor *lapsus calami*; they are examples of weakness or of carelessness, which should not appear. The revised and re-revised code of educational legislation has supplied a remedy for these defects of orthography.

We need not inform the proprietors that their Midsummer volume will be very acceptable; but we may tell our readers that such a mode of communicating ideas and facts is worth a trial by those who have something to relate which they do not think of sufficient interest to the general public, or who are naturally sensitive to hostile remarks, and shrink even from fair criticism. To all such, this novel mode of publishing their discoveries, thoughts, feelings, etc., will be available.

The Flora of Wiltshire, etc. By Thomas Bruges Flower, M.R.C.S., F.L.S., etc. No. 6.

This portion of the indigenous plants of Wilts. contains the Orders Aceraceæ, Geraniaceæ, Linaceæ, Balsaminaceæ, Oxalidaceæ, and Rhamnaceæ, viz. all the native Wiltshire species of these families.

The localities appear to be well worked out, and in all cases authenticated by recent authorities.

At page 127 there is a long and interesting note on the national floral emblem of Ireland, viz. the Shamrock; and as the learned author quotes Mr. Bicheno's essay in proof that the present *Oxalis Acetosella* was the ancient Shamrock of Ireland, it is perhaps fair to conclude that Mr. Flower adopts Mr. Bicheno's views. "Typical," our author writes, "of the delicacy and susceptibility" (*sic in exemplare*) (? susceptible) "temperament of its inhabitants."

One of the arguments urged in behalf of the Wood Sorrel's being the proper national emblem is, that the plant is "familiar at that season when the people celebrate the national festival." It

may be in flower in early seasons on the 17th of March in Wiltshire, and in the south of England generally, but it is later in Ireland.

Besides, it is scarcely credible that the people, who know little about the modern distinctions between wild and domesticated plants, cared whether their emblematic flower or plant was wild or cultivated.

But is it a real or only an assumed fact that the Dutch or white Clover is not indigenous in Ireland, as it is usually, rather universally, admitted to be a native of Great Britain? We have several plants which are both wild and cultivated,—for example, the red and white Clover. Sainfoin grows in fields, and on banks by roadsides. Ribgrass grows wild, and it is sometimes sown for pasture and for being cut as green food. Some say that Carrots, Parsnips, Cabbages, and many other plants are both wild and tame. Why should white Clover be an exception? It may, however be observed that even admitting that the plant now adopted by the modern inhabitants of Ireland as their national badge was not introduced before the sixteenth century: let us just ask where is the proof that the custom of wearing Trefoil on the hat or button-hole of a true Hibernian was observed before that time. The plant, even if introduced, might have been then in time enough to afford this lively people a means of indulging their whim.

We should like to learn what authority there is that the Irish people, either ancient or modern, ever employed the Wood Sorrel as an article of food. The author who visited Ireland in the sixteenth century, and who relates the fact of the people's eating this herb called Shamrock, also states that their destitution was so great that they ate each other. When a famished nation is reduced to such extremities, the distinctions between the acid and the astringent are not very obvious; Cresses, Dock leaves, Sorrel, and mayhap Clover, are eagerly gathered and devoured to allay the pangs of hunger. The Wood Sorrel would be but a poor substitute for the valuable Potato, even if a sufficient quantity could be procured, which would be impossible, for the plant is not very common, and it yields the slightest possible herbage.

It is true that this plant is called Shamrock in the native language, but it is equally true that the *Trefoils, Buckbean,* and possibly other trifoliate plants, are called by the same name.

It is quite possible that Dutch or white Clover is not the right Hibernian national emblem, though both the poets and the people are content to use it till they know better, or can find a fitter badge. Can our learned botanists and antiquarians tell us which is the Scotch Thistle?

Guernsey, Sark, etc. A Handbook for Invalids, Geologists, Naturalists, Archæologists, and others. Guernsey: S. Barbet, Printer and Publisher.

This tract is issued by certain inhabitants of these islands, with the view of drawing some part of pleasure-seekers, vacation tourists, and other descriptions of travellers to these shores.

Though it be of very modest appearance, with no pretensions, and obtainable at small cost, yet the *specialities* of the islands are briefly and lucidly described by great authorities, who possess the inestimable advantage of adding several initials after their legal and courtesy titles, as handles to their names. We will not venture to specify these authors, but they are the authors of papers on Climatology, Geology, Antiquities, Conchology, Entomology, Botany, Piscatorianism, Zoophytes, Ornithology. The last two subjects are by a fair authoress, who is *rien du tout*, as the witty Frenchman said; not even a member of the Linnean Society.

We wish, for our readers' sakes and our own, that all such invitations as the present were prefaced by so clear directions about the best way of reaching the places whereunto their authors wish to allure the public whose purses are well filled or their pocket-books well lined with something more negotiable than drafts on the banks of elegance and fashion.

The author or authors give a choice of *routes*, viz. first, by London and South-Western Railway, and steam-packet from Southampton, three or four times a week; second, by Great Western, combined with packet service from Weymouth, three times a week; third, from London direct, by a steamer which sails once every ten days; fourth, there is a steamer every week from Newhaven.

On arriving at Guernsey, and having settled his several fares to boatmen, porters, etc., the tourist is told where he may lodge,

and five principal hotels are named and localized; three are in the High Street, one in the Esplanade, and another in Cornet Street. Those who desire a private residence are informed that unfurnished houses, the rents of which vary according to size, situation, and term of hiring, may be had at every price, from £15 to £100 per annum; cottages in the country being obtainable at from £10 to £15. When taken furnished, the rent, as a general rule, is about double; but in both cases the rent is all that is payable, there being no taxes of any kind. Lodgings, whether furnished or unfurnished, may be had in all parts of the town and environs. The prices, of course, vary according to circumstances, but they will be found much below those payable in England, and they are, generally, well furnished, clean, and comfortable.

The following extract from the botanical article will show the floral riches of these islands.

The Channel Islands have long been famed for their floriculture, and this quality is said to have elicited from the late Douglas Jerrold the remark, that "one day or other these islands must be put into pots and sent over to Covent Garden to be sold." The wit of this saying is too refined or too recondite for raising even a smile on the features of persons of but average intelligence, but it will be sufficient to exemply a fact that even the dark sayings of the ingenious are quoted, even though barely intelligible. The following quotation shows that if the Channel Islands cannot be potted and sent to Covent Garden, they are well worth a visit. As the Arabian prophet said, "If the mountain will not come to Mahomet, Mahomet may or must go to the mountain."

"The size to which the ordinary flowering-shrubs attain in the Island gardens, and their exuberant luxuriance of bloom, are astonishing to those who have been accustomed to the more modest products of an English garden. To see a myrtle covering the side of a house; fuchsias fifteen to twenty feet high, and full of splendid bloom; magnolias as tall as the loftiest laurels; hydrangeas of enormous size [frequently producing blue flowers],—these are the common wonders of the Island gardens; but what will the inhabitants of even Devonshire think of the *Camellia japonica* growing and flowering in the open air all the winter through, with a luxuriance quite equal to anything that can be attained in a greenhouse in England?

"Two aloes in bloom (*Agave americana*) were from twenty-five to twenty-eight feet high, and the leaves are already over eight feet high.

The *Pinus filifolia;* the Norfolk Island Pine (*Araucaria excelsa*), and the *Yucca aloifolia* of South America, were all in splendid order and fine development. The *Cheirostemon platanifolium* (or *platanoides*), the celebrated 'Hand-tree,'—so called from the resemblance which the disposition of the stamens of its bright red flowers bear to the human hand,—a fruit-bearing shrub from Mexico, was also noticed by the author. Among other curiosities here were some splendid plants of the *Gunnera scabra,* a noble plant from the Pacific, with leaves of extraordinary size and roughness, and the fruit or seed gathered together in a tremendous spike.

"In England, people drive miles to see a specimen of the Aloe in flower, and the vulgar error is very generally adopted that these plants flower only once in a hundred years. Our readers, of course, do not need to be reminded that the fact is that the Aloe flowers but once in its existence, and that after that grand effort of nature has been accomplished, the plant dies. In England, the crisis takes a long time to come about; but in the islands, it is effected so much more rapidly, that the sight of an aloe in bloom is by no means an uncommon one. I certainly saw from eight to ten during my walks about the island, and the height which the major part of these had attained was not under five-and-twenty feet.

"Cape bulbs luxuriate here. The gaudy varieties of Gladioli—the *Ixias, I. viridiflora,* and *crateroides* with many other splendid kinds, are raised in this island, as well as the beautiful species of *Tritonia* and *Sparaxis* of many shades of colour. Great numbers of these are exported annually, and are of some importance commercially.

"The New Zealand Flax (*Phormium tenax*) grows vigorously in some spots, producing flowers and ripening seeds. *Arundo Donax* (or 'Canni di Giardini' of the Italians) sometimes grows twelve feet high; Indian Shot (*Cannæ*) remain in the open ground many years. These plants, belonging to this great division of the vegetable kingdom, are so exotic in appearance as to cause the English visitor to think himself further distant from home.

"The Blue Gum-trees (*Eucalypti*) and Wattle-trees (*Mimosa*) of Australia become trees here, and are very striking.

"The Glory Pea (*Clianthus puniceus*), a splendid shrub from New Zealand, as well as the Veronicas from same country, grow luxuriantly here."

Finally, the author tempts the economical by the information that lodgings will cost only from twelve to thirty shillings per week, the price being dependent on style and situation. We beg leave to second this laudable effort to help tourists to disburse their spare cash in a rational way, and in a place where it is believed that they will get a *quid pro quo,* or a fair equivalent for their expenditure.

Botanists will be induced to visit these isles in the hope of increasing the attractiveness of their herbaria or collections. The following are a few of the novelties that may be expected; they are extracted from the list published in this little work, and contributed by one of our Guernsey correspondents. :—

Allium Ampeloprasum.
Allium Babingtonii.
Allium triquetrum.
Arthrolobium ebracteatum.
Briza minor.
Bromus maximus.
Bupleurum aristatum.
Carex punctata.
Cicendia Candollii.
Cicendia filiformis.
Coronopus didyma.
Cynodon Dactylon.
Cynosurus echinatus.
Cyperus longus.
Daucus maritimus.
Erodium moschatum.
Euphorbia Peplis.
Frankenia lævis.
Gnaphalium luteo-album.
Herniaria glabra.
Hypericum linariæfolium.
Isoetes Duriæi.
Juncus capitatus.
Knappia agrostidea.
Lagurus ovatus.
Lavatera arborea.
Leonurus cardiaca.
Lotus hispidus.
Lythrum Hyssopifolium.
Matthiola sinuata.
Ononis reclinata.
Orchis laxiflora.
Ophioglossum lusitanicum.
Orobanche Hederæ.
Oxalis corniculata.
Polycarpon tetraphyllum.
Polygonum maritimum.
Polypogon littoralis.
Polypogon monspeliensis.
Scilla autumnalis.
Scrophularia Scorodonia.
Sibthorpia europæa.
Silene anglica, var. quinquevulnera.
Silene conica.
Spiranthes æstivalis.
Tillæa muscosa.
Trichonema Columnæ.
Trifolium suffocatum.
Vicia lutea, etc. etc.

Hints for the Formation of Local Museums. By the Treasurer of the Wimbledon Museum Committee. London: Robert Hardwicke, 192, Piccadilly. 1863.

What parochial community would now be without a museum, when the annual expense to each individual proprietor or member would be only five shillings per annum?

The formation of associations for the study of natural history has been frequently advocated in our pages, and at last a method has been discovered which renders their failure all but impossible. The success of the Wimbledon Village Club of Naturalists has placed this matter beyond the possibility of doubt.

The objects of the Wimbledon Club of Naturalists are the study of natural history in all its branches; and these are promoted by lectures, readings, the collection and comparison of specimens, etc. etc. By these means the working classes are to be both instructed and amused. The *utile* and the *dulce* are so admirably blended, and all classes of the community are so cheaply and agreeably associated, that a healthy stimulus is

afforded to the more intelligent members, who educate themselves while they impart information to the younger and less informed members, who are thus roused and prepared to take an interest and an influential part in the great business of education.

The contents of this little but comprehensive volume present the readers with the objects of local museums, their furniture, their effects, results, etc. etc.

The treatise shows how the labour is to be apportioned, how the funds are to be raised, how the museum is to be started, what specimens are to be preserved, how they are to be mounted or prepared for future inspection, etc. etc.

On all these points the fullest information is embodied in the Treasurer's address, which is here presented to the readers of the 'Phytologist,' in the earnest hope that the energetic inhabitants of many of our smaller towns and villages will imitate this good example which the Wimbledon naturalists have carried out so successfully.

"Address.

"The Wimbledon Museum Committee wish it to be understood in the very outset of their undertaking, that their Museum is to be purely local; it is to consist solely of such objects of interest, characteristic of Wimbledon and its neighbourhood, as may be found within a radius of five miles from the parish church. . . . The Wimbledon Museum should contain specimens illustrating the nature of the soil, the tribes of living beings (plants and animals), and the antiquities, if any, of the neighbourhood; and in its formation it is hoped that all classes of the inhabitants will take a part. . . . If called upon to particularize objects whose collection, preservation, and careful examination, would be a source of never-failing interest to the inhabitants of Wimbledon—young and old,—the Museum Committee, speaking in very general terms, may point to the following list:—

"*Mineral Kingdom.*—Different kinds of sand, and of pebbles forming the gravel, and of fossils surrounding the pebbles, or within them. Varieties of peat and clay, to illustrate the nature of the surface earth.

"*Vegetable Kingdom.*—Confervæ, Lichens, Fungi, Mosses, Ferns. A collection of flowering plants, to show the leaf, flower, seed, and stem, arranged according to the natural system. Seeds of different plants, seed vessels, and their skeletons. Specimens of woods, also in section (transverse and longitudinal), and their bark. Several series, showing the stages of growth of a bud, from the period of its formation to that of its leaves, flower, seed, and bud again; series of leaves and their skeletons."

The author next sets before his readers several objects which may be called the appendages of a museum, viz. plans, sketches, photographs, drawings of magnified objects, registers of the flowering of plants, the leafing of trees, the first appearances of migratory animals, etc. etc.

His proposals for the formation of a museum are—

(1.) That the collection be limited to objects that are strictly local or existing within five miles of the church.

(2.) That all specimens must be well mounted, or otherwise so prepared as to be readily inspected by the members. These should have written or printed tickets, containing the name of the object, the place and time where and when it was collected, with any other needful information, and this account should be accompanied with the name and address of the collector.

(3.) That lists of plants and animals found in the museum area be drawn up, printed, and circulated.

(4.) That a series of meteorological observations be kept.

(5.) That books of reference be provided, and descriptive catalogues of the contents of the museum be compiled.

(6.) That a record of interesting facts in natural science be preserved for the use of the members.

The author next disposes of the objection "that the collection and custody of so many objects will be a burden on the willing-hearted members of the society." For example, see page 11.

"Why should not one person devote himself to the department of moths, or flies, or butterflies, or dragonflies, or bees, or wasps, or gnats, or beetles, or spiders, or ants, or snails, or worms, or to one class of fish, or reptiles, or birds, or mammalia, or to lichens, or fungi, or mosses, or ferns, or particular classes of flowers, or seeds, or woods, or barks, or fossils? The observation, collection, and preservation of any one of these classes of objects would give ample work to any individual, or indeed to two or three associated together, or even to a family; at the same time that the interest taken by each worker in other departments than his own would be increased rather than lessened.

"Again, some one person may be appointed to draw up a list of plants, another to receive information from villagers regarding the migration of birds, a third, the dates of the first and the latest appearance of annual flowers; a fourth, the total disappearance of plants or animals; a fifth, the habits of certain insects, fish, birds, or quadrupeds; while all would be aided in every way possible by the committee; and the specimens, if duly preserved, and the facts, if accurately recorded, would be of interest to the

inhabitants, not only of our own village, but to those of all villages, towns, and cities, in Great Britain; indeed to the inhabitants of all lands, wheresoever the contemplation of God's works cheers and elevates the mind of man."

In conclusion we very warmly recommend these hints to our readers, many of whom desire to extend their acquaintance with natural science, and especially offer them as an excellent model to such benevolent persons as have the intention of doing something to provide innocent recreation, and healthy, useful instruction to the younger and less affluent members of society.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Answers to Correspondents, Notes, Remarks, etc.

Mr. C. Howie, now of Largo, and late of St. Andrew's, obligingly informs us that he, with a deputation of the Archæological and Scientific Society of St. Andrew's, intends to explore the ancient camp of Sueno, the Danish monarch who invaded Scotland many centuries ago. Fifty years ago this place was a *muir* covered with whins, where *Hypnum undulatum* grew and fruited in profusion.

Our excellent correspondent is organizing a naturalists' society, and promises particulars in a future communication.

Our Plymouth correspondent, T. R. A. B., is hereby thanked for his remarks on *Epilobium lanceolatum*, and is requested to continue his observations, and to tell us the results. That his plant is *E. lanceolatum* we do not deny; all that we can say is that it corresponds with M. Crepin's description of what is so called by Belgian botanists, and it is like *E. montanum*, var. β, of Willdenow; but it does not correspond with Mr. Thwaites's Stapylton plant which was sent to us many years ago, and a specimen of the same has been recently sent by an obliging correspondent.

Mr. Winter is informed that a preserved or dried specimen of *Peucedanum palustre* is not wanted, but a living root. Any time between this and Midsummer will be time enough for its removal and replanting, viz. so that it may be well rooted in its new location before winter.

Our fair correspondent of Chace Cottage is hereby informed that the locality for *Lilium Martagon* is a very satisfactory one. As this species increases much by its creeping roots, and as the place where it grows is old pasture, there is no risk of its disappearance now that it has again reached the air and light, after its interment for so many ages as have passed since Enfield Chace was disforested. We hope to have the pleasure of visiting the locality, and also that of paying our respects to the fair inmates of Chace Cottage.

Botanical News.

The following is a brief Report of the Society of Amateur Botanists, 232, Euston Road :—

March 18th.—Paper on the Genus *Lycoperdon*, read by the President. Also an account of some of the most interesting plants found in the neighbourhood of Epping, by Mr. A. Grugeon.

April 1st.—Paper on the Order *Phalloidei* of British Fungi, by the President. Also "On the species of *Bovista* found in Great Britain."

April 3rd.—Excursion to Combe Wood (by permission), for the purpose of collecting Cryptogamic plants.

April 15th.—Paper on *Technokynesis*, or staminal motion in certain British plants, by the President. "Notes on British *Orchidaceæ*, by Mr. Savage.

Earliness of the Season, Fineness of the Weather and the Spring Flowers.

Not a tree, or shrub, or bush, or plant, or flower but seems instinct with life; an unprecedented precocity and forwardness are apparent in all of them, resulting from, and accelerated by the soft, mild weather. Honeysuckles and many Rose-trees have expanded their leaves; the Mezereon shows itself, "thick beset with blushing wreaths;" Lilacs and Syringas appear ready to burst into leaf; the Hawthorn is evolving and protruding its countless buds; and the Gooseberry even is mantling itself in green attire. The Snowdrop has been in flower an entire month; and, closely following it, in Flora's train, the several varieties of the Crocus—yellow, white, and blue, have made their appearance. Polyanthuses, Primroses, Daisies, Wallflowers, the Hepatica, Arabis, and Dandelion may all be seen in bloom; while the Daffodil, or Lent Lily,

> "Which comes before the swallow dares, and takes
> The winds of March with beauty,"

will ere many days unfold its flowers, and deck the garden among other beauties. Not many days ago, the yellow Star of Bethlehem, which usually flowers about the 19th of March, and continues to blow through April, was discovered just coming into bloom in one of its old habitats in this neighbourhood by a botanical friend of ours. He is a keen observer, and was surprised at seeing this little plant so early. The weather yesterday was more favourable, and the day, for February, was very fine,—inviting birds to sing, and ladies who have nothing to do, or who ought to have something to do, to walk out and admire the loveliness of the vernal season.

Preston Chronicle, April, 1863.

Exchange of Specimens.

Having good duplicates of several of the rarer Mosses (amongst them *Schistostega pennata*, recently collected), and being still in want of a large number of the more local species and varieties, and also of named specimens (well set and in good condition) of either British or foreign marine and freshwater Algæ, and foreign Lycopods,—having none of the latter, and but few of the former,—I shall be glad to forward lists to botanists wishing to exchange, and to receive their lists of desiderata.

Huddersfield. T. W. B. Ingle.

Rubus saxatilis in Merionethshire, North Wales.

This bramble grows in the drier parts of the stony bed of the torrent Clettwr (ascending the stream), about three hundred yards above the bridge.

Pont Clettwr, Llanderfel.

Sarracenia purpurea, a cure for the Smallpox.

On the efficacy of the above as a remedial agent in this loathsome disease, there is the following, copied from the 'Edinburgh Weekly Review,' of December 13, 1862:—

"During the season of 1861, the province of Nova Scotia was visited by a severe attack of smallpox; and as the disease was unusually malignant and fatal, defying all the ordinary remedial agents, Dr. Morris was induced, at the earnest solicitations of his friend Mr. Sang, who had elicited the secret from a Mic-Mac squaw, to try the remedy; and, to his delight, found the plant possessed of the specific virtue ascribed to it by the Indian."

This was communicated to the Review by Samuel H. Nibbs, 12, Rankeillor Street, Edinburgh.

Valeriana officinalis, and V. sambucifolia.

The earliest notice of these two forms or species of Valerian that I have seen, is in Lobel's 'Adversaria,' 319, ed. 1576, and 'Observationes,' 411, same date, where both are figured. *V. sylvestris minor* is the common form, which grows about London, and *V. sylvestris major* is the form which I have seen both in Wales and in Scotland.

Clusius' figures on page lv. Hist. Plantarum, appear as if they had been taken from the same blocks used in printing those of Lobel.

Parkinson, 123, and Gerard, 1075, are, as usual, faithful copiers of their great predecessors; their impressions of these two plants are as faultless as photographs.

Deadly Nightshade.

"The insane root that takes the reason prisoner."—Macbeth.

You have already given some notes in the 'Phytologist' on this subject, but I am not certain whether the *insane root of Shakspeare* has been identified. I find, in a work by John Thomson, called 'Etymon of English Words,' the following:—

"*Dwale*, a noxious plant, a species of *Solanum;* G. *duala*, T. *toll*, B. *doll*, Swed. and D. *dwala*, delirium, folly, insanity, swooning, trance, all which effects are produced by Deadly Nightshade, which was formerly used in witchcraft.

"*Dwaule*, v. a., to rave, to be delirious, to talk idly."

Culverkeys. The same work gives the following:—

"*Culverkeys*, the flower Columbine.

"*Culver*, a wood-pigeon; S. *culfre*, from L. *columba*.

"*Keys*, flowers or fruit, such as the Cowslip, or Ash-pods, which hang like bunches of keys."

Could not some of your correspondents inform us whether they have ever heard the Columbine called Culverkey by the common people?

S. Beisly.

Papaver cambricus. (*Welsh Poppy.*)

"Nascitur autem et observata primum fuit in Cambria septentrionali, locis umbrosis et lapidosis circa rivos alpinos, v. gr. Parkinsono primum memorante, versus Abbar media via inter Denbigam et Guidar, item prope pontem, Devæ fluvio superstructum, prope Balam, et ascendendo montem verus Bangorium. Sed nullibi frequentius provenit, quam circa Perisuum ad radices montium Widva et Glyder, circa rivum qui inde in lacus decurrit, observante Lloydio, dein Rajo et nobis etiam. Postea idem Lloydius vidit in monte 'Vann uwch deni' prope Brechiniam in Cambria australi. Sed nec ipsi Angliæ hanc plantam deesse constitit mihi, anno 1726, dum rupes Chedderenses plantarum gratia perlustrarem, in cujus cautibus eam cum Tunica rupestri (*Dianthus cæsius*), folio cæsio molli observavi; quæ rupes inter oppida Chedder et Axbridge, in Somersetiensi comitatu, sitæ sunt."—Dill. Hort. Elth. p. 301, f. 290.

We do not remember any notice of the Bala locality of *Meconopsis cambrica*, but we know that in 1852 it grew plentifully on the old stone walls and on the cottage roofs of a little hamlet beyond Stainforth, near Settle, a few humble tenements on the road from the last-mentioned place to Penyghent. Our observant Preston correspondent, who has frequently botanized this district, has not, so far as known to the writer of this note, observed, or has not recorded this locality.

In the above year it was seen at Stackhouse, but only as a straggler. Also between Stackhouse and Stainforth Foss, a couple of plants of garden *Angelica* were found growing on the thick dry turf by the roadside.

Harebell, Bluebell.

"The wild Hyacinth; *S. hæur;* Scot. *haw*, blue, and bell. The Gothic tribe, called Heruli, are known to have affected a blue colour."

It appears from the above, taken from Thomson's Etymon, that this flower does not take its name from *hare*, the animal, but from the Saxon word signifying blue. It may be the same with regard to the Campanula, *hair* or *hare* bell, a very different flower, but having a blue colour, and probably better entitled to the name *bell* than the Hyacinth. What are the Blue-bells of Scotland? S. Beisly.

Convolvulus sepium.

The pink-flowered state of *Convolvulus sepium* has been noticed for many years in hedges about Hurstpierpoint, Sussex, growing with the ordinary white-flowered state. William Britten.

Communications have been received from

C. Howie; T. R. A. Briggs; John Peers; W. Winter; M. A. Walker; J. W. Chapman; John Sim; J. Britten; F. Crepin; W. Pamplin; W. T. Dyer; C. J. Ashfield; H. C.; J. S. M.

BOOKS RECEIVED FOR REVIEW.

Supplement to the Warrington Guardian, April 15th.
The Preston Chronicle, May 16th, L'Ardenne; by F. Crepin.

Erratum.—Page 492, line 1, *for* latter *read* former.

ON THE BOTANY OF MALHAM.

The little village of Malham, in Yorkshire, has long attracted visitors by the wonders of its natural scenery and the rare interest of its flora. Ray, Willisel, Curtis, Dillenius, and Richardson are only a few of the older botanists who have left accounts of their discoveries at Gordale and the neighbourhood. For nearly two centuries the limestone rocks of that strange locality have been explored by an almost uninterrupted succession of British naturalists, nor have their pains been ill bestowed. There are few parts of England where the number of rare plants bears anything like the proportion to the extent of ground which those of Malham bear to its comparatively limited botanical area, and our knowledge of its botany may be said to be almost co-extensive with the number of species itself. Indeed, Britain on the whole is a well-examined country. Its botany is in a forward state of development, and few well-educated Englishmen are unacquainted with its chief centres of natural beauty. Whatever may have been said in the past respecting the folly of posting over the Continent and leaving our native land unexamined, we are not now prone to *that* fault. There is no necessity in the England of 1863 for an oration "*de necessitate peregrinationum intra patriam.*"

Malham is situated at the head of Airedale. The river which gives its name to that valley rises at the southern end of Malham Tarn. After flowing about half a mile, it sinks, reappearing at the foot of the Cove, a distance of more than a mile. Another stream, equal in volume, rises from the heights and "clowders" north-east of the tarn, rushes through the precipitous cleft of Gordale, and under the name of Gordale Beck joins the other rivulet between the villages of Malham and Kirby Malham. A third tributary flows from Kirby Fell and Scosthrop Moor, uniting itself to the Aire about a mile below the fork.

The general aspect of this remarkable spot may be roughly indicated by the resemblance it bears to a staircase of grey limestone cliffs, alternating with grassy slopes, reaching nearly 2000 feet at various points along its upper ridge, and descending to 650 feet above the sea-level in the valley below. The last irregular descent forms an arc of a circle, which, if completed, would have a radius of some five miles. In this arc of about 30°

the Cove and Gordale Scar find their place. The tarn is high up on the broad terrace between the top of the Cove and the second great ridge, 1200 feet above the level of the sea. The village of Malham lies about a mile from the foot of the Cove, at a height of rather more than 600 feet.*

It will be readily seen that such a piling-up of rocks as this is far from usual. The geological phenomena by which the scenery may be interpreted are no less extraordinary. To enter upon this interesting subject here is impossible, and it must suffice to say that Malham is situated on the edge of the Great Craven Fault, to which disturbance it owes the huge and precipitous limestone scars which now form its most characteristic feature. At the Cove the mountain limestone forms a compact band about 400 feet thick, with numerous vertical fissures. The valley of the Aire below the Cove is occupied by Yoredale rocks, consisting of alternating layers of limestone and millstone grit, with ironstone and coal in smaller quantities. The subject may be pursued further with the aid of Professor Phillips's 'Illustrations of the Geology of Yorkshire,' or his cheaper and more popular work on the 'Rivers, Mountains, and Sea-coasts of Yorkshire.'

The following *Florula* of Malham (to use a convenient though barbarous term) has been drawn up from personal observations extending over several years, various MS. lists, and one or two printed catalogues. An excellent series of papers by Dr. Windsor ('Phytologist,' N.S. vol. i.), which contains a large number of Craven stations for the rarer plants, has been consulted throughout. I have been able to verify most of his Malham localities. In all cases where I have found the plants *in situ*, the mark (!) is added. The very common species are omitted.

Plants observed in the neighbourhood of Malham, Yorkshire.

RANUNCULACEÆ.

Thalictrum minus, L. The normal form is littoral. *T. calcareum*, Jord. Grows near the top of Gordale!

T. flexuosum, Reich.? (*T. eminens*, Jord.?) Gordale! In some lists this is styled *T. majus*. The *T. majus* of Dr. Windsor's list (N.S. i. 263) is the same as the Gordale plant.

Trollius europæus, L. Pastures above and below the Cove!

* The poet Gray has left an admirable description of Gordale among his letters. (See his Correspondence with Wharton, Oct. 18th, 1769.)

Helleborus fœtidus, L. I have a specimen which is said to have been "gathered below Malham Cove, 1839." No botanist of my acquaintance professes to have seen the plant *in situ*.

Actæa spicata, L. Gordale! Top of Malham Cove! "A few plants at the side of the brook below Malham Cove," *Dr. Windsor*.

CRUCIFERÆ.

Thlaspi alpestre, L. Malham Cove, *J. Tatham*. Near Malham Tarn! "Very plentiful by the lead-mines betwixt Stockdale and Malham," *Dr. Windsor*. The Malham plant is *T. occitanum*, Jord. Probably all of Dr. Windsor's stations for *T. alpestre* belong to this species. Has he not mistaken *T. occitanum* for *T. virens* in the note to *T. alpestre* (p. 350)? The last-mentioned variety has not been found in Craven. Jordan, and not Babington, is responsible for the division of *T. alpestre*.

Hutchinsia petræa, Br. "On the higher part of the furthest east cliff in Awes Scar, near Malham Tarn," *Dr. Windsor*. I have found this plant at the height of 450 yards.

Cochlearia officinalis, L. (Var. *alpina*, Bab. *C. groenlandica*, Sm., not Linn.) Kirby Fell! Hawkswick Clowder?

Draba incana, L. Gordale! Hawkswick Clowder! Kirby Fell!

D. muralis, L. Walls in the village of Malham, *J. Nowell*. Rocks near the foot of Malham Cove! Gordale! Under Malham Cove, *Dr. Windsor*.

D. verna, L. A specimen in herbarium, named *D. inflata*, Hook., but difficult to identify in the dried state.

Arabis hirsuta, Br. Frequent on the limestone. Several unimportant varieties occur.

CISTACEÆ.

Helianthemum vulgare, Gært. Gordale! Malham Cove!

H. canum, Dun. Malham Cove! This plant, subdivided by Linnæus into *Cistus marifolius*, *anglicus*, etc., is by others regarded as merely a dwarf form of *H. vulgare*. This would be difficult to prove. I have seen the two plants growing side by side under precisely similar conditions, nor has any intermediate form been observed. The following diagnosis was made upon fresh specimens. (August, 1859.)

HELIANTHEMUM CANUM, *Dun.*	H. VULGARE, *Gært.*
Root—Long, woody.	
Stem—Decumbent, shrubby, covered with numerous minute scars.	*Stem*—Procumbent, shrubby.
Leaves—Without stipules, ovate, opposite, flat, hoary beneath, hairy above.	*Leaves*—With stipules, ovate, opposite, flattish, hoary beneath, thinly covered with adpressed hairs above, margin slightly reflexed.

Racemes—Terminal, bracteate.

Sepals—Hoary, veins indistinct.

Petals—Æstivation rugose. Variable, but not so much so as *H. vulgare*.
Anthers—Subrotundate, notched.
Style—Flexuose, twisted sharply at the base, reflexed, "inflexed at the apex, longer than the stigma."
Seeds—Numerous, fuscous.
Vertical range—West Yorkshire, 150–600 nearly. North Yorkshire (J. G. Baker), 600. North of England, (Cybele Brit. iv. 337), Lake Province, 200; Yorkshire, 600.

Racemes—Bracteate.
Flower-stalks—Leafed to the top.
Sepals—Hoary only along the veins, intervening portions glabrous.
Petals—Æstivation rugose. Varying widely in size and form.
Anthers—Pyrulate, rugose.
Style—"Longer than the germen, bent at the base."

Seeds—Numerous, black.
Vertical range—West Yorkshire, 50–650. North Yorkshire (J. G. Baker), 0–700. North England (Cybele Brit.), Lake Province, 360; Yorkshire, 600.

VIOLACEÆ.

Viola hirta, L. Malham Cove! Gordale!

V. lutea, Huds. Above and below the Cove! What appears to be the same as Mr. Baker's var. *hamulata* ('North Yorkshire,' p. 207) in Gordale!

CARYOPHYLLACEÆ.

Arenaria verna, L. "By the calamine or lead mines between Settle and Malham, abundantly," *Dr. Windsor*. Rises to 650 yards or thereabouts on Hawkswick Clowder! Is Dr. Windsor sure that *A. Gerardi* grows in a "field between Stackhouse-Borrins and Feizor"? *A. laricifolica*, With., is not more likely, though it is said to be "localized by the Yore side at Hutton Conyers."

Stellaria glauca, With. Bogs near Malham Tarn, *Dr. Carrington*.

HYPERICACEÆ.

Hypericum montanum, L. Malham Cove! Gordale!

GERANIACEÆ.

Geranium sylvaticum, L. Malham Cove!

G. columbinum, L. At the foot of Malham Cove, *Dr. Windsor!*

G. sanguineum, L. Malham Cove! Gordale!

LEGUMINIFERÆ.

Hippocrepis comosa, L. Rocks above Malham Tarn, *Dr. Windsor*. Malham Cove!

ROSACEÆ.

Potentilla verna, L. Malham Tarn, *J. Tatham*. Gordale.

P. alpestris, Hall. Gordale! near Malham Tarn! between Grisedales and Malham Tarn?, *Dr. Windsor*.

Rubus saxatilis, L. Dry Banks, Gordale, *J. Nowell*. On the moor above Gordale!

R. plicatus, W. and N. Malham Cove! I believe that the *R. suberectus*

And., said to have been found at Malham, must be referred to *R. plicatus*.

R. discolor, W. and N. Frequent in hedges near Malham and Kirby Malham, but not ascending the higher scars.

Pyrus Aria, Sm. Malham Cove, *J. Tatham and others!*

ONAGRACEÆ.

Circæa intermedia, Angl. Malham Cove, *Dr. Windsor*.

GROSSULARIACEÆ.

Ribes rubrum, L. Above Gordale, *J. Nowell*. This apparently belongs to the following.

b. petræum, Sm. Gordale! "Crevices of rock betwixt Gordale and Malham Tarn. Also above Malham Tarn, and on the banks of the rivulet above Gordale," *Dr. Windsor*.

R. alpinum, L. Gordale! "Found between Gordale and Malham Tarn, with *R. petræum*," *Dr. Windsor*.

CRASSULACEÆ.

Sedum villosum, L. Malham Cove!

S. sexangulare, L. "In 1801 I found specimens of what I considered to be this plant, on the left-hand just below Malham Tarn," *Dr. Windsor*. Roof of a small shed near Kirby Malham! Undoubtedly alien or sub-spontaneous in both places.

SAXIFRAGACEÆ.

Saxifraga oppositifolia, L. Rocks on Malham Moor!

S. granulata, L. Near the top of Gordale! "Under walls on the road to Malham," *Dr. Windsor*.

S. hypnoides, L. Mr. Tatham refers the plant found near Malham Tarn to *S. platypetala*, Sm., which I have seen between Malham and Kilnsey.

Parnassia palustris, L. Malham Moor! "Very common in bogs and wet meadows," *Curtis*.

RUBIACEÆ.

Galium sylvestre, Poll. (*G. pusillum*, L.) Above Gordale! Malham Tarn!

G. boreale, L. Malham Tarn! Aire below Kirby Malham!

COMPOSITÆ.

Hieracium pallidum, Fries. In the Dillenian herbarium at Oxford, this plant and *H. anglicum* are preserved on one sheet, and labelled "Hieracium glaucum, pilosum, foliis parum dentatis. In loco declivi Gordil, prope Malham Cravoniæ vicum."

H. Gibsoni, Back. Gordale! Hawkswick Clowder!

H. murorum, L. Gordale! Malham Tarn!

SKETCHES IN DENBIGHSHIRE.

A Ramble round the "Barber," May 9, 1863.

The place fixed upon as our starting-point was "Plas Newydd," a spot regarded with much veneration by the natives of Llangollen for having been the chosen residence of "Lady Eleanor Butler and Miss Sarah Ponsonby," two Irish ladies, who, for some romantic reason only known to themselves, chose to abandon their native country, lead a life of seclusion, and adopt an unfeminine and eccentric style of costume. Their portraits are to be seen in almost every house in Llangollen, while they now sleep beneath a monument in the burying-ground of the old parish church. Whatever hidden reasons they had for their oddities, their Welsh residence is at least interesting from the quantity of ancient oak-carving with which they had the good taste to adorn it. The gardens and pleasure-grounds, though of late years much neglected, show traces of former beauty; and then, having crossed a running stream, we find "a wishing well," the water of which falls drop by drop into an ancient baptismal font, which must have belonged to some sacred edifice, probably that little church whose ruins now form a portion of the farm-buildings at "Pengwern Hall." Around the "wishing well" Ferns have found a home, especially the *Scolopendrium vulgare*, which thrives luxuriantly in its smaller and larger varieties.

So much for the Plas. Our party being bent on a ramble, did not linger many moments within its gates, but, turning from thence, passed into a narrow lane leading behind "Bache Issa" and "Pen-y-bryn Hall. Later in the season the old hedgebank on the left-hand side will present a waving mass of foliage, as the graceful *Filix-fœmina* and tall *Filix-mas* mingle amicably one with another. Here the road diverges into two paths, one forming a long and gentle ascent to the "Geriaut," or "Barber's Hill," and the other leading to a mountain gorge, the scenery about which is very romantic and beautiful. We chose the latter path, and were soon rewarded by finding several fine plants of the *Lastrea cristata*. The green edges of a wood close by were gay with numerous wild-flowers, among which we noticed the rich yellow blossoms of the *Caltha palustris*, just now in the zenith of its beauty. Skirting the wood, we soon found ourselves in the gorge, and there the

party scattered, some to ramble about the "Barber," and others to climb the steep black rocks which overhang the Berwyn side of the wide ravine. Feet adorned with "the best French kid" would find themselves in difficulties on that steep hillside, for the sharp loose stones are very insecure ground, often giving way at the slightest touch, and carrying the climber as many steps backward as forward. But we were not sorry to pause now and then, for said loose stones are in many places covered with patches of the *Polypodium Dryopteris*, which just now have a peculiarly pretty effect, the exquisite green of their delicate fronds showing in bright contrast to the golden stipes of (we think) the *Lastrea paleacea*, clusters of which dot the hillside in all directions. Stopping at an oasis among the stones, we managed to unbuild the roots of the *Dryopteris*, and so obtained a few specimens for home cultivation. Climbing the Berwyn rocks is rather hard work, but not so bad now as it will be a month or two hence, when the briery paths become invisible beneath the strong and spreading fronds of the Bracken. As it was, we fought our way through all difficulties, minutely examining every chink and crevice that could possibly contain a Fern. We had been told that we should find the *Allosorus crispus*, but though a very probable locality for that little Fern to choose, we could see nothing like it; so we contented ourselves by filling our cases with the *As. Trichomanes*, *Cystopteris fragilis*, and *Polypodium Phegopteris*, all of which we found in great plenty. The *Polystichum aculeatum*, too, almost covers a wide ledge just below the highest rocky ridge, showing, by the great length and breadth of its feathery fronds, that it is very content in its elevated quarters. Dark-green patches of the *Polypodium vulgare*, of a stunted though fertile growth, here and there met our view; and nearing the moorland above, we noticed the *Blechnum boreale* growing very luxuriantly among the gorse and heather in the peaty soil it loves so well. While carefully scrambling upwards, a rather amusing incident occurred. One of our party, who was closely investigating the contents of a rocky corner, was astonished, and somewhat alarmed, by the sudden appearance of a great white owl, whose afternoon *siesta* she had unconsciously disturbed, and who, after angrily fluttering over our heads, betook himself, in high dudgeon, to the neighbouring woods. We discovered his sleeping-place—a snug nook, shaded at the opening by gorse, but as

it extended far into the rock, we did not venture more than a peep, fearing that another member of the family might fly out and resent our intrusion. Reaching the top of the rocks, we sat a few moments to rest and enjoy the splendid view, and then ascending the moorland, and with much difficulty wading through a sea of stubborn gorse, we at last found a well-trodden sheep-path; and, following its course, we descended at the other side of the hill, and soon joined our companions, and with them struck into the road that leads around the "Barber." That bold dark hill which forms so remarkable a feature in the scenery of the Vale of Llangollen, is (according to Roberts's guide-book) seven hundred feet above the level of the turnpike road. It derives its English surname from a tragedy which, some hundred years ago, was enacted on its summit. According to tradition, a barber (who also followed the vocation of village schoolmaster in Llangollen), wishing to cut short the gossiping propensities of a too talkative wife (who had threatened to disclose what she knew of a murder committed by him), severed her windpipe, and so silenced her for ever. The deed done, he fled from its consequences, but did not get very far, for he was arrested while washing his hands in the "Pistill Aber Adda," and finally sentenced to be hanged. This sentence was carried out on the summit of the "Geriaut;" and if the unlucky criminal was gifted with any taste for the beauties of nature, it must have greatly aggravated the horror of his punishment to be allowed to feast his eyes for one moment on the wide expanse of hill and dale, woodland and shining river, only to bid adieu for ever to the lovely scene, before being violently launched into an unknown and (to him) a dread and dark eternity. Taking the road down that side of the "Barber" that faces Llangollen, we noticed the *Athyrium Filix-fœmina* in great luxuriance; also the little *Dryopteris*, as usual rearing its emerald fronds from a bed of sharp loose stones; also some common varieties of the *Lastrea* family; and the *Polypodium vulgare*, with its dark-green tufts, showing fronds of a much larger growth than any we had previously met with.

Notes on some Ornamental (mostly Greek) Plants, which are commended to the notice of Nurserymen, Florists, and Amateur Cultivators.

The critic who judges the productions of nature enjoys an immunity from censure not conceded to him who criticizes works of art, whether literary or pictorial. He who deals with the current literature or art is sometimes censured for his good-natured opinions, and not seldom for too much harshness.

If he warmly commends a work by any of his contemporaries, he is liable to the accusation of adulation, and to the charge of fulsome flattery; while no bad motives are or can be urged against him who praises natural objects. He may be deficient in judgment, but his honesty and sincerity are rarely questioned.

The writer of the following remarks on species, which are believed to be valuable both as commercial and ornamental objects, is neither a florist, nor a nurseryman, nor an amateur; he is nothing at all, not so much as a member or a fellow of any scientific or literary body,—he is only a sincere lover of the beautiful, the useful, and the good, whether in nature or in art, and his views in presenting the following remarks are purely utilitarian.

The plants from which the following selection is offered were chiefly collected in Greece, in the spring and summer of 1862. They are selected from one of the largest collections ever brought from the eastern part of Europe, and from the adjoining coasts and mountains of Western Asia. A few are from the Pyrenees, also recently brought to England, and presented to the reader's humble servant by their collector.

The writer will not take the liberty of publishing the name of the gentleman to whom he is indebted for these treasures, but it will be given to any one who makes a private application to the editor of this periodical.

Several of the Natural Orders contain plants which are worthy of a place in the shrubbery or on the lawn; they are well adapted for bedding purposes, and some might even grace the conservatory. One paper or one essay will consequently contain but a small portion of the selection believed to be worthy of a trial; but it is intended to continue the papers serially till the whole be published.

It is hereby announced that only the BEST have been selected,

such as are remarkable for their beauty, neatness of foliage, good habit, etc. It is also the writer's aim to avoid all repetitions, viz. not to enter such plants as are already well known and deservedly popular.

As a beginning must be made somewhere, the *Borragineæ* are put foremost, not because they have any peculiarities entitling them to the distinction of leading the van, but because they happened to be at hand, and because the matter of the remarks was wanted to fill up a few pages of the magazine.

The first part of this paper will contain the plants which have their genera represented in our own small native flora; and the second will be devoted to those species which are foreign and belong to exotic genera.

The following foreign species, belonging to British genera, are recommended to the attention of cultivators of all classes, viz.

1st. *Lithospermum incrassatum*, Guss., a species which approaches *L. purpureo-cæruleum* in habit and general appearance. This grows in Spain, Naples, Sicily, Dalmatia, Turkey, etc. The specimen in our herbarium was collected about St. Givors, Central Pyrenees, and is expected to be sufficiently hardy to bear the cold of the winter in these islands.

Lithospermum fruticosum, L.,* is a dwarf, half-shrubby plant, apparently suitable for what is called a *rockwork*. The flowers are large, deep pink, the foliage linear and hoary.

Our specimen is from Montpellier; and its capabilities to endure the rigour of a British winter may be questioned.

Lithospermum Sibthorpianum, Griseb., *L. tenuiflorum fl. græca*, but not of Linnæus, is a somewhat hassocky but very dwarf species, only three or four inches high. Our specimen is from the Bay of Phalerum, in Greece. It flowers in March.

Note.—This species and *L. apulum* are stated to be annuals. Their cultivation, notwithstanding, may be worth a trial in col-

* "Of the *Lithosperma*, the handsomest is *L. fruticosum*, a plant of the South of France and South of Europe generally. It is shrubby, and has not much foliage, but fine blue flowers.

"*L. apulum* is a stiffish plant with small yellow flowers. It is also general in the south of Europe, though I have not found it here (Avignon), nor nearer than Montpellier.

"*L. incrassatum* I have only seen in a valley of the Pyrenees (St. Girons). Some doubt hangs to the last-named species, a doubt which will be removed before long."—*From a Correspondent.*

lections where many species are grown. Many annuals in favourable situations continue to exist in gardens; if once well-established, they continue self-propagated.

Echium plantagineum, L., is a tall and rather erect plant, with large intensely blue flowers. This specimen (*herbario in meo*) is from Laconia, between Gythesim and Levetsova. It flowers in April, and is annual.

Echium calycinum, Viv., another Grecian plant, grows at Lerna, near Argos.

Echium elegans, Lehm., is from Acro-Corinth, apparently an annual. The two latter-mentioned are not in Smith's Prodromus Floræ Græcæ.*

Cynoglossum columnæ, Tenore?, is a curious plant with yellow flowers and downy greyish leaves. All these plants have a strong family likeness. This specimen is from the valley of the Eurotas, and flowers in March. It is only found wild in the South of Europe, viz. in Naples, Sicily, Dalmatia, etc.

Cynoglossum cheirifolium, L., is a much finer plant than the above-mentioned, with hoary, velvety, neatly-shaped leaves and deep purple flowers. Both are probably perennial, like our two British species, though the majority of modern authors, Smith *e.g.*, call them biennials.†

The following plants belong to the Order *Borragineæ*, but they have neither generic nor specific representatives in Great Britain, viz., first, *Alkanna græca*, Bois., *A. pulmonaria*, Grsb., which is common in many parts of the Peloponnesus. It grows also in Turkey, Macedonia, etc. It is a showy plant, with numerous lanceolate leaves and deep yellow flowers. It is probably only half-hardy; yet it might be worth a trial in our climate. Is it in Smith's 'Prodromus'? ‡

* "*Echium calycinum* is common in the north of Europe. *E. elegans* is rarer. The chief place where I have seen it is the ascent to Acro-Corinth, where it abounds."

† *Cynoglossum cheirifolium* is common here, and in the whole Mediterranean region of France. So is *C. pictum*, a beautiful species, with pale-blue flowers streaked with a brighter blue. This last is common in Sicily. *C. columnæ* grows in Sicily, and is frequent in Greece, where I do not think I ever saw *C. cheirifolium*.

‡ "To *A. græca* may be added the rarer and still finer *A. orientalis*, which grows abundantly at Delphi and on the Acro-Corinth. Also *A. tinctoria*, a rather dwarfish species, the root of which yields a dye, and which stains the paper. This plant is covered with fine blue flowers, with the brilliant metallic glance so characteristic of the colours of the *Borragineæ*."—*From a Correspondent.*

Several *Onosmas* are found in Greece, and some of them may prove worth cultivation. *Onosma frutescens*, Lam., is a neat dwarfish species, with pale yellow flowers, somewhat like those of *Symphytum*. The specimen before the writer is from Mount Lycabettos, and is probably hardy enough to bear the winter temperature of England. It is one of Sibthorp's or of Smith's species; but does not appear in Nymann's 'Sylloge Floræ Europæ.'

Onosma pallidum is a slenderer and more upright plant, with larger and paler flowers. The specimen before the writer was collected between Lebadeia and the Triados.

Onosma orphanoides, Bois., is a taller and a stouter plant than any of the above-named species of this genus. It is from Megaspelion, and flowers in May.*

Some of the *Cerinthes* are well-known annual border flowers; and as their habit is good and their foliage neat and of a bright green, unlike the general colour and usual shagginess of the plants of this Order, they might be worth re-introducing, if, like many other good plants that have been neglected, they have already ceased to exist.

Cerinthe retorta, Sibthorp and Sm., and *C. aspera*, Roth, are probably both hardy enough for annuals; the former is from Mount Ithome, in Greece, the latter is from Naples.†

The gems of the Borageineous plants in our small collection are decidedly the two following, which are also probably the only two that would be worth continuous cultivation as permanent occupants of the *parterre* or conservatory. The first is *Mattia græca*, which has the habit of an alpine and rock-loving plant. Its leaves are in shape and hue like some of the well-known *Alyssums;* and its inflorescence is umbellate, not unlike the trusses of flowers of our common Cowslip or Oxlip. The colour

* *Onosma orphanoides* I have seen only in the rich vicinity of the Convent of Megaspelion (where the Greek Revolution began, and which had the glory of repulsing Ibrahim Pasha when he had nearly re-conquered Peloponnesus). To these may be added, from the south of France, *O. echioides*, which I have found lately for the first time. It is very like the others in habit, and its flowers are a still paler yellow than those of *O. pallidum*.

† *Cerinthe aspera* is very common about Naples. You can even see in the dried state how fine a plant it is. It is less common in Greece. *C. retorta* I have seen in a few places. My specimens are from the hill or mountain of Ithome, the seat of so many Messenian struggles. *C. minor*, a plant not unlike *C. retorta*, I have collected in Italy.

of the flowers is a very deep purple, nearly black in our specimen. Although in Europe almost exclusively confined to Greece, it is not in Smith's 'Prodromus.' Our specimen is from Mount Khelmos, and it flowers in June. But the showiest and handsomest of all the Greek *Borragineæ* is unquestionably *Mumbya cephalotes*, Bois., *Arnebia*, Dec., a plant which is neither in Smith's 'Prodromus' nor in Nymann's 'Sylloge.' This, like the last-mentioned, is a Mount Khelmos species, and flowers in June. The leaves are lanceolate, elongated, very hoary, mostly but not all radical; the flowering stem is stout, erect, and from 9-12 inches long; the flowers, as in *Mattia*, are umbellate, and the entire truss is not much smaller than a cricket-ball. The individual pips or flowers are quite as large as those of the common Primrose, and of the most charming yellow colour; its habit is quite unexceptionable.

The writer of these recommendatory remarks is too old to undertake so long a journey as to Mount Khelmos, in Greece, to see this fine specimen of the Greek flora, but he would gladly go so far as Snowdon to see it in a vital state, with all the concomitants even of Welsh scenery, notwithstanding the drawbacks of mist, drizzly rain, wind, snow, and hail. To admire it amid the fascinating loveliness and imposing grandeur of Greek scenery would be rather too much for an excitable mortal safely to undertake.

These two plants, viz. one of the *Mattias*, *M. græca*, a species which is probably not in our larger catalogues of collections, and certainly neither in Sweet's nor in Donn's, is hardy, being in Greece a mountainous plant. The other one, viz. *Mumbya cephalotes*, is one of the choicest species in the entire Order. It well deserves cultivation, and it will get a place and retain its eminence in the most select assortments of the vegetable kingdom.*

Finally, the writer hereby informs both amateurs and commercial cultivators, that the pickings from Greece, etc., in his possession, are by far, as a whole, superior to the few here presented as a sample. The best leg or foot has not been placed

* *Mattia græca* and especially *Mumbya cephalotes* are indeed splendid plants. I believe both were unknown until the most magnificent mountain in Greece, Mount Khelmos, in which are the falls of the Styx, was botanically explored within the last few years. You can imagine what a fine sight the *Mumbya* is on the steep, rocky sides of that noble mountain.

foremost. Some exceedingly handsome plants are in the Orders *Ranunculaceæ, Cruciferæ, Labiatæ, Compositæ, Orchidaceæ, Iridaceæ, Liliaceæ.* The *Ranunculaceæ, Leguminiferæ, Umbelliferæ, Saxifragaceæ, Compositæ, Gentianaceæ, Primulaceæ, Labiatæ, Euphorbiaceæ,* are the great ornaments of the Pyrenees.

The botany of the Pyrenees is pretty well known, thanks to the eminent botanists, Boissier and Bentham, and to one of the contributors to the 'Phytologist.' A large list of Pyrenean plants was published in the above-named periodical, but the subject is not exhausted. The readers of this will find in the back numbers of this magazine the addresses, names, etc., of resident botanists, who will supply them with specimens, roots, and seeds.

Nurserymen of extensive connections can readily procure plants from the most remote parts of the world; others, whose correspondence may not be so extended, are recommended to apply to M. Theodore von Heldreich, director of the Botanic Gardens of Athens, who will readily supply applicants with living roots of plants, or seeds, or specimens; or such may apply to their humble servant, the editor of the 'Phytologist,' of 28, Upper Manor Street, Chelsea.

Note.—The writer of the above has just been favoured, through the kindness of a mutual friend, with some lists of roots, seeds, specimens, etc., which M. T. von Heldreich is ready to supply. There is no room for entering an abstract of these respective catalogues. It is hoped that some means will be devised for circulating among amateurs and nurserymen the most important articles of their contents.

ROMAN OATS.

Sir,—My attention has been recently directed to a letter in the 'Phytologist' for the current month, written "for Peter Lawson and Son," respecting an article on the "Roman oat" question, which appeared in your last month's issue of the same periodical. I must premise, in simple justice to myself, that the article in question was published in your pages in its present imperfect form entirely without my knowledge and concurrence; otherwise I might have supplied additional particulars as to the result of last year's trial of the oats, a course which might pos-

sibly have saved your correspondent's animadversions, by furnishing the "further manifestations" he seems to have expected. It appears almost superfluous to remind the writer that, as the opinion of "*nearly every one*" at the Battersea Park Show was communicated to me by him at the time in terms precisely synonymous to those in the said letter, it would have been a work of supererogation to have intruded any further notice of my oats in quarters where the firm he represents has so great influence.

Happily, however, another year's careful cultivation of the oats has warranted experienced agriculturists of the north of England in still retaining opinions entirely hostile to that of "*nearly every one*" at the Battersea Park Show.

I may further be allowed to state, at the risk of trespassing too much on your valuable space, that it is my intention to recultivate the original camp-ground next season, when I have no doubt the specimens with heads resembling onions will be brought permanently into the catalogue of mortal realities. In the meantime, the number of intending purchasers of the specimens already exhibited continues weekly to increase.

James Binks.

Pepper Moor, Alnwick, May 18th, 1863.

BOTANICAL NOTES.

1. *Petasites vulgaris* (Phytol., June, 1862) grows abundantly on the Surrey bank of the Thames, between Putney and Hammersmith Bridges, near to the latter. On the ascent, shortly before reaching Hammersmith Bridge, *Erysimum cheiranthoides* is very plentiful. *Verbascum nigrum* and *Diplotaxis tenuifolia* grow on the piece of waste ground immediately on the west side of the bridge.

2. I have received to-day (May 5) specimens of *Paris quadrifolia* and *Dentaria bulbifera*, from a wood in the immediate neighbourhood of High Wycombe, Bucks.

3. The following less common plants were found in the neighbourhood of Stock, Essex, on the 4th ult.:—*Lepidium Smithii, Chelidonium majus, Veronica Buxbaumii, V. montana, Ajuga reptans* (a white variety), *Galeobdolon luteum, Lysimachia nemorum, Vinca major* (in a suspected locality), *V. minor, Orchis Morio*, a white variety of *Agraphis nutans, Convallaria majalis*,

etc. *Lathyrus Nissolia* is not unfrequent in the hedges, and *Hottonia palustris* was found last year in a pond in one of the woods, but this habitat is now destroyed.

4. On the 14th of April last, several specimens of *Anemone apennina, Corydalis solida,* and *Geum urbanum* were received from Brocklesby Park, Lincolnshire.

5. *Polygonum Bistorta* (see Phyt., June, 1862), occurs in large patches on the south bank of the ditch which intersects Battersea Park, near the ornamental water. *Saxifraga granulata* abounds in its immediate vicinity. This is the only locality in the neighbourhood of London for these plants with which I am acquainted.

6. *Teesdalia nudicaulis* was found abundantly, in full blossom, in its old habitat on Putney Heath, on the 22nd of April last.

7. A white variety of *Ranunculus bulbosus* has occurred for the last four years by the catacombs in Brompton Cemetery. Is this a common form of the species? I have never met with it elsewhere. *Geranium pyrenaicum, Fedia olitoria,* and *Tragopogon pratensis* are abundant in various parts of the grounds.

8. *Convallaria majalis* and *Vinca major* are not now to be found in Dulwich Wood. *Sisymbrium thalianum* abounds on a wall in Lower Sydenham.

JAMES BRITTEN.

Reviews.

L'Ardenne. By FRANÇOIS CREPIN, Professor of Botany in the Horticultural College of Gendbrugge-lez-Gendbrugge. Brussels: G. Mayolez, Rue de l'Impératrice. 1863.

Ardenne covers a considerable portion of the southern and western part of the kingdom of Belgium. It is bounded on the south by the department of Ardenne, in France, and on the east by Luxembourg and Rhenish Prussia. There is not room here for even an epitome of M. Crepin's elaborate notice of the physical condition of this tract, the most hilly (? mountainous) of this part of Europe.

It may be briefly stated that it is watered by the Meuse, and by many smaller and chiefly tributary streams to this the chief river.

The greatest elevation is 680 metres; the rocks are of the transition class, between primary and secondary, viz. siliceous, cretaceous, etc.

The physical description of Ardenne fills up twenty-six pages of our author's pamphlet, and the descriptive catalogue (*c. raisonné*) about thirty-four.

The whole number of Phænogamous plants, with the Filices and Fern-allies, is 663. Future researches will probably increase this number to upwards of 700 species.

The following non-British species are enumerated among the plants of Ardenne, viz. *Anemone sylvestris*, (*Anemone Pulsatilla* is not one of the species of this tract,) *Ranunculus platanifolius*, (there are only eleven species of the genus *Ranunculus*. The *Ranunculi Babingtoniani* do not grow in Ardenne?) *Aconitum Lycoctonum*, *Arabis arenosa*, *Lunaria rediviva*, *Thlaspi calaminare*, *Genista germanica*, *G. sagittalis*, *Trifolium montanum*, *Orobus vernus*, *Sedum aureum*, *Potentilla procumbens* (this species has been found in England, of spontaneous growth, but it is not yet established here), *Epilobium collinum*, *Selinum carvifolium*, *Orlaya grandiflora*, *Saxifraga sponhemica*, *Vincetoxicum officinale*, *Cuscuta densiflora*, *Gratiola officinalis*, *Digitalis lutea*, *D. grandiflora*, *Linaria striata*, *Galeopsis dubia*, *G. intermedia*, *Stachys alpina*, *Campanula Cervicaria*, *Specularia Speculum*, *Galium sylvaticum*, *G. sylvestre*, *Centaurea Jacea*, *C. montana*, *Arnica montana*, *Senecio Jacquinianus*, *Scorzonera humilis*, *Hieracium Auricula*, *Rumex scutatus*, *Euphorbia Cyparissias*, *Ornithogalum sulphureum*, *Phalangium Liliago*, *Orchis coriophora*, *O. incarnata*, *Calla palustris*, *Juncus Tenageia*, *Luzula vernalis*, *L. albida*, *Carex canescens*, *C. maxima*, *Baldingera colorata* (a grass), *Calamagrostis sylvatica*, *Poa serotina*, *P. sudetica*, *Bromus grossus*, *Festuca sciuroides*, *Struthiopteris germanica*, *Asplenium Breynii*, *Lycopodium Chamæcyparissias*, *L. complanatum*. These are all the non-British plants enumerated in this catalogue, barely a tenth part of the whole.

Probably the excluded species are about an equal number; for example:—

The following list comprehends the species which are subspontaneous or but partially naturalized, viz. *Dianthus plumarius*, *Spergula saginoides*, *Geranium phæum*, *Barbarea præcox*, *Hesperis matronalis*, *Lunaria biennis*, *Viola rothomagensis*, *Astragalus*

Cicer, Coronilla minima, Lythrum virgatum, Sedum Cepæa, S. Anacampseros, S. boloniense, Sempervivum tectorum, S. Funkii, Rosa alpina, Epilobium origanifolium, Isnardia palustris, Peucedanum Ostruthium, Myrrhis odorata, Ribes petræum, Saxifraga cæspitosa, Asclepias Cornuti, Gentiana lutea, Melampyrum nemorosum, Linaria simplex, Salvia Sclarea, Hyssopus officinalis, Satureja montana, Teucrium montanum, Jasione perennis, Rumex alpinus, R. Patientia, Alchemilla alpina, Salix incana, S. phylicifolia, S. helvetica, S. rosmarinifolia, S. herbacea, Allium Schœnoprasum, Muscari botryoides, Iris graminea, Narcissus poeticus, Leucojum æstivum, Potamogeton prælongus. The whole number of these is 45.

The species remaining to be detected, as the result of further explorations, are as follows, viz. *Ranunculus trichophyllus, R. lanuginosus, Aconitum Napellus, Dianthus superbus, Cerastium obscurum, Geranium palustre, G. pusillum, Malva sylvestris, Polygala austriaca, P. Chamæbuxus, Pyrola secunda, Nasturtium palustre, Erysimum cheiranthoides, Trifolium rubens, T. spadiceum, Scleranthus perennis, Sedum villosum, S. album, Potentilla rupestris, P. verna, P. reptans, Circæa alpina, Myriophyllum verticillatum, Ribes alpinum, Swertia perennis, Lithospermum purpureo-cæruleum, Scrophularia Ehrharti, Rhinanthus angustifolius, Pinguicula vulgaris, Lathræa Squamaria, Campanula pusilla, C. latifolia, Galium montanum, G. tricorne, Knautia sylvatica, Carduus crispus, Matricaria inodora, Senecio erucæfolius* (not *erucæfolius* as in *exemplar*), *Hypochœris glabra, Rumex conglomeratus, Polygonum Bellardi, Alchemilla alpina, Euphorbia dulcis, E. exigua, Salix pentandra, Gagea lutea, Aceras anthropophora, Orchis sambucina, Epipogium Gmelini, Scheuchzeria palustris, Lemna polyrrhiza, L. trisulca, Carex dioica, C. davalliana, C. paradoxa,* Willd., *C. teretiuscula,* Good., *C. Schreberi,* Schrank, *C. brizoides, C. tomentosa, C. paludosa,* Good., *C. riparia,* Curt., *Scirpus compressus, Eriophorum gracile, Festuca pratensis, F. rubra, Alopecurus agrestis, Triticum caninum, Hymenophyllum tunbridgense, Polystichum cristatum, Ophioglossum vulgatum, Equisetum* (in exemplar *c* for *e*) *umbrosum, Isoetes lacustris.* Upwards of seventy plants are believed to be undetected in Ardenne, and are held out as the reward of subsequent explorers.

The rare or very rare British plants entered in this catalogue are *Anemone ranunculoides, Actæa spicata, Dianthus cæsius,*

Elatine hexandra, Impatiens Noli-me-tangere, Pyrola rotundifolia, Corydalis solida, Cardamine impatiens, Sinapis Cheiranthus, Thlaspi perfoliatum, Genista pilosa, Trifolium ochroleucum, Lathyrus sylvestris, Corrigiola littoralis, Cotoneaster vulgaris, Cicuta virosa, Œnanthe pimpinelloides, Primula elatior, Jacq., *Centunculus minimus, Gentiana Pneumonanthe, Myosotis sylvatica, Pulmonaria angustifolia, Atropa Belladonna, Verbascum Lychnitis, Melampyrum arvense, Mentha rotundifolia, Ajuga pyramidalis, Campanula Rapunculus, Wahlenbergia hederacea, Phyteuma spicata, Dipsacus pilosus, Inula Helenium, Senecio viscosus, S. saracenicus, Arnoseris minima, Hypochœris maculata, Crepis biennis, Hieracium tridentatum, Daphne Mezereum, Polygonatum multiflorum, P. verticillatum, Malaxis paludosa. Potamogeton polygonifolius, Carex pauciflora, C. elongata, C. digitata, C. lævigata, C. hornschuchiana, Heleocharis uniglumis, Leersia oryzoides, Calamogrostis lanceolata, C. Epigejos, Melica uniflora, Poa sudetica* (a doubtful native of England), *P. compressa, Elymus europæus, Asplenium septentrionale, Osmunda regalis, Botrychium Lunaria, Pilularia globulifera, Equisetum hyemale, E. sylvaticum, Lycopodium annotinum.* The above list comprehends above sixty species.

The following list of Lorraine species, or of plants growing in the province which bounds Ardenne on the south, is compiled to exemplify the far greater richness of the southern districts, which may be easily contrasted by comparing the foregoing with the subsequent list. *Anemone alpina, A. narcissiflora, A. vernalis, A. sylvestris, A. Hepatica, Corydalis fabacea, C. cava, Arabis brassicæformis, A. sagittata, Dentaria pinnata, Biscutella lævigata, Silene rupestris, Althæa hirsuta, Herniaria hirsuta, Viola stricta, V. mirabilis, Medicago scutellata, Vicia lutea, V. hybrida, Bupleurum longifolium, Angelica pyrenæa, Laserpitium latifolium, Siler trilobum, Peucedanum Cervaria, Tordylium maximum, Sibbaldia procumbens, Potentilla micrantha, Sedum Rhodiola, S. alpestre, S. elegans, Saxifraga Aizoon, S. stellaris, S. decipiens, Lonicera nigra, Galium montanum, Scabiosa suaveolens, Valeriana tripteris, Pyrola uniflora,* etc., *Scrophularia vernalis, Veronica verna, Rhinanthus angustifolius, Stachys annua, Teucrium Botrys, T. Chamædrys, Gnaphalium norvegicum, Adenostyles albifrons, Inula salicina, Leucanthemum corymbosum, Petasites albus, Doronicum Pardalianches, Senecio subalpinus, Prenanthes purpurea,*

Leontodon pyrenaicus, Carduus Personata, Carlina nebrodensis, Picris pyrenaica, Sonchus alpinus, S. Plumieri, Crepis blattarioides, Hieracium aurantiacum, H. alpinum, H. Mougeotii, H. Schmidtii, H. albidum, H. cydoniæfol., H. magistri, H. præruptorum, H. auratum, Androsace carnea, Gentiana lutea, Myosotis alpestris, Veronica saxatilis, Bartsia alpina, Pedicularis foliosa, Veratrum Lobelianum, Allium Victorialis, Orchis globosa, O. cinerea, Limodorum abortivum, Loroglossum hircinum, Cypripedium Calceolus, Carex frigida, Botrychium matricarioides, B. rutaceum, Polystichum Lonchitis, Asplenium germanicum, Pulmonaria tuberosa.

Ex ungue leonem,—you may judge of the lion by his claw. The above list, which might be doubled by adding more names of rare plants, shows what influence a degree or two degrees of latitude exerts on the vegetation of an extensive country.

Something is probably owing to altitude as well as to a further extension south, which gives Lorraine a richer flora than Ardenne. Lorraine, as it existed formerly as a province, probably is more extensive than its northern neighbour, and its elevation is greater. Both Lorraine and the Vosges have higher points than the highest in the province so well illustrated by M. Crepin.

A sojourn in Ardenne, in Lorraine, or in the Vosges, in early summer, viz. in the leafy month of June, would be to a botanist a treat of no ordinary attractiveness. This season, 1863, we should like to undertake this botanical tour next week (on the 18th May), and we would take as silent guides this tract of M. Crepin's, a thin 8vo of 60 pages, and Dr. A. Godron's 'Géographie botanique de la Lorraine.'

This journey would not be quite so productive as a visit to the Fountain of Vaucluse, celebrated in song by the greatest of Italy's lyric poets, and quite as famous for its botanical rarities. The hills of Ardenne and the mountains of Lorraine and the Vosges are not so rich in rare alpines as Mont Ventoux, and the central and high peaks, the loftiest of the Pyrenees; but the former would afford no ordinary gratification to one who rarely sees anything higher than Primrose Hill, Hampstead Heath, or Harrow, in Middlesex; Hayes Common and Shooter's Hill in Kent; and in Essex, the hills of Brentwood and Epping Forest.

The Flora of the West Riding. The Phænogams by L. C. Miall. *The Cryptogams* by B. Carrington, M.D.Ed., F.L.S. London: William Pamplin.

To those botanists who visit the West Riding or the Craven district of Yorkshire, this well-compiled list of its vegetable productions will be a most acceptable and useful pocket-companion. It will inform them where the rare plants grow, and it will supply them with the address of the local botanists whose help will be required to point out to the passing stranger the exact localities where the rare species are to be found.

There are few indeed of the fraternity who have not heard or read about the botanical celebrity of Settle, Ingleton, Ingleborough, Penyghent, Giggleswick, with its productive scars, its ebbing and flowing well, its hanging woods and lovely situation! Who has not heard of Gordale, Malham (with its Cove and its tarn)? Wharfedale and Bolton Abbey, Thorpe Arch, etc., are familiar as household words among the botanists of England. This Flora will be a great acquisition to all who either have seen or who desire to see these lovely scenes, called, by some who have seen Continental scenery, the Switzerland of England.

In a modest and sensible introduction, our author instructs his readers how they may overcome the difficulty of classification; and, in truth, he has "hit the nail on the head." System is of no use till the tyro has got some considerable number of things to arrange. A multitude of objects huddled together at haphazard is like a lumber-room, or a heap of books of which the owner cannot avail himself, because he cannot lay his hands on the particular volume which would help him. But system is of no use, and cannot be understood, until it becomes a necessity, a something which is indispensable to the student. Let the author explain his views in his own way, which he does very briefly and clearly.

"The difficulty of scientific classification, and the unreasonable objections so often made to it by the ignorant, take their origin simply in non-acquaintance with the objects to be classified. No man of regular habits finds much difficulty in classifying his books or his papers, or even his thoughts. He finds classification in these matters essential to the proper management of his concerns, knowing well that without it he could neither remember where his property was disposed nor combine his acquirements

to any advantage. Scientific classification proceeds from exactly the same source,—the inability of the mind to receive a mass of unarranged particulars."

"Those who make foolish objections to systems of names as dry and unprofitable, may be reminded that the most valuable discoveries in science, and generally in philosophy, have been merely fresh combinations of facts known before. If there be a distinction between the classification of science and that necessary to every-day business, it is this, that in the latter the distinctions are precise and the method symmetrical, while in the former both are, for the most part, rough and arbitrary."

A list of the plants, or rather of the rare plants, in the Craven and south-west districts of Yorkshire, would be labour and cost wasted. Lists of Ardenne and Lorraine plants may be of some use to inform those who will never see M. Crepin's and Dr. Godron's works, that plants grow in these provinces common to both England and Belgium and France, and that there are many plants to be found in these Continental countries which we have not in the British Isles. But such lists would be quite superfluous here, because everybody who means to visit the places above mentioned, and which have been familiar since the times of Ray, Dr. Richardson, Th. Willisel, Mr. Lawson, Wm. Curtis, Sir J. E. Smith, etc., will purchase this work, carry it in their pocket, and wear it out by frequent consultation of its instructive pages.

The size of the book may be estimated from the fact that the pages filled up with the Phænogamous plants of the district are just fifty-one, and the Cryptogams occupy thirty-seven. The latter portion is, as above stated, by Dr. Carrington, who professes his obligations to Mr. W. Wilson, Dr. Lindsay, Mr. Mudd, T. Moore, Esq., F.L.S., Mr. Tom Stansfield, and other friends, who aided the learned author "in the determination of species."

Special thanks are awarded to Mr. J. Nowell, of Todmorden, in a separate article.

Thanks are tendered to "the following gentlemen," who have given the author "notes or lists of species:"—J. G. Baker, Esq., L. Miall, Esq., Dr. Deighton, Mr. C. Hobkirk, Dr. Windsor, J. Cramond, Esq., Rev. J. Pinder, P. Inchbald, Esq., R. Clapham, Esq., Mr. C. Eastwood, and the members of the Todmorden and Thirsk Botanical Societies.

Mr. Miall's obligations are "too many to be singly men-

tioned." J. G. Baker, Esq., of Thirsk, and J. Emmet, Esq., of Thorp Arch, are most cordially thanked for suggestions, corrections, and co-operations.

The excellent author of the Phænogamous part of the work is most respectfully reminded or informed, if it may be assumed that he never heard of the following fact, that Giggleswick Tarn has been drained, and is now cultivated; and probably this is no recent change. In 1852, just eleven years ago, the place where *Lobelia Dortmanna* used to grow was a meadow, somewhat depressed, but bore no traces of having been recently submerged. See p. 26.

On p. 18 there is a novelty of orthography, viz. *Shignell*, which used to be Spignel; and *loco in eodem* men *pro* meu. On p. 4, *Mithridate* is printed *Mithradate*. Attermire is invariably printed Attermine. Which is right,—the supplement to the 'Yorkshire Flora,' where this once-celebrated locality is invariably printed "Attermire," or that of the work under review, where the name of these rocks is invariably printed "Attermine"?

Some botanists—the writer of these remarks is one—might think *Lysimachia thyrsiflora* sufficiently rare or local to have, in the West Riding, a more precise description of its places of growth than the very general one of *marshy heaths*, of which there are thousands of acres not more than six or seven miles from Settle. *L. Nummularia* has nine stations entered! *L. thyrsiflora* is a much more uncommon or unfrequent or rare plant than Moneywort. It is localized "wet moors," as if it were as common as the Heaths, *Erica Tetralix*, etc. These plants grow generally on damp moorish places, where the subsoil is gritty or gravelly, and where the underlying rock is some kind of gritstone. *Lysimachia thyrsiflora* doubtless grows in such soils and situations, but how seldom is it found!—so unfrequent, that it was overlooked for many centuries,—not exactly overlooked, but not detected.

We hope Mr. Miall, in the next edition of his very useful and well-compiled Flora, will tell us where this species of Loosestrife grows; on what heathy moors, and near what town or village it is to be found.

Quercus sessiflora is probably another typographical error, *Betula*, or its varieties, are rendered unintelligible by confounding *Alnus* with *Betula*, or *Betula* with *Alnus*, or substituting the

initial of the one for that of the other. For example, *A. glutinosa* (common B.) (*sic*), *A. verucosa* (*sic*), is a quotation from the supplement to the Yorkshire Flora. The correct form is *Betula alba;* for variety, *verrucosa,* not *verucosa.*

Topfielda is a new mode of spelling the name of a plant which commemorates one who should not be forgotten, as being a celebrated English botanist in not very remote times. Alas! memory is treacherous; the place where we are known now will soon "know us no more." The remembrance of great men has perished—of men who have done more harm or more good to society than the innocent culler of simples. Where is the authority for this innovation? Why has the author transmogrified a well-known name? Is it a *lapsus* or an intentional alteration? In p. 93 this name (term?) is printed *Tophielda.* Which is the true reading or *scription,—Tofieldia, Topfielda,* or *Tophielda?* Authority and custom sanction the first form.

On p. 51, *sub* Bromus, and underneath *B. giganteus,* there is put *F. triflora,* a mingling or mixture of two genera. No cause for wonderment here, for ever since we knew *Bromus giganteus,* or *Festuca gigantea,* the unhappy plant has, like Noah's dove, found no rest in any genus. Like a shuttlecock, it has been tossed or trundled about between *Festuca* and *Bromus,* from the one to another. Analogy, grammar, and custom require the masculine form, *B. gigant.,* var. *triflorus.*

Anechsa, Alkanet, p. 32, is an evident misprint for *Anchusa. Officinate,* p. 22, is another of these examples of inaccurate printing for *T. officinale.*

Again, in the south of England *Crepis biennis* grows more commonly on banks and about the borders of fields than among crops "in cultivated fields." See note, p. 21.

Helminthia echiodes is an uncommon form of the specific name. Possibly the author and compositor thought it was long enough without the additional syllable; but *echioides* is the usual form. Underneath there is *P. hieracioides;* why not also *H. echioides, —euphoniæ causâ vel analogiæ vel usus?*

We wish specially to be informed if *Melilotus officinalis* is really so, or the common form in England and on the Continent also, viz. *M. arvensis.* See Errata.

On p. 57, why is *ramosum* the solitary exception to the rule— "Adjectiva, participia pronominaque cum substantivis genere,

numero casuque concordant." Is there no fear of affronting or offending Priscian's ghost among botanists?

Query, is variety *repandium*, p. 60, the correct orthography of this adjective?

Is MANNUAL, p. 94, the usual spelling of a derivative of *manus?*

On p. 93 there are the following remarkable examples of nomenclature:—*Cuscuta europea, Pulmonaria angustifolium*—something worse than spelling (error maximus *in scholis grammaticalibus*), *Oxyria reinformis*—the right letters are all present, but they are not in their right places; *Tophielda palustris*, before mentioned.

In list of errata, for *F. triflora* read *B. triflora: error maximus;* it should be *B. triflorus*, by the rule *Adjectiva, participia et pronomina cum substantivis concordant genere, numero casuque.*

Note.—The writer has a strong impression that *Plantago maritima* grows near the Rye-loaf, Settle; and he also thinks that he observed *Armeria maritima* in the same locality. Ask Mr. Tatham: he knows more about the botany of Settle than any living botanist.

As a second edition of this useful Manual will soon be required, it is to be hoped that these minor blemishes will disappear. The work is warmly recommended to all botanists who intend visiting this beautiful picturesque district.

The Field Naturalist's Scrap-Book.

After this number of the 'Phytologist' was sent to press, through the kindness of one of our obliging correspondents, four numbers of the above-named serial reached our office, and no time is lost in here warmly commending it to the patronage of our readers.

In external appearance, it resembles the MS. Magazine of the Glasgow naturalists, only it is lithographed, and is issued in monthly parts, not in volumes. It has, besides, another distinguishing feature, viz. several copies are in circulation among the members, and it is sold at the very moderate price of threepence.

Communications, orders for the periodical, are requested to be sent to Mr. Ker, 4, Basnet Street, Liverpool. This new candidate has our suffrages and good wishes.

Mr. Webb, one of our correspondents, has published, in No.

II. p. 28, a notice of *Fumaria media*, Loisel., which he found "sparingly in a small piece of cultivated ground south of Forret Road and west of Park Road, close to Claughton village, on the Cheshire side of the Mersey; different in habit from *F. officinalis*, but having the spathulate lower petal and the retuse fruit of that species. . . . It has not previously been recorded in Britain."

In the beginning of this month, viz. June, 1863, while botanizing near Dartford, and not far from Greenstreet Green, we met with a form of *Fumaria* new to us, with very long stem, long, very slender, almost capillary leaves, and white flowers, which are rather smaller than those of *F. capreolata*, or *F. pallidiflora* as we call it, of the learned botanical Professor of Cambridge. This stranger is hereby recommended to the respectful attentions of those who do not disdain to give a passing glance at these interesting strangers who come to endeavour to effect a settlement among the genuine productions of our native land.

"*On the Violets and Pansies of the Liverpool District.*

"As the Violets and Pansies are now, or will be shortly in proper condition for examination, the present is perhaps a favourable opportunity for expressing an opinion on those reported in our district, with the object of clearing away the confusion there is in Dr. Dickinson's 'Flora,' and that I know exists in the minds of our botanists, regarding these plants.

"*V. palustris*, L., boggy places, occasional. *V. odorata*, L., hedge-banks, pastures, occasional, rare.

"Mr. Fisher is intending to write upon the claim of this species to be considered indigenous, and is in a better position to do so than myself. *V. hirta*, L., reported on late Mr. Shepherd's authority, but probably an error, not being a plant likely to occur with us.

"*V. sylvatica*, Fries. This is a plant that from (and before) Smith's time, until fourteen or fifteen years ago, passed current among British botanists as *V. canina*, L., and is still so called by alarge section. The cause of change of title may be thus explained:—Linnæus's name of *canina* was applied by him to the present and following species: when it was found necessary to separate the two, this previously collective name was restricted by Fries (1817) to the latter, and this author then proposed *sylvatica* for the present species. His views were adopted by Continental botanists; and such being the case, the British, upon finding out years afterwards their non-agreement, had to put up with the inconvenience of transferring names for the sake of obtaining uniformity of nomenclature; but, as will be shown subsequently, this desirable result has not been arrived

at amongst themselves. *V. sylvatica* comprehends two well-marked forms, viz. *V. Reichenbachiana*, Boreau, β, *V. Riviniana*, Reich.

"Both are plants of our district, the latter very common, and the first probably either frequent or common, but on this point we want information. The distinctive characters will be found in Babington's 'Manual,' ed. 5, p. 38. *V. flavicornis* of Forster, E. B. S. 2736 (not of Smith) a dwarf form with large flowers—it is hardly worth mentioning. *V. canina*, L., (Fries,) known from the preceding species by the absence of the short central barren rosette of leaves, occurs with us in a wide range of forms upon the sand-hills bordering the Mersey and Dee, and very rarely upon sandy ground inland. It is the *V. pumila* of Hooker and Arnott (but not of Villars), and is given under this name in Dr. Dickinson's Flora; it is also the plant there meant by *V. lactea*, Smith, as a specimen I possess from Mr. Sansom clearly proves. The typical form is described with cordate-oblong leaves, roundedly acute; the forms *V. montana*, L., and *V. Ruppii*, Auct., are here included, and we have also the form *V. flavicornis* of Smith, which is of smaller growth with cordate leaves: more of these are worth separating as varieties. We have not the variety *V. lactea*, Sm., which is now better known as *V. lancifolia*, Thor.

"*V. tricolor*.—Those who have paid any attention to this species will have noticed the great diversity of appearances it presents, varying in the wild state from the plant with the corolla an inch in length to that with the petals considerably less than the calyx (*V. arvensis*); and between these two extremes connecting links (in this respect) are frequently found in our district. The large-flowered form is rare with us, the smaller is common. The species is usually annual, but plants are occasionally found of two or more years' duration."

F. M. Webb.

BOTANICAL NOTES, NOTICES, AND QUERIES.

Retrospective Criticism.

The following lively and graphic morsels of criticism have pleased us so much, that we are induced to submit them to the readers of our periodical. The fair authoress, it is humbly hoped, will graciously condone our publication of what was written for private or personal perusal.

"I hope you will tell the Editor, with the compliments of an *Irish native*, that I do *not* believe that my countrymen *ever* fed on 'Wood Sorrel' (or on each other either), as that learned author of the sixteenth century states. During the famine of 1846 I was staying for some months at Dingle, on the south-west coast, and in *that* neighbourhood the people *were* reduced by starvation to eat *seaweed;* but Wood Sorrel grows so scantily in our island, it would have never been worth gathering. By the way, if the Editor and his botanical *confrères* have not yet visited

that wild and beautiful country, they would find a large and interesting field of labour, from Killarney round the headlands to Dingle, and from thence to Dunquin, and (if they are good sailors) to the Blecket Islands. Talking of the beauty and size of Fuchsias, etc., in Guernsey, I must also say that at Dingle they attain an immense size, the climate is so warm and mild. I should also like to tell them of the Myrtles, twenty feet high, to be seen at "Myrtle Grove," in Youghal. Myrtle Grove is famous for its ancient Yews, Bays, and Myrtles, planted by Sir Walter Raleigh, he having resided there during the years 1588 and 1589, and in the *gardens there* he *first* planted Ireland's blessing and Ireland's curse—the Potato. Do you know any botanist who would kindly send me a few fronds of the *Hymenophyllum tunbridgense*, or any member of that family, in exchange for the *Dryopteris*, *Phegopteris*, or any of our natives, among which we boast the *Asplenium viride ?* M. B. B.

Exotic and Rare Plants at Wandsworth.

The following exotic and rare plants were found on the 27th of May last in the piece of waste ground at Wandsworth Steamboat Pier, which formed the subject of a paper in the 'Phytologist' of January, 1863.

Lepidium Draba. Covering a very large space in the second division of the said piece of waste ground. It was blossoming abundantly, and appears to be most firmly established.

Diplotaxis tenuifolia. On the bank facing the river, abundant.

Melilotus parviflora. Scattered all over the ground, very abundant.

M. messanensis. With *M. parviflora*, but less frequent.

Galium sp. ? Very abundant.

Anagallis cærulea. In the second division *only ;* frequent.

Plantago Lagopus. In the second division *only ;* very abundant.

Owing to the forwardness of the season, the foregoing plants were in an unwonted state of luxuriance, especially *Lepidium Draba*, which was very conspicuous. *Trifolium resupinatum* and others were appearing, but were not in blossom. The exotic *Ononis*, mentioned in the previous paper, is appearing in great strength.

I may just mention that, should any botanist in the country be desirous of obtaining specimens of all or any of these plants, I shall have much pleasure in forwarding them, on receipt of stamps for the postage.

18, *Shawfield Street, Chelsea.* J. Britten.

1. *Corrections to the Flora of Ireland* (No. 56, N.S.)—Since the publication of my remarks on the Flora of Ireland in the December number of the 'Phytologist' for 1859, I have, from the examination of recent specimens received from Ireland, been inclined to doubt some of the facts contained in the above-named paper. *Muscari racemosum*, which I saw growing on the banks of the Blackwater, near Fermoy, I apprehend to be a very different plant, viz. *Agraphis nutans*. *Inula Conyza* was likely a form of *Pulicaria dysenterica ; Caucalis daucoides*, a species of *Anthriscus ; Sedum villosum*, likely *Sedum anglicum ;* and *Melica nutans*, on Cave Hill, Belfast, *Danthonia decumbens*.

2. *Claytonia alsinoides*.—This plant I have cultivated for some years, and am really puzzled what to think about it. Some of the plants blossom in May, continue in flower till October or November, and remain

alive till late in the following spring, appearing to be perennial; others flower in May, shed their seed during the summer, and succumb on the approach of winter, which makes me (contrary to my first impression) consider it to be only an annual after all. An eminent botanist of the present day informs me this plant was introduced into Britain in 1794.

3. *Epilobium hirsutum.*—The mode generally adopted by Phænogamic plants to perpetuate their kind is by seed, but the method chosen by *Epilobium hirsutum* for the multiplication of the species appears to me strange, anomalous, and apparently unique. It is as follows:—Numerous horizontal scions are thrown out from the foot of the stem; these take root, and become detached from the parent plant by that part of the shoot nearest the stem, which rots. Each scion now becomes a new plant, firmly maintaining an independent existence. This very handsome plant is susceptible of being cultivated, which I have done for years. It however attains greater luxuriance and beauty when left to nature's care; in its wild state, under favourable circumstances, frequently attaining a height of six or seven feet. This plant, though plentiful in England and Ireland, is far from being common in Scotland, and appears to disappear altogether beyond the fifty-seventh parallel. It occurs in the neighbourhood of Perth in two or three localities, and is found in abundance near to Pittenweem, in Fife. *Epilobium angustifolium* seems to be more common in Scotland than this species, occurring in several places in Perthshire, as on the banks of the Almond Tay, near the foot of Ben Lawers, and is also found clambering to the top of the Ochils. JOHN SIM.

OBITUARY NOTICES.—MR. W. G. PERRY.

Died, on the 25th of March, 1863, at his residence in Warwick, Mr. William Groves Perry, aged sixty-seven. He was a Fellow of the Botanical Society of Edinburgh, and a contemporary of Loudon, Purton, and Bree, and a contributor to the earlier volumes of the magazine published by the former of these authors, as well as being himself the author of a work on the plants of Warwickshire, called 'Plantæ Varricenses Selectæ,' which, although of great merit, was not as well known as it should have been. This was probably owing to its having been published by the author at Warwick. It has been for some time out of print, but at the time of Mr. Perry's death he had nearly completed the additions and corrections of a new edition, which we hope will shortly appear. Mr. Perry was for many years Honorary Secretary of the Warwickshire Natural History and Archæological Society, taking great interest in Archæology, as well as Natural History. The urbanity of his disposition, and the freedom with which he imparted information on all subjects which had been his study, has rendered his death much regretted by all who knew him.

Died, at Campbeltown Nursery, on the 23rd May, 1863, at a quarter to twelve o'clock, Thomas Lothian.

NAMES OF PLANTS.

Raspberry.—From its roughness. Compare Swedish and Dutch *rasp;* German *raspel;* Fr. *râpe,*—whence rappee, a *rasped* kind of snuff.

Holihoc.—A.-Sax. *Holihoc.*

London Pride.—Possibly so-called because one of the few plants which grow well in or near London. *None-so-pretty* (of which Nancy Pretty

seems probably a corruption) is another flattering appellation of the same old-fashioned plant.

Wake-Robin.—"From its acrimony" (Miller's 'Gardener's Dictionary').

Dock.—A.-Sax. *docce.*

Cowslip.—Possibly for 'cow's lip,' from some fancied resemblance in the segments of the corolla.

Charlock, Carlock, Cadlock, etc.—A.-Sax. *Cerlice.* Cerlice might be a corruption from *gearlic,* annual. (See on this point 'Notes and Queries,' i. p. 470, 3rd series.)

Sauce-alone.—"The Prussians eat the leaves with salted meats in the spring. . . . They are useful with lettuces and the colder salads." (With. 7th ed. vol. iii. p. 775).

Rampe.—Query from *rapum,* an excrescence on the roots of trees (so used in Seneca, Ep. 87), and applied to *Arum maculatum* on account of its farinaceous roots. 'Rapum' is used properly only of the roots of *Brassica,* etc. (thence rape-seed and 'Rapa,' the specific appellation of the Turnip); by later Latinists, however, of any plant with an enlarged or tuberous root. Gerarde has "*Rapum sylvestre,* Rampions" (*Campanula Rapunculus*). Ramps or Rampions (*Allium ursinum*) may probably be explained in the same way. W. T. Dyer.

Zostera marina.

We heard a great deal, some short time ago, of a vegetable production bearing the name of the *Zostera marina.* But Zostera is plainly no feminine noun of the first declension, but the accusative singular, after the Greek mode of declension, of the masculine noun Zoster of the third,—in Greek ζωστὴρ, -ος, ὁ, a girdle, and also a kind of seaweed. We ought therefore to say 'Zoster marinus.' *Zostera,* indeed, is the form which happens to be employed by Pliny:—"Folia lata colore viridi gignit, quod quidam Prason vocant, alii Zostera" (N. H. xiii. 49); but Zostera is here plainly the accusative. W. T. D.

Helleborus fœtidus.

In reference to some observations offered some time since relative to the appearance of plants in localities not before noted, or rather after a lapse of some years, I have observed this year, in a very small part of a wood that has been partially cleared for the purpose of planting some Fir-trees, that at least a score plants of *Helleborus fœtidus* have made their appearance. Myself and others have for years carefully examined this part of the wood, and have never seen a single plant growing in that part of the wood, and only a plant or two growing throughout the remaining portion. On the opposite side of the river, some fourteen years since, I should think hundreds of specimens may have been obtained. Since that time, or within a year or two after that time, I have never observed a single specimen, although I have repeatedly looked for it. I intend watching this plant, and hope to communicate again upon this subject.

Glewstone, near Ross, April, 1863. Burton M. Watkins.

Cardamine pratensis, Variety of.

Enclosed I send you two specimens of variation in *Cardamine pratensis.* In one of them the raceme has a tuft of leaves at the top. In the other, after the flower has fallen, the pod swells, and ultimately bursts on one

side, disclosing a number of petals, which are not produced by the metamorphosis of stamens or any other organs, as the sepals, petals, and stamens all appear in their places before the abnormal flower is developed, of which the carpels act the part of calyx. This curious monstrosity was first discovered by me in a field at Widford, in 1859, and has appeared there every summer since, so that it may now be considered an established variety, which may perhaps even be propagated by seed, as the stamens are perfect, and their pollen may therefore be conveyed to other flowers; if, indeed, there is not sometimes a pod bearing seeds in a raceme whose other pods are changed into double flowers. I think you will agree with me in thinking these examples of variation worthy of the notice of botanists.

Chelmsford, June 19, 1863. JOHN GIBBS.

SIR,—I have read your very interesting tour in North Wales with much pleasure and instruction. You there state having found near Oswestry *Linaria Cymbalaria*, in so great profusion as to appear "aboriginal." I also found large masses of it growing apparently wild at Llanrydd, near to Ruthin, the origin of which I attributed to the following cause, which it seems likely might have produced the profusion which you describe. Some twenty years ago, Mr. Dovaston, of West Felton, near Shrewsbury, well known in that neighbourhood for his great classical learning and enthusiastic love of nature, during a pedestrian tour in North Wales, desirous to naturalize this pretty plant, scattered its seeds in every locality he considered likely to suit its tender and harmless habits. Thirty years ago, I found it growing on the ruined walls of the Abbey at Birkenhead, in Cheshire, and could only account for its presence there, evidently quite wild, and its locality not easily accessible, by concluding it to be a legacy from the medical herb gardens attached to such seats of piety and learning. It was evidently no outcast of any garden. To any one not a botanist I should be afraid to pen these trifling remarks, but as among lovers of native plants I have ever found a kind of botanical freemasonry, I make no apology.

Hafod-y-coed, Llangollen, 12th June, 1863. MONANDRIA.

SCOTCH THISTLE.

Which is the Scotch Thistle? is a question easier to ask than to answer. A fool may ask a question which the seven sages of Greece, if alive, could not answer. I will give the best reply I can, *more Scotico*, which, for the benefit of the less learned, may be translated, "like a Scotchman," *i. e.* by asking another, or several other questions.

Primo. Is not every native Thistle growing in Scotland, properly belonging to the country, and therefore Scotch?

Is not the nationality of every Scotchman determined by his being born in the "Land of Cakes"?

Are not all the thistles in Scotland truly Scottish, and dependent on that simple condition as produced in that country, grown north of the Tweed?

I have never observed a natural thistle exactly like the heraldic symbol or emblem impressed on the current coin, etc.

The plant in question was selected as a fit emblem of the manly spirit of Scotia's sons, who resent, and sometimes punish, rough treatment. This disposition is expressed both by the flower of the "Big Bur Thistle,"

supported by two nondescript leaves and the surrounding legend, "Nemo me impune lacessit," which may be freely rendered, "Beware lest I prick you."

This national badge was not selected, nor devised, nor introduced to exemplify the specific distinctions that exist in *Thistledom*, but to illustrate and represent the combative character of the people. Every one knows that a thistle will prick, and that a nettle will sting; and the lesson conveyed by these emblematic teachings is that the quietest and humblest may, by rough treatment, be roused to retaliation.

CHARLES HOWIE.

TRICHOMANES RADICANS IN WALES?

"The *Trichomanes radicans*, better known as the Killarney Fern, was found last week in North Wales by Mr. J. F. Rowbotham, a member of the Manchester Field Naturalists' Society. This interesting Fern has not been found in Great Britain, except in some portions of the lake district of Ireland, since the year 1782, when it was found at Bingley, in Yorkhire."

I forward the above extract from one of our Norwich papers of Wednesday last. Do you know anything about the fact of the Fern having been discovered in North Wales, and also whereabout? If so, you will oblige

A. M. GIBSON.

Norwich.

CORALLORHIZA INNATA.

I have just been shown for identification a single specimen of the rare *Corallorhiza innata*. The young man who brought it states that it was gathered on the 4th inst., in marshy ground, in the woods of Aberdargie, parish of Forgandenny, about five or six miles south-west of Perth. The discoverer of this rarity is Mr. Robert Steele, son of Mr. Wm. Steele, teacher of languages, Perth Academy. He said that he only saw another example of it, and it was imperfect.

JOHN SIM.

GLYPHOMITRIUM DAVIESII.

Glyphomitrium Daviesii was got on Kilpatrick hills on Saturday, 16th, the old locality, it is supposed, of J. Drummond restored,—certainly a different one from Dr. Hooker's, in Wilson's 'Bryologia Britannica.' W. G.

Communications have been received from

W. Galt; L. C. Miall; James Binks; C. J. Ashfield; J. Britten; W. Pamplin; J. S. M.; John Sim; Sidney Beisly; W. Richardson; Cecil Monro; M. C. Cooke; M. A. Walker; H. Beisly; C. Howie; Andrew Stewart; M. B. B.; John Gibbs.

BOOKS RECEIVED FOR REVIEW.

The Preston Chronicle, May 23rd, 30th, June 13th and 20th.
Notes on Books.
The Naturalist's Scrap Book; Parts I., II., III., and IV.
A Lecture on the Variations of Plants, by John Gibbs.
List of Ornamental Greek Plants, by Th. von Heldreich.

ERRATA.—Page 576, line 2, *for* Cambricus *read* Cambricum; page 576, line 39, *for* William Britten *read* William Mitten.

INDEX.

END OF THE SIXTH AND LAST VOLUME.

JOHN EDWARD TAYLOR, PRINTER,
LITTLE QUEEN STREET, LINCOLN'S INN FIELDS.

Division I. DICHLAMYDEÆ.

Both floral envelopes present, calyx and corolla.

Class I. Hypogynous Dichlamydeous Plants.—Thalamifloræ.—Petals and stamens inserted on the receptacle, or on a free disc, or united with the base of the ovary. Ovary free.

RANUNCULACEÆ, *Juss.* The Crowfoot Family.

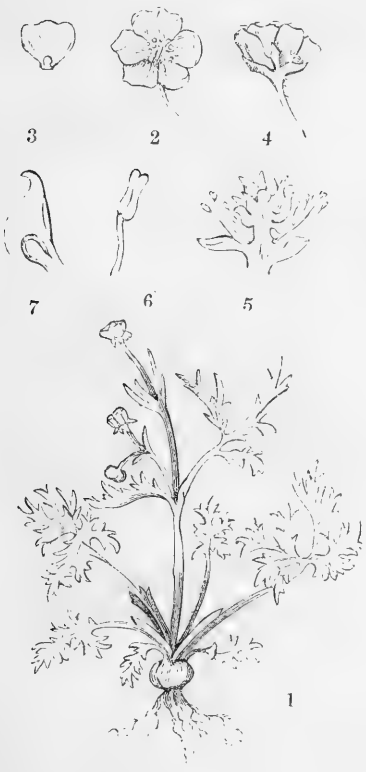

Fig. I. Ranunculus bulbosus.

Herbaceous, rarely half-shrubby or ligneous plants, with more or less acridity. Leaves alternate, rarely opposite or ternate, petiolate, entire or more or less divided, sheathed at the base. Flowers solitary, terminal or lateral, or in irregular cymes, clusters, or panicles, perfect (having stamens and pistils), regular or irregular, with an imbricated, rarely valvular prefloration (æstivation). Sepals 5, rarely 3–15, free, caducous, rarely persistent; petals 5–15, caducous, regular or irregular, rarely wanting. Stamens indefinite, rarely 5–10. Anthers extrorse, rarely introrse. Ovary free; carpels indefinite, or 2–10, rarely reduced to a single carpel; carpels free or connected at the base, with one or several ovules. Ovules erect or ascending, rarely suspended. Styles short, persistent. Fruit either

Fig. I.—1. Plant, reduced. 2. Internal view of the corolla. 3. A detached petal, with the scale. 4. External view of the flower, calyx and corolla. 5. A longitudinal section, exhibiting the receptacle and the carpels, all magnified. 6. A stamen, magnified. 7. A carpel, magnified.

a series of dry, one-seeded, indehiscent carpels, or of dry, many-seeded carpels, which are either free or united at the base, and opening by a ventral placental suture (*i. e.* a follicle), very rarely baccate and indehiscent. Seeds ascending or suspended (pendulous). Embryo straight, minute, in a thick corneous albumen (perisperm). Radicle towards the hilum.

Tribe I. CLEMATIDEÆ.—Shrubby or herbaceous plants; branches and leaves opposite. Petals wanting. Prefloration valvular. Carpels indefinite, one-seeded, not opening. Anthers extrorse.

Tribe II. RANUNCULEÆ.—Leaves alternate or radical. Petals regular, rarely wanting, imbricated. Carpels numerous, one-seeded, not opening.

Tribe III. HELLEBOREÆ.—Leaves alternate or radical. Petals irregular, nectariferous. Carpels 3–10, very rarely solitary, many-seeded, opening.

Tribe IV. PÆONIEÆ.—Leaves alternate or radical. Carpels 2–5 or solitary, many-seeded, follicular or opening, or baccate and not opening.

Tribe I. *CLEMATIDEÆ: The* CLEMATIS *Tribe.* — Stems woody, rarely herbaceous, with opposite leaves and spreading branches. Corolla wanting. Sepals valvular before their expansion. Carpels indefinite, one-seeded, not opening.

CLEMATIS, *Lin.*—Perennial plants, with climbing woody stems, rarely herbaceous. Leaves opposite. Flowers in panicles. Sepals 4–5, coloured and petaloid (like petals). Corolla wanting. Carpels terminating in a long feathery style, which increases after flowering. Seed suspended.

C. Vitalba, Lin. *Common Traveller's Joy.*—Eng. Bot. 612. L. B. S. H. 1.

Area, 6 Prov. Counties, 30. Lat. 50–53°. Alt. 0–200 yds. Tem. 52–48°.*

Stems woody, climbing, very variable in length and thickness.

* Eng. Bot. or E. B. 612 signifies that the plant is represented in Sowerby's English Botany on plate 612. L. B. S. H. 1, means that it is the first plant in the Herbarium of the London Botanical Society, or the first in the London Catalogue of British Plants. A. 6, intimates that it is found in 6 botanical provinces; also in 30 counties, between latitude 50° and 53°, with an altitudinal range of, from the coast-line, 0, to 200 yards of vertical height. Tem. 52–48° means that these are the two means of annual temperature of the tracts where it grows.

Leaves pinnate; leaflets ovate-lanceolate or subcordate (half heart-shaped) incised, toothed or entire, on spiral footstalks, by which the stem is supported. Flowers white, in axillary panicles. Sepals hairy on the outside.

In hedges, woods, and bushy places, on a calcareous or cretaceous soil. Peren.; Aug.–Sept.

Tribe II. *RANUNCULEÆ: The* RANUNCULUS *Tribe.*—Herbaceous plants, with alternate or radical leaves, rarely ternate. Petals regular, rarely none, imbricated. Carpels usually indefinite, one-seeded, indehiscent (not opening).

SYNOPSIS OF THE GENERA.

THALICTRUM.—Stems branched, erect, leafy, often fistular, many-flowered.
ANEMONE.—Stems simple, 1–2-flowered. Leaves mostly radical.
ADONIS.—Stems branched, leafy. Leaves scattered, pinnate, with linear segments.
MYOSURUS.—Leaves radical, linear. Peduncle radical, one-flowered.
RANUNCULUS.—Herbaceous, or annual plants. Stems usually branched, with many or several flowers. Petals usually 5, with a basal pore, which is covered by a scale.
FICARIA.—Leaves simple, petiolate. Flowers solitary, on radical peduncles.

THALICTRUM, *Lin.*—Herbaceous plants, with erect, branched, often fistulous stems. Leaves alternate, 2–3-pinnate, petiolate; petiole usually enlarged at the base, and with adnate stipules. Flowers in terminal panicles, often with abortive parts. Sepals 4, rarely 5, coloured, caducous. Corolla none. Stamens longer than the sepals. Carpels 4–10, on a narrow receptacle, with a short persistent style. Seed suspended.

T. alpinum, Lin. *Alpine Meadow Rue.*—E. B. 262. L. B. S. H. 2.

A. 9. Counties, 20. Lat. 53–61°. Alt. 0–1300 yds. Tem. 46–34°.

Roots fibrous, sometimes stoloniferous. Stem simple, 4–6 inches, naked or nearly so, quite smooth, with a terminal simple cluster of flowers. Leaves 2-ternate or pinnate, on slender erect petioles. Flowers small, on *reflexed* peduncles. Carpels pedicelled, and terminated by the curved stigma.

Moist alpine pastures, Wales and Scotland. Per.; May–June.

T. minus. Stem zigzag, streaked, branched, solid, leafless *at the base; stipules with inflexed auricles.* Leaves 2–3-pinnate; leaflets ternate, 3-cleft, glaucous; petioles with angular ascending branches. Panicle leafless, with divaricate branches; flowers droop-

ing. Carpels fusiform, 8-ribbed, subcompressed, ventricose below externally.—T. minus, *Koch, Fries.* T. majus, *Reich.*

T. flexuosum, Reich. Stem as above; leafless to *the base;* stipules *with reflexed auricles.* Leaves 2–3-pinnate, with 3–5-cleft leaflets, paler beneath; *petioles with patent, divaricate branches.* Panicle leafy, elongate, with patent, often reclinate branches. Flowers drooping. Carpels narrowly oblong, subcompressed, sub-10-ribbed, gibbous within upwards.—T. majus, *Smith, E. B.* 611. *E. F.* iii. 42.

T. saxatile, DC. Stem rather zigzag, *smooth,* but striated below, the striated sheaths branched, hollow, *leafy to the base;* stipules with horizontal auricles. Leaves 2–3-pinnate; leaflets 3–5-cleft, paler beneath. Petioles subterete, with patent, not *divaricate branches.* Panicle leafless, *erect, pyramidal,* with patent, straight branches and drooping flowers. Carpels *regularly oval.*—T. Kochii, *Fries.* T. collinum, *Wallr.**

T. flavum, Lin. *Common Meadow Rue.*—E. B. 367. L. B. S. H. 4.

A. 15. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Root with elongated horizontal rhizomes. Stems 3–6 feet high, erect, furrowed. Leaves 2–3-pinnate, with obovate or oblong or cuneate segments, which have pointed or blunt lobes; the upper leaves have narrow linear or lanceolate lobes. Stipules adnate. Panicle usually compact, with numerous erect branches. Flowers *yellow, erect.* Stamens *erect.*

Moist meadows and riversides. Per.; June, July.

Anemone, *Lin.*—Herbaceous, more or less hairy plants, with simple one- or two-flowered stems. Radical leaves palmate, in 3–5 segments; stem-leaves ternate, forming an involucre usually distant from the flower. Flowers terminal. Sepals 5–15, coloured and petaloid. Corolla none. Carpels numerous, on a hemispherical receptacle, terminated by a persistent style, which is sometimes elongated and feathery. Seed suspended.

A. nemorosa, Lin. *Wood Anemone.*—E. B. 355. L. B. S. H. 6.

A. 17. C. 80. Lat. 50–58°. Alt. 0–950 yds. Tem. 52–38°.

Root slender, horizontal, branching, with very long rhizomes.

* For these descriptions we are indebted to Mr. Babington. *See* 'Phytologist,' 1853–4. The range is not given. *T. minus* probably is confounded with both the other allied species.

Stem 6–12 in., simple, one-flowered, rarely two-flowered, erect. Root-leaves on long petioles, in 3–5, oblong, cuneate, incised or dentate segments; sometimes abortive. Involucre of 3 petiolate ternate leaves, similar to the root-leaves. Flowers solitary, on long peduncles, slightly pendulous, white or rose-coloured externally. Sepals 6–9, *oblong-roundish*. Carpels pubescent, spreading, with glabrous styles, forming a longish beak.

Woods, copses, and bushy places. Per.; March, April.

A. Apennina, Lin. *Blue Anemone.*—E. B. 1062. L. B. S. H. 7.

Root similar to the root of *A. nemorosa*. Stem erect, 9–15 in., slender, erect, one-flowered. Root-leaves twice ternate, with rather blunter segments than in *A. nemorosa*. Involucre like the root-leaves. Flowers erect. *Sepals* 10–12, *elliptical, lanceolate,* spreading, blue. Carpels downy, with a short beak.

Wimbledon Park, Surrey. Per.; March, April. Naturalized at Cullen, in Scotland. *See* Cybele, vol. i. p. 75.

A. ranunculoides, Lin. *Ranunculus-like Anemone.*—E. B. 1484. L. B. S. H. 8.

Root similar to the two last. Stem slender, erect. Root-leaves and involucre twice ternate, as in *A. nemorosa*. Peduncle *slightly curved* when ripe. Sepals 5–8, *yellow*. Carpels pubescent, slightly longer than the curved style which crowns the fruit.

Naturalized? Per.; April. We have only seen garden or cultivated specimens of this species.

A. Pulsatilla, Lin. *Pasque Flower.*—E. B. 51. L. B. S. H. 5.

A. 5. C. 10. Lat. 51–54°. Alt. 0–200 yds. Tem. 49–47°.

Root oblique, *thick, woody*. Stems *cylindrical, stout, erect,* 1–12 in. high; the whole herbage *is densely clothed with long silky* hairs. Root-leaves bipinnate, with pinnatifid segments and linear acute lobes. Involucre sessile, with linear segments. Flowers erect. Sepals oblong or oblong-lanceolate, curved above, clothed on their outside with dense silky hairs. Carpels silky, with long feathery appendages.

Chalky pastures. Per.; April–June. Streatly Downs, Berks; Northamptonshire, etc.

Adonis, *Lin.*—Root annual. Stems branching, many-flowered. Leaves many-parted, with linear, very narrow segments. Flowers solitary, at the extremities of the branches. Sepals 5, more or less coloured, caducous. Petals 3–15, longer than the sepals.

Carpels numerous, arranged in a spike on a cylindrical receptacle, beaked with the short persistent style.

A. autumnalis, Lin. *Pheasant's Eye.*—E. B. 308. L. B. S. 9.

A. 3. C. 8. Lat. 50–53°. Alt. 0–100 yds. Tem. 51–48°.

Stem 4–12 in., branched, glabrous. Sepals dark purple, glabrous, spreading. Petals 6–8, deep purple-red (scarlet?); obovate, concave, connivent. Carpel-border without teeth, terminating with a straight beak.

Cornfields. Kent. Annual; May-Oct.

Myosurus, *Lin.*—Annual, glabrous plants, with one-flowered, radical peduncles. Leaves all radical, linear, narrow, entire. Sepals 5, coloured, caducous, elongated into a spur below their insertion. Petals shorter than the sepals, with a long tubular claw. Stamens 5–10. Carpels numerous, closely imbricated on a filiform receptacle, terminated by the short style.

M. minimus, Lin. *Mouse-tail.*—E. B. 435. L. B. S. H. 10.

A. 10. C. 30. Lat. 50–55°. Alt. 0–200 yds. Tem. 51–47°.

Radical peduncles 2–4 inches high, erect. Leaves numerous, erect. Spurs close to the peduncle. Carpels four-angled, compressed.

Cornfields. South and south-east of England; Hampshire, etc. Annual, May.

Ranunculus, *Lin.*—Perennial and annual plants. Stems branched, many-flowered. Leaves variously divided; the root-leaves petiolate; the stem-leaves alternate, sessile or petiolate. Flowers terminal or lateral, solitary, on axillary peduncles, or opposite to the leaves. Sepals 5, coloured or herbaceous, caducous. Petals 5, rarely more or fewer, with a nectariferous pore, and usually with a scale at the base (on the claw). Carpels numerous, in globular, rarely oblong heads; style persistent, curved into a beak, or prolonged to a point.

Sect. I. Batrachium.—Aquatic perennials, usually submersed or swimming. Petals white, usually with a yellow claw and uncovered pore (scale wanting). Carpels wrinkled (ridged) across, without a border.

R. hederaceus, Lin. *Ivy-leaved Water Crowfoot.*—E. B. 796. L. B. S. H. 13.

A. 18. C. 80. Lat. 50–59°. Alt. 0–800 yds. Tem. 51–41°.

Stems 2–6 inches, prostrate, rooting. Leaves *uniform, cordate-reniform,* entire, with 3–5 *triangular short rounded lobes,* on long petioles. Petals oblong or obovate, slightly longer than the calyx.

Carpels oblong, glabrous, whitish, blunt, or with a very small mucro (point).

In shallow rivulets, rills, springy and muddy places. Per.; May–Sept.

R. cœnosus, Guss.—R. Lenormandi, *Schultz.* E. B. S. 2930. L. B. S. H. 13*.

A. 14. C. 60. Lat. 50–55°. Alt. 0–200. Tem. 50–47°.

Stem as in *R. hederaceus.* Leaves uniform, 3–5-lobed; lobes larger (deeper), and having 2–3 notches. Petals obovate, *larger than the sepals.* Carpels *obovate,* terminated by the short style, which is near the centre of the carpel: in *R. hederaceus* the style is lateral, and shorter.

Watery places; not so common as the above. Per.; May–Sept.

R. tripartitus, DC. L. B. S. C. 12.

Stems variable, usually swimming. Lower leaves with capillary *diverging and divaricating* (not spreading in the same plane) *segments;* upper leaves nearly reniform, deeply 3–5-parted, with triangular or obovate, toothed or incised lobes. Stipules of the upper leaves united only for *one-third of their length from the base.* Petals very small, oblong, scarcely longer than the sepals. Carpels glabrous when ripe, scarcely pointed.

Stagnant water, and in muddy places. Per.; May–July.

R. circinatus, Sibthorp.—E. B. S. 2869. Coss. et Ger. t. 1. f. 9. L. B. S. H. 11*.

A. 14. C. 50. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

Stems variable in length, submersed or swimming. Leaves all *capillary, spreading in the same plane, and forming a circular outline,* 2–4-forked, rigid, and *not collapsing into a pencilled tuft when taken out of the water,* with sheathing, not auricled (stipulate) stalks. Petals large, obovate. Carpels obovate, laterally tipped with the acute recurved style.

Ditches, stagnant waters. Per.; June–August.

R. fluitans, Lam.—E. B. S. 2870. Coss. et Ger. t. 2. f. 1–2. L. B. S. H. 11*.

A. 14. C. 50. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

Stems of various length, sometimes very long, floating or swimming. Leaves all submersed, uniform, *repeatedly forked, segments very long, nearly parallel.* Petals 5–12, much larger than the sepals. Carpels glabrous. Per.; May–August.

Seldom observed in flower or fruit in the South of England. In rivers and running streams.

Var. *terrestris*, Coss. et Ger. Leaves thicker, and enlarged at the apex. Banks of rivers, sandy shores.

Var. *heterophyllus*. Upper leaves floating, 3–5-parted, with deeply cuneate segments.

R. aquatilis, Lin. in part.—E. B. 101. Coss. et Ger. t. 2. f. 3, 4, 5. L. B. S. H. 11.

A. general, 18. C. 81. Lat. 50–60°. Alt. 0–350 yds. Tem. 52–43°.

Stems variable in length, floating or submersed, or prostrate and rooting. Leaves not uniform; the lower leaves divided into numerous capillary segments, *which spread widely in all directions;* the upper ones reniform, more or less deeply 3–5-parted, with triangular or ovate, crenulate or notched lobes. *Stipules of upper leaves adnate nearly throughout.* Petals obovate, much longer than the sepals. Carpels rarely glabrous, generally rough.

Ponds, ditches, and similar places. Per.; April–August.

Var. *α. heterophyllus,* Willd. Upper leaves roundish, reniform, more or less deeply 3–5-parted; lower leaves capillary.

Var. *β. peltatus,* Fries. Floating leaves peltate, and bearing axillary flowers.

R. confusus, Nob. Peduncles twice the length of those of *R. aquatilis,* attenuated above, *and much longer than the leaves.* Submersed leaves not collapsing, nor forming *a pencil when taken out of the water;* floating leaves deeply divided into 3 cuneate segments. Petals obovate, narrow, not contiguous. Carpels attenuated at the summit, and with a rather longer apiculus (point) than in *R. aquatilis.*

Supposed to have been gathered on the coast of Hampshire or of Sussex. Per.; June.

Sect. II. RANUNCULUS.—Terrestrial or aquatic plants, never submersed nor floating. Petals yellow (white in *R. alpestris*), with a scale over the pore. Carpel smooth or tubercular, rarely wrinkled, with a compressed border, which is rarely wanting.

§ *Leaves entire, or toothed, not parted.*

R. gramineus, Lin., was reported from Wales many years ago, and is figured in E. B., fig. 2306. Its characters are as follows:—Root short, vertical, with radical fleshy fibres, *crowned by the decayed persistent leaves.* Stem 4–12 inches, erect, one-flowered or few-flowered. Leaves linear or lanceolate, tapering

into the petiole, entire. Calyx smooth. Petals large, with a short, almost tubular scale. Carpels *irregularly wrinkled*, with a slightly keeled border.

This plant abounds in the forest of Fontainebleau in France. It is not found in Germany. Per.; May–June.

R. Lingua, Lin. *Great Spearwort.*—E.B. 100. L.B.S. 16.

A. 15. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Root truncate, with oblique or with horizontal stolons. Stem erect, 12–18 inches high, fistular (hollow), with few or with several flowers on downy peduncles. Leaves *elongated, lanceolate, sessile*, tapering below, entire or obscurely toothed, with a thick midrib. Calyx downy. Petals large. Carpels smooth, with a rim compressed only on one side, and a large compressed beak.

Rivers, ponds, and marshy places; rare. Per.; June–August.

R. Flammula, Lin. *Lesser Spearwort.*—E.B. 387. L.B.S. 15.

A. 18. C. 82. Lat. 50–61°. Alt. 0–900 yds. Tem. 52–38°.

Root rhizomatous, more or less oblique. Stem 6–12 inches high, ascending, *spreading or rooting at the base*, fistular, with few or several flowers. Leaves glabrous, entire or toothed, with a callous point and thick midrib; radical leaves *oblong or ovate, on very long petioles;* upper leaves linear or lanceolate, nearly sessile. Calyx downy. Corolla small. Carpels *smooth*, with a short beak, and a rim compressed on only one side.

In moist places. Per.; June–August.

R. ophioglossifolius, Vill. E.B. 2833. L.B.S. 17.

Roots fibrous, *annual.* Stems 6–12 inches, branched, erect, hollow, many-flowered. Lower *leaves cordate,* ovate, stalked; upper ones oblong, sessile and amplexicaul, glabrous. Flowers small. Carpels ovate, *tubercular*, bordered, with a short terminal point.

St. Peter's Marsh, Jersey. Annual, June.

§§ *Leaves parted, or lobed.*

† *Perennials; carpels smooth, or nearly so.*

R. alpestris, Lin. *Alpine Crowfoot.*—E.B. 2390.

Root fibrous. Stem erect, 2–6 inches, *usually one-flowered and with one leaf.* Root-leaves cordate, roundish, 3–5-parted, with lobes cut or crenate at the apex. Stem-leaf elongate, lanceolate, entire or 3-cleft or 3-parted, with linear lobes. Calyx glabrous. Petals obcordate, *white.* Carpels terminated by a hooked style.

R. Trauenfellneri, Hoppe, is said by Kittel, 'Deutschlands Flora,' to be only a variety of *R. alpestris.*

Clova Mountains, *Mr. G. Don.* Not recently observed. Per.; May. "Mr. Don's memorandum in Smith's Herbarium runs thus: 'By little rills and among rocks on the mountains of Clova, Angusshire, seldom flowering.'" *See* Cybele *in loco.*

R. auricomus, Lin. *Wood Crowfoot.*—E.B. 624. L.B.S. 18.

A. 16. C. 70. Lat. 50–58°. Alt. 0–500 yds. Tem. 51–42°.

Roots fibrous, oblique. Stems solitary or few, 12–18 inches, erect or ascending, almost glabrous. Root-leaves *reniform-roundish,* crenate or more or less deeply incised, with crenulate lobes; stem-leaves sessile, palmate, in 5–7 diverging, linear segments, which are entire or nearly so. Calyx downy. Carpels *pubescent,* with a slender, curved and hooked beak.

Woods; bushy, moist places. Per.; April–June.

R. acris, Lin. *Common Buttercup.*—E.B. 652. L.B.S. 19.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1300 yds. Tem. 52–34°.

Root horizontal or oblique, simple, with radical fibres below the crown. Stem 12–18 inches, erect, many-flowered, more or less clothed with appressed hairs. Leaves hairy; the radical ones 3–5-parted, with cuneate incised or dentate lobes, on long petioles; stem-leaves uniform, with narrower lobes and shorter petioles; the upper ones sessile or nearly so, usually palmate, in 3–5 linear, entire or incised segments. *Peduncles not furrowed.* Calyx erect or slightly spreading. Carpels glabrous, with a hooked beak. Receptacle glabrous.

Meadows and pastures. Per.; May–July.

R. repens, Lin. *Creeping Crowfoot.*—E.B. 516. L.B.S. 20.

A. 18. C. 82. Lat. 50–61°. Alt. 0–900 yds. Tem. 52–38°.

Root simple, short, truncate, rarely oblique. Stems 6–10 inches, two- or more-flowered, hairy or pubescent, some ascending, others *prostrate and rooting* (stoloniferous). Leaves hairy or nearly glabrous; the root-leaves have usually patches of black and white on the upper surface, ternate, the middle leaflet on a long petiole; segments 3-parted, incised or toothed; upper leaves sessile or nearly so, with linear, entire or incised segments. *Peduncles furrowed.* Calyx *spreading.* Carpels smooth, finely punctate, crowned by a curved beak. Receptacle slightly hairy.

Meadows, roadsides, and especially near hedges and banks of rivers. Per.; April–September.

R. bulbosus, Lin. *Bulbous Crowfoot.*—E.B. 515. L.B.S. 21.

A. 17. C. 75. Lat. 50–58°. Alt. 0–500 yds. Tem. 52–42°.

Root vertical, *bulbous*. Stems solitary or several, 4–10 inches high, erect, many-flowered, hairy or pubescent. Root-leaves on long petioles, ternate, *the middle leaflet on a long petiole;* stem-leaves on shorter petioles; upper ones sessile, with linear entire or pinnatifid segments and linear lobes. Peduncles grooved (furrowed). *Calyx reflexed.* Carpels glabrous, with a curved beak. Receptacle slightly hairy.

Meadows and pastures. Per.; May–August.

†† *Carpels tuberculate or muricate.*

R. hirsutus, Curt. *Rough Crowfoot.*—E.B. 1504. L.B.S. 22.

A. 16. C. 60. Lat. 50–57°. Alt. 0–200. Tem. 52–47°.

Root annual. Stems numerous, 4–12 inches, spreading or ascending, rarely erect, hairy or downy, branching from the base. Leaves hairy or downy, 3-parted, the middle portion on a long petiole; segments of the upper leaves linear, entire or incised. Calyx *reflexed.* Carpels *compressed, tuberculate near the margin, and surrounded with a thin border.* Beak broad, slightly curved.

Moist places, rare. Annual; May–August.

Var. *R. parvulus,* Lin. Plant dwarfish, with 1 or 2 flowers.

R. parviflorus, Lin. *Small-flowered Crowfoot.*—E. B. 120. L.B.S. 24.

A. 11. C. 40. Lat. 50–55°. Alt. 0–200 yds. Tem. 52–48°.

Stem 4–6 inches, spreading or ascending, pubescent. Leaves 3–5-cleft, with crenulate lobes. Peduncles short, smooth. Sepals reflexed, *nearly as long as the petals.* Petals narrow, sometimes wanting; scale *rudimentary or wanting.* Carpels compressed, furnished with long *hooked tubercles* (*muricated*) *and crowned with a broad beak.* Receptacle glabrous.

About hedges and fields, rare. Annual; May–June.

R. arvensis, Lin. *Corn Crowfoot.*—E.B. 135. L.B.S. 25.

A. 14. C. 50. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

Root annual. Stem usually solitary, erect, branched from the base, pubescent or glabrous. Leaves glabrous or pubescent; the radical ones ternate on long petioles, with elongate cuneate segments; stem-leaves petioled, with long narrow segments, which are either entire or incised; the upper ones sessile or nearly so, uniform. Peduncles opposite to the leaves. Calyx erect or slightly spreading. Petals yellowish-green, small. Carpels 4–8, com-

pressed, *with spinous tubercles and a thick border*; beak long, linear.

Corn-fields. Annual; May–July.

R. sceleratus, Lin. *Celery-leaved Crowfoot.*—E. B. 681. L.B.S. 23.

A. 18. C. 75. Lat. 50–59°. Alt. 0–200 yds. Tem. 51–47°.

Root annual. Stem usually solitary, 6–12 inches, erect, fistular, many-flowered, with erect branches, which often spring from the base, forked (dichotomous) above, usually glabrous. The radical and lower leaves are on long petioles, roundish, reniform, 3–5-lobed or in 3–5 divisions, with crenulate lobes; upper nearly sessile, with linear, entire or incised segments. Flowers in the forks of the angles or terminal. Calyx reflexed. Corolla small. Petals shorter than the *conical capitulum* (*head*) *without a scale.* Carpels numerous, in an oblong or conical head, slightly compressed, rough at the centre, with a very short beak. Receptacle of the fruit thick, oblong.

Watery places, riversides, etc. Annual; May–August.

Ficaria, *Dill.*—Perennial, sometimes acauline plants (without a stem). Leaves entire, or only lobed or crenulate. Flowers mostly solitary on radical peduncles. *Sepals* 3, herbaceous or but slightly coloured, caducous. *Petals* 6–9, with a short claw and a pore and scale. Carpels numerous, in roundish heads; beak almost wanting. *Seed erect.*

F. ranunculoides, Mœnch.—*Ranunculus Ficaria,* Lin. and London Cat. 14.

A. 18. C. 82. Lat. 50–61°. Alt. 0–800 yds. Tem. 52–41°.

Root short, *with turgid, fleshy, oblong fibres* (fascicled tubers). Stems short, reclining or ascending. Leaves cordate, crenulate or obscurely 3–5-lobed, on long sheathing petioles. Peduncles elongated. Petals often green externally. Carpels roundish, smooth.

Moist shady places. Per.; March–May.

Tribe III. *HELLEBOREÆ: The* Hellebore *Tribe.*—Leaves alternate or all radical. Petals nectariferous, usually irregular, rarely none. Carpels follicular, 3–10, rarely solitary, many-seeded.

SYNOPSIS OF THE GENERA.

Caltha, Lin.—Sepals 5–7, petaloid. Petals none.

Trollius, Lin.—Sepals 5–15, petaloid. Petals linear, flat, with a nectariferous pore.

Helleborus, Lin.—Sepals herbaceous, persistent. Petals tubular.
Eranthis, Salisb.—Sepals 5–8, petaloid. Petals and follicles 5–8.
Aquilegia, Lin.—Sepals petaloid. Petals spurred.
Delphinium, Lin.—Sepals 5, unequal, the upper one spurred. Petals 4 by abortion.
Aconitum, Lin.—Sepals petaloid, unequal, the upper one with a hood.

Caltha, *Lin.*—Herbaceous, glabrous plants, with roundish reniform leaves, simply crenulate or toothed. Peduncles axillary, with solitary large flowers. Sepals 5–7, coloured (petaloid), caducous (falling off). Corolla none. Fruit consisting of 5–12, free, diverging, many-seeded carpels (follicles).

C. palustris, Lin. *Marsh Marigold.*—E.B. 506. L.B.S. 26.
A. 18. C. 82. Lat. 50–61°. Alt. 0–1150 yds. Tem. 51–36°.

Root vertical, short, with thick fibres. Stems 4–8 inches, mostly ascending, branching above, many-flowered. Leaves roundish, reniform, thick, glabrous, shining; the root-leaves on long petioles, the upper ones sessile or nearly so. Follicles terminated by a beak formed by the prolongation of the dorsal (back) nerve.

In watery places and marshy meadows. Per.; March–May.

Trollius, *Lin.*—Stems erect. Sepals 5–15, petaloid, caducous. Petals numerous, very small, linear, with a nectariferous pore. Involucre wanting. Carpels numerous, verticilled in several rows, free, sessile. Seeds in two rows. (*Grenier.*)

T. europæus, Lin. *Globe Flower.*—E.B. 28. L.B.S. 27.
A. 14. C. 15. Lat. 52–61°. Alt. 0–1050 yds. Tem. 47–37°.

Root fibrous. Stem erect, few-flowered. Leaves palmate, 5-parted, with rhomboidal trifid segments, which are incised or toothed. Sepals 12–15, concave, connivent, elliptical, blunt. Petals 12–15, narrow, linear. Follicles linear-oblong, with a short beak.

Mountain pastures. Yorkshire, about Settle. Per.; June–July.

Helleborus, *Lin.*—Herbaceous, glabrous plants, with coriaceous (leathery), sometimes persistent leaves. Sepals herbaceous, sometimes coloured, persistent. Petals 5–10, shorter than the sepals, tubular, obliquely truncate or toothed at the summit. Follicles (carpels) 2–10, usually slightly united below, diverging above.

H. fœtidus, Lin. *Stinking Hellebore.*—E.B. 613. L.B.S. 30.
A. 8. C. 20. Lat. 50–55°. Alt. 0–200 yds. Tem. 51–47°.

Root vertical, truncate. *Stems persistent*, 12–18 inches or more, stout, naked below, leafy above, branched and many-flowered. Leaves pedate (divided to the base), leathery, with lanceolate, toothed segments; bracts (upper leaves) ovate, entire, sessile. Flowers *pendulous*, in a branched corymb. Sepals concave, erect, green, often with a purplish border. Follicles oblong, terminating in an elongated beak. The whole herbage has a fetid, poisonous smell.

On calcareous or cretaceous soils, rare. Per.; Feb.–May.

H. viridis, Lin. *Green Hellebore.*—E.B. 200. L.B.S. 29.

A. 7. C. 20. Lat. 50–55°. Alt. 0–200 yds. Tem. 51–47°.

Root rhizomatous, oblique, black. Stems *annual*, 8–12 inches, erect, slightly branched above, few-flowered, leafy only below the branches. Radical leaves pedate or palmate, on very long petioles, with oblong lanceolate, toothed segments; the floral leaves sessile, *with partially united segments*. Flowers 2–5, slightly pendulous, spreading, green. Follicles as in the former.

Shady places. Per.; March–April. Plentiful in a copse not far from the Fox, Ranmer Common, near Dorking, April, 1840, *Mr. Irvine.*

Eranthis, *Salisb.*—Perennial roots. Leaves all radical, on long petioles. Flowers solitary, terminal, in the centre of a leaf-like persistent involucre. Sepals 5–8, petaloid, caducous. Petals 5–8, much shorter than the sepals, tubular and obliquely truncate. Follicles 5–8, free, stipitate, slightly divergent, subtended by the persistent receptacle.

E. hyemalis, Salisb. *Winter Aconite.*—L.B.S. 28.

Root roundish, thick, fleshy. Stem 2–4 inches, erect. Leaves with oblong linear lobes. Sepals spreading, oblong or oblong-ovate. Follicles oblong, with a beak. Seeds angular, finely shagreened.

Naturalized in thickets in the south of England, *Mr. Babington.* In a copse at Hemswell, Spittal, Lincolnshire, 1830, *Mr. Irvine.* Per.; February–March.

Aquilegia, *Lin.*—Leaves mostly radical, twice ternate. Flowers pendulous. Sepals 5, ovate, petaloid, caducous. Petals 5, prolonged below their insertion, involute and terminating in spurs, which are more or less curved over the sepals. Follicles 5, free or slightly cohering at the base and connivent.

A. vulgaris, Lin. *Common Columbine.*—E.B. 297. L.B.S. 31.

A. 13. C. 35. Lat. 50–55°. Alt. 0–200 yds. Tem. 51–47°.

Root thick, oblique. Stems solitary, branched above, 12–24 inches or more, erect, many-flowered. Leaves bi-ternate (twice ternate), the lower on long petioles, the upper nearly sessile; the floral leaves trifid. Sepals erect. Petals truncate above, the upper part above their insertion shorter than the spur. Spur involute, like a crook. Follicles oblong, with a slender beak.

Woods and bushy places. Per.; June–July.

DELPHINIUM, *Lin.*—Annual plants, with capillary or linear leaves and very irregular flowers. Sepals petaloid, caducous, unequal, the upper with a hollow spur. Petals 4 by abortion, forming a gamopetalous corolla by cohesion, prolonged into a spur which is contained in the hollow spur of the upper sepal. Follicles 5, or 1–3 by abortion, free.

D. Consolida, Lin. *Larkspur.*—E.B. 1839. L.B.S. 32.

A. 1. C. 4. Lat. 52–53°. Alt. 0–50 yds. Tem. 49–48°.

Stems erect, 12–18–24 inches, with divergent branches. Lower leaves petiolate, the upper sessile or nearly so. Peduncles bracteate, one-flowered. Sepals pubescent, with a green dorsal nerve; spur elongate and horizontal, lateral sepals tapering below. Petals united and forming a one-lipped monopetalous (gamopetalous) corolla. Follicles often solitary, terminated by a slender beak.

Corn-fields. Cambridgeshire, Kent, Surrey (Weybridge, Batersea, Wandsworth). Annual; June–September.

ACONITUM, *Lin.*—Herbaceous, nearly glabrous plants. Leaves palmate. Flowers very irregular. Sepals petaloid, rarely persistent, unequal, the upper one hooded, the two lateral roundish. Petals 2–5, the upper two filiform and dilated above, where they are shut up in the hood of the upper sepal, the lower ones small. Follicles 3–5, free.

A. Napellus, Lin. *Monkshood.*—E.B. 2730. L.B.S. 33.

A. 4. C. 6. Lat. 52–54°. Alt. 0–200 yds. Tem. 49–47°.

Root thick, turbinate, rhizomatous. Stems 2–3 feet, erect, simple or branched above. Leaves shining above, palmate, in 5–7 sections, with cuneate incised lobes. Flowers in terminal, spike-like, many-flowered clusters, on erect peduncles. Sepals downy, the upper one arched (hooded). The cornettes (necta-

ries) of the petals are horizontal. Follicles oblong, glabrous, diverging when young.

By rivers in the west of England, rare. Per.; June–July.

Tribe IV. *PÆONIEÆ: The* Peony *Tribe.*—Leaves radical or alternate. Petals 4–5, flat. Carpels 2–5 or solitary, many-seeded follicles, or baccate, and not opening.

Actæa, *Lin.*—Herbaceous, glabrous plants, with doubly pinnate leaves and regular white flowers, disposed in clusters on long opposite or axillary peduncles. Sepals 4, petaloid, caducous. Petals 4, or fewer by abortion. Carpel solitary, baccate (a berry), not opening (indehiscent).

A. spicata, Lin. *Baneberry.*—E.B. 918. L.B.S. 35.

A. 2. C. 2. Lat. 53–55°. Alt. ? Tem. ?

Root oblique or horizontal, thick, black. Stem 1–3 feet high, naked below, with 1–3 leaves above, simple, rarely branching. Leaves 2–3-pinnate, with acuminate segments. Flowers small, in 1–2 dense oval-oblong clusters; the chief cluster is opposite to the upper leaf, the secondary cluster axillary or abortive. Petals spathulate, tapering into long claws. Fruit oblong-roundish, finally becoming black.

Limestone pavement, Ingleborough, Yorkshire. Per.; May–June. The above-mentioned station is nearly half-way up the mountain, reckoning from the village of Ingleton, and the altitude is probably half the height of Ingleborough, 390–400 yards.

Pæonia, *Lin.*—Leaves ternate or bi-ternate. Flowers large and handsome. Sepals 5, persistent, unequal. Petals 5 or numerous. Carpels 2–5, opening inwardly, many-seeded.

P. corallina, Retz. *Peony.*—E.B. 1513. L.B.S. 34.

A. 1. C. 1. Lat. 51–52°. Alt. 0–50 yds. Tem. 50°.

Stem simple, one-flowered, 1–2 feet. Lower leaves bi-ternate, the upper ternate, segments ovate-elliptic, glabrous. Sepals 5, unequal, concave. Petals 5–10, broadly ovate. Anthers longer than the filaments. Carpels 3–5, tomentose, curved and spreading. Stigma involute.

Steep Holmes in the Severn. Per.; May–June.

BERBERACEÆ, *Vent.* The Berbery Family.

Spinous shrubs, rarely herbaceous plants. Leaves simple or compound, with spinous teeth, alternate or in tufts, with very

small caducous stipules. Flowers yellow, in pendulous clusters, perfect, regular, imbricated in prefloration (æstivation). Sepals 4–6, usually in two rows, petaloid, unequal, caducous, subtended by two or more bracts. Petals 6–8, in two rows, usually with two glands at the base. Stamens as many as the petals; anther-cells opening by a valve from the base to the summit. Ovary free, monocarpous, one-celled, with two or more ovules, which are ascending and reflexed. Stigma sessile, discoid. Fruit a one-seeded berry, or with several seeds, rarely capsular and opening (dehiscent). Seeds ascending. Embryo straight, in a fleshy or corneous albumen (perisperm). Radicle directed towards the hilum.

SYNOPSIS OF THE GENERA.

BERBERIS.—Stems woody, rarely herbaceous. Sepals, petals, and stamens 6 respectively. Fruit a berry.

EPIMEDIUM.—Stems herbaceous. Sepals, petals, and stamens 4. Fruit capsular.

BERBERIS, *Lin.*—Spinous shrubs, with simple tufted leaves on the extremities of abortive short branches, which are subtended by a palmate spine (an abortive leaf). Flowers yellow, in many-flowered pendulous clusters. Sepals 6, petaloid, with 2–3 scale-like bracts at their base. Petals 6, with glands near the claw. Stamens 6, with flat filaments. Berry oblong, usually two-seeded.

B. vulgaris, Lin. *Common Berberry,* or *Barberry.*—E.B. 49. L.B.S. 401.

A. 15. C. 40. Lat. 50–57°. Alt. 0–150 yds. Tem. 51–46°.

Hedge-shrub, 3–6 feet high, bushy, with grey bark and yellow wood. Leaves oblong-obovate, toothed, with spinous *cilia* (fringes). Flowers yellow, scented. Fruit bright red, acid, crowned by the withered stigma.

Hedges, not common. Flowers in May and June; fruits in September and October.

EPIMEDIUM, *Lin.*—Roots permanent, creeping, and woody, with annual stems and compound leaves. Flowers in terminal clusters. Sepals 4, ovate, equal, deciduous. Petals 4, ovate, equal, and concave, with an appendage, crown (nectary) on each, connected with the receptacle. Anthers with valvular cells, the valve rolling back when the pollen is shed. Fruit capsular, one-celled, two-valved, and many-seeded.

E. alpinum, Lin. *Alpine Barrenwort.*—E.B. 438. L.B.S. 402.

A. 7?

Stem simple, solitary, about a foot high, with a twice or thrice ternate, erect leaf; leaflets cordate at the base, elongate, pendulous. Flowers drooping, with dark red petals and pale yellow nectaries.

Per.; May. Naturalized in Kildale Woods, Cleveland, *W. Mudd* (in Supplement to Baines's Yorkshire Flora). In bushy places, among the Carinthian and Tyrolese Alps, *Kittel* (Deutschland's Flora). Excluded from Grenier and Godron's 'Flore Française.'

NYMPHÆACEÆ, *Salisb.* The Water Lily Family.

Perennial, herbaceous, aquatic plants, with horizontal, fleshy rhizomes. Leaves radical, on long petioles, entire, cordate at the base, floating. Flowers large, on axillary peduncles, perfect, regular. Sepals 4–5, more or less coloured, caducous or persistent. Petals numerous, in several rows. Stamens indefinite; anthers two-lobed, introrse. Ovary free, with numerous carpels and numerous incomplete, many-ovuled cells. Ovules inserted on the spongy dissepiments. Stigmas sessile, equal in number to the cells, radiating. Fruit fleshy-herbaceous, indehiscent (not opening). Cells many-seeded; seeds horizontal in a fleshy envelope. Perisperm (albumen) double; the outer one farinaceous, the inner fleshy, enclosing the embryo. Embryo straight, with short, thick cotyledons. Radicle towards the hilum.

SYNOPSIS OF THE GENERA.

Nymphæa.—Flowers white. Sepals 4, lanceolate.
Nuphar.—Flowers yellow. Sepals 5, roundish.

Nymphæa, *Sm.*—Sepals coloured internally, *caducous*. Petals 16–18, lanceolate, in several rows; outer ones equalling the sepals, the inner ones diminishing and gradually passing into stamens, which are more or less completely developed. Fruit bearing the scars where the petals and stamens were inserted.

N. alba, Lin. *White Water Lily.*—E.B. 160. L.B.S. 36.

A. 18. C. 70. Lat. 50–61°. Alt. 0–350 or 400 yds. Tem. 52–45°.

Leaves large, coriaceous, ovate-roundish, deeply cordate at the base, with contiguous and almost parallel lobes on cylindrical petioles. Flowers white, or tinged with rose-colour. Stigmas convex, with a crenulate margin. Fruit roundish.

Lakes and rivers. Per.; June–September.

NUPHAR, *Sm.*—Sepals obovate-roundish, coloured, *persistent.* Petals 10–20, obovate, shorter than the sepals, thick, fleshy, in two rows, with longitudinal prominences, corresponding to the anther-lobes. Fruit ovate, smooth, crowned by the radiate stigmas.

N. luteum, Sm. *Yellow Water Lily.*—E.B. 159. L.B.S. 37.

A. 16. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Leaves ovate, coriaccous, deeply cordate, with *slightly divergent lobes* on a slightly triangular petiole. Petals shining, *gradually attenuated at the base.* Stigmas umbilicate, *entire or slightly undulate.* Fruit tapering into a slender neck. (The name Brandy-bottle is descriptive of the shape of the fruit.)

In deep waters. Per.; June–September.

N. pumilum, Sm. *Least Yellow Water Lily.*—E.B. 2292. L.B.S. 38.

A. 2. C. 4. Lat. 56–58°. Alt. ? Tem. 45–44°.

Leaves with *parallel or slightly divergent lobes.* Petals roundish, *abruptly tapering into a claw.* Disc of the stigmas strongly umbilicate.

The plant is much smaller than *N. luteum,* with flowers about as large as those of *Caltha palustris.*

In several Scottish lakes. Lake at the foot of Ben Cruachan, *Mr. Borrer.*

PAPAVERACEÆ, *Juss.* THE POPPY FAMILY.

Annual, biennial, or perennial herbaceous plants, with sinuate, pinnatifid or pinnate, alternate leaves, without stipules. Flowers few or solitary, terminal, regular or nearly so, perfect. Sepals 2, concave, caducous (falling off), with valvular prefloration. Petals 4, imbricate, rumpled in prefloration. Stamens usually indefinite, free. Anthers two-lobed, introrse. Ovary free, consisting of two or several carpels, one-celled, with false (imperfect) dissepiments, rarely two-celled by a complete dissepiment. Ovules numerous. Stigmas sessile, persistent. Fruit dry, many-seeded, usually round or oblong, rarely linear, opening by a series of pores under the disc of the stigmas, sometimes not opening, but transversely divided into one-seeded joints. Seeds usually very small, in an oleaccous (oily) fleshy perisperm. Embryo straight, very small, at the base of the perisperm. Radicle towards the hilum.

SYNOPSIS OF THE GENERA.

PAPAVER.—Annual herbs, with white milky juice. Leaves pinnatifid or pinnate. Flowers large, solitary, on long peduncles. Stigmas 4–20, *radiate*. Partitions of the fruit *incomplete*.

MECONOPSIS.—Perennial herbs, with milky, yellow juice. Stigmas 4–6, radiate. Partitions wanting.

RŒMERIA.—Stigmas capitate. Fruit capsular, *one-celled*, linear (like a pod).

GLAUCIUM.—Stigmas capitate. Fruit capsular, elongate, *two-celled*, with a spongy partition.

CHELIDONIUM.—Stigmas 2, oblique. Fruit capsular, *one-celled and two-valved*.

PAPAVER, *Lin.*—Stems erect, with sinuate, pinnatifid, or pinnate leaves. Flowers large, on very long peduncles, drooping before they expand. Sepals 2, herbaceous, hairy, rarely glabrous. Petals red, rarely variegated or white, usually with a dark patch above the claw. Stigmas 4–20, radiated and united. Capsule round or oblong, one-celled, with incomplete partitions, opening by pores under the disc of the stigmas. Seeds without an aril.

P. somniferum, Lin. *White Poppy.*—E.B. 2145. L.B.S. 43.

Stem erect, simple or branched, stout, very glaucous and glabrous. Leaves all *glabrous and glaucous*, deeply toothed, crenate or sinuate, undulate; stem-leaves oblong or obovate, *cordate, amplexicaul* (embracing the stem). Sepals *glabrous*. Petals very large, purple, violet, or white. Stigmas 8–15. Capsule nearly round, with a lobed stigmatiferous disc.

Pretty well established in the Thames valley, particularly in Kent. It is only sub-spontaneous on the Continent, where it is cultivated for its juice (Opium), but chiefly for its oleaginous seeds. Annual; June–September.

P. Rhœas, Lin. *Common Red Poppy.*—E.B. 645. L.B.S. 42.

A. 16. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Stem erect, branched, hairy. Leaves usually pinnate-pinnatifid, with oblong-lanceolate, toothed, or incised lobes. Peduncles and sepals furnished with *rough spreading hairs*. Petals large, roundish, deep red, with a black spot above the claw. Stigmas 8–12. Capsule *obovate-roundish, glabrous*. Disc of the stigmas lobed, the margins *overlapping*.

Fields; rubbish, etc. Annual; June–July.

P. hybridum, Lin. E.B. 43. L.B.S. 39.

A. 9. C. 25. Lat. 50–55°. Alt. 0–200 yds. Tem. 51–48°.

Stem erect, branched at the top, with spreading or erect hairs.

Leaves bipinnate, with lanceolate-linear lobes. Sepals covered with spreading hairs (bristles). Petals oblong-obovate. Stigmas 4–8. Capsule *roundish,* armed *with spreading rigid bristles,* with 4–8 prominent angles. Disc not lobed.

On cretaceous and calcareous soils. Annual; June–July.

P. Argemone, Lin. E.B. 643. L.B.S. 40.

A. 18. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–46°.

Stems solitary or few, erect or ascending, branching above, with spreading or erect hairs. Leaves bipinnate, with lanceolate or linear lobes. Sepals hairy. Petals oblong or obovate, bright red. Stigmas 4–6. Capsule *oblong-clavate,* hairy at the apex, 4–6-sided. Disc not lobed.

Corn-fields. Annual; June–August.

P. dubium, Lin. E.B. 644. L.B.S. 41.

A. general (18). C. 82. Lat. 50–61°. Alt. 0–200 yds. Tem. 51–45°.

Stems solitary or few, erect, simple or branching. Leaves *glaucous,* with a few hairs, or glabrous, bipinnate, with oblong-lanceolate, entire lobes. Sepals furnished with rigid hairs. Petals very large, roundish, deep red. Stigmas 5–10. Capsule *oblong-clavate, glabrous.* Disc lobed; lobes not overlapping.

Fields. Annual; June–July.

MECONOPSIS, *Vig.*—Plants with yellow juice. Flowers solitary, yellow, drooping before expansion. Sepals 2, caducous. Petals 4. Stigmas 4–6, radiate, concave, *free.* Capsule obovate, opening by 4–6 valves.

M. cambrica, Vig. *Welsh Poppy.*—E.B. 66. L.B.S. 44.

A. 5. C. 10. Lat. 50–55°. Alt. 0–700 yds. Tem. 48–41°.

Stem erect, branching. Leaves pinnate, with pinnatifid, incised leaflets. Flowers large, orange-yellow, on long peduncles. Sepals glabrous. Capsule oblong, tapering at the base, glabrous, with 4–6 sides. Stigmas radiate. Seeds brown.

Shady places on the ledges of rocks, on old walls, etc. About Settle, Yorkshire, not uncommon; also in the Vale of Llanberis, North Wales. Per.; July.

RŒMERIA, *DC.*—Annual herbs. Sepals 2, caducous. Petals 4, crumpled before flowering. Style short. Stigmas capitate. Capsule elongated, one-celled, without a partition, *silicular,* 3–4-*valved,* opening from the summit to the base.

R. hybrida, DC.—*Glaucium violaceum,* Sm. and L. B. S. 47. E.B. 201.

Stem erect, hairy, more or less branched. Leaves deeply cut, 2–3-pinnatifid, with tapering lobes, terminating in a bristle. Peduncles shorter than the capsules, enlarged at their tops. Flowers large, of a beautiful violet. Sepals hairy, concave. Capsule linear, cylindrical, longitudinally striated, with spreading bristles. Seeds cinereous, reniform.

Fields in Norfolk and Cambridgeshire. Annual; June. We have gathered it, with many other exotics, at Wandsworth Steamboat Pier.

Glaucium, *Tournf.*—Herbage hoary, glaucous. Leaves pinnate or pinnatifid. Flowers large, nearly solitary, terminal. Sepals herbaceous, caducous. Petals 4. Stigma capitate, two-lobed. Capsule elongate, linear (like a pod), *two-celled*, with a spongy dissepiment, opening by valvular dehiscence from *the summit to the base*. Seeds without an aril.

G. luteum, Scop. *Yellow Horned Poppy.*—E.B. 8. L.B.S. 46.
A. 16. C. 30. Lat. 50–57°. Alt. 0– yds. Tem. 52–48°.

Stems reclining or ascending, robust, branching. Root-leaves lyrate-pinnatifid, with sinuate or toothed lobes, petiolate; stem-leaves embracing the stem, all very glaucous and more or less rough or tubercular. Capsules linear, cylindrical, often arcuate (shaped like a bow).

Sea-shores. Biennial; July–September.

G. phœniceum, Gært. — *G. corniculatum,* Curt. *Scarlet Horned Poppy.*—E.B. 1433.

Slenderer, and not so glaucous as the preceding. Stem hairy. Leaves deeply pinnatifid, with narrower lobes than in *G. luteum*. Flowers smaller, on shorter peduncles. Petals red or orange, with a purple spot at the base. Capsule rough.

At Wandsworth Steamboat Pier, with a multitude of exotic things. In this locality it has been noticed since 1852. Annual; June–September.

Chelidonium, *Tournf.*—Perennial herbs, with a copious yellow milky juice, pinnatifid leaves and yellow flowers. Sepals 2, slightly coloured. Stigma two-lobed. Capsule linear (like a pod), *one-celled,* with a *defective partition,* opening by two valves from the base to the summit. Seeds arillate.

C. majus, Lin. *Common Celandine.*—E.B. 1581. L.B.S. 45.
A. 14. C. 50. Lat. 50–56°. Alt. 0–200 yds. Tem. 52–47°.

Root thick, oblique or vertical. Stems erect, branching, with more or less spreading hairs. Leaves lobed; lobes 3–7, ovate, incised or crenate, glabrous, glaucous above. Sepals coloured. Capsule linear, slightly torulose (beaded). Seeds ovate, shining, with a white aril.

Usually near houses: seldom far from human dwellings. Per.; April–September.

Var. *β. laciniatum*, Reich. (Fl. Ger. 4467). Segments of the leaves pinnatifid, with straight linear lobes. Petals incised-crenulate.—About Wimbledon, under hedges and on old walls.

FUMARIACEÆ, *DC.* The Fumitory Family.

Fig. II. Fumaria officinalis.

Annual or perennial, herbaceous, succulent plants, often glaucous, usually yielding a bitter juice. Leaves 2–3-pinnate, petiolate, alternate. Flowers perfect, irregular, terminal or in opposite clusters (opposite to the leaves). Sepals two, usually toothed, petaloid, free, caducous; prefloration valvular. Petals four, free or more or less united at the base, the two lateral usually cohering at the summit, the upper one prolonged at the base and spurred. Stamens six, with their filaments united in two bundles (diadelphous). Anthers extrorse, the two lateral anthers in each bundle one-lobed, the middle

Fig. II.—1. Flower; *a*, corolla; *b*, calyx. 2. Fruit; *a*, pedicel; *b*, carpel.

one two-lobed. Ovary consisting of two carpels; ovules several, or one only. Style filiform, caducous or persistent. Stigma two-lobed; lobes compressed, usually crenulate. Fruit dry, one-celled and one-seeded, not opening, or many-seeded, with valvular dehiscence (opening). Seeds reniform. Perisperm fleshy, thick. Embryo minute, situated near the micropyle (opening; the *foramen* of the ovule is the *mycropyle* of the seed). Radicle near the hilum.

SYNOPSIS OF THE GENERA.

CORYDALIS.—Fruit a compressed, two-valved, many-seeded pod.
FUMARIA.—Fruit one-seeded, not opening.

CORYDALIS, *DC.*—Perennial or annual plants, with simple or branched, solitary or numerous stems. Leaves 2–3-pinnate. Flowers yellow or purple, rarely white. Lower petal channelled, with a flat limb; inner petals coherent at the summit, with lateral enlargements. Style caducous or persistent. Fruit a compressed, many-seeded pod. Seeds smooth, shining, with an aril, lenticular (*in the shape of a lens*).

C. solida, Smith?* Hook.? *Bulbous Fumitory.*—E.B. 1471. L.B.S. 49.

Roots tuberous, solid. Stems solitary, about a span high, erect, simple, *with a scale near the base* (a rudimentary leaf). Leaves twice ternate, the segments of the first series being on long petioles; the segments of the second series being cuneate, with entire or cut lobes. Bracts *cuneate, incised.* Flowers *purple, rarely white;* upper petal notched, with a long spur. Pedicels about as long as the capsule. Seeds smooth, shining.

In groves and thickets, but sparingly. Per.; March–April. Perhaps a doubtful native, *Sm. in Eng. Fl. vol.* 3. *p.* 252. It appears to be extensively distributed over the middle and south of France, see *Grenier et Godron, part* 1. *p.* 65. A very doubtful native, *Mr. Babington, Man. Brit. Bot. p.* 14. Are its claims to be regarded as a spontaneous British production *doubtful?* In 'Cybele,' vol. i. p. 110, Mr. Watson says, "Much less esta-

* Grenier and Godron, 'Flore de France,' quote Eng. Fl. vol. iii. p. 353, as the authority for this name. The third volume of the 'English Flora' does not contain so many pages. The plant is described in Eng. Fl. vol. iii. pp. 251 and 252. In 'Flore des Environs de Paris,' Fl. Brit. of the same author is quoted as the authority. Mr. Babington, in the second edition of his 'Manual of British Botany,' refers to *Hooker.*

blished than *C. lutea;* but has been admitted into English lists by botanists who were more solicitous to publish novelties than to promulgate truth; and once admitted into books, no one likes to take the lead in discarding it again."

C. lutea, DC. *Yellow Fumitory.*—E.B. 588. L.B.S. 49.

Root tufted. Stems numerous (a foot high, *Sm.*), with spreading branches. Leaves 2–3-pinnate, with cuneate, obovate, or oblong, petiolate, incised segments. Bracts lanceolate, linear, shorter than the pedicels. Flowers yellow, in terminal, solitary, erect clusters; upper petal with a short, rounded, incurved spur. Seeds granular.

On old walls. Per.; May–September.

Both these plants were reported by Mr. Robson, and introduced by Withering, who states, "*F. intermedia* (*C. solida*) was first sent to me by Mr. Hall, then by Mr. Gough, and afterwards by Mr. Robson. The former found it in Lavan's Park, five miles from Kendal. Wattsfield, half a mile from Kendal, amongst a clump of tall trees, plentiful, *Mr. Gough.* Near Ulverstone; also between Cartmel and Kendal, *Mr. Robson.* At Perry Hall, near Birmingham, in a meadow between the house and the river, *Mr. Pitt.*" The same author states, in reference to *C. lutea,* "This plant was first found in England by Mr. Howard, growing on old walls near Castleton, in Derbyshire, in an uncultivated place, and far from any garden, as I am informed by Mr. Robson, who sent a specimen for my inspection." The following is from *Coss. et Ger.*:—"*Subspontané;* vieux murs de jardins, décombres, voisinage des habitations." *Gren. and God.,* "Environs de Paris, Strasbourg, Narbonne, etc." *Kittel,* 'Deutschland's Flora,' "Hier und da, sehr selten" (Here and there, very rare). Ealing, Middlesex; Albury, Surrey; West Ham, Essex, etc.

C. claviculata, DC. *White Climbing Fumitory.*—E.B. 103. L.B.S. 48.

A. 17. C. 50. Lat. 50–58°. Alt. 0–400 yds., Dartmoor, Devon. Tem. 50–46°.

Root slender. Stems solitary or several, feeble (tender), leafy, climbing by *branched tendrils,* 1–3 feet long (longer sometimes). Leaves pinnate, with elliptical, entire, glaucous leaflets, petiolate (the petiole is terminated by a branched tendril). Clusters 5–8-flowered, erect, axillary or opposite to the leaves; bracts small, ovate, mucronate, somewhat longer than the pedicels. Upper

petal with a very short, rounded spur. Pods ovate-lanceolate. Seeds black, shining, reniform.

In bushy, shady places. Annual; June, July.

Fumaria, *Lin.*—Annual plants, with angular branched and spreading stems, often climbing by means of the twisted petioles. Leaves 2–3-pinnate. Flowers purple or white, tipped with a black-purple border (deep red summit). Petals 4, the lower one channelled, the inner cohering at their tips, and with lateral enlargements, as in *Corydalis*. Fruit roundish, one-seeded, not opening. Seeds without an aril.

F. officinalis, Lin. *Common Fumitory.*—E.B. 589. L.B.S. 51. A. 18. C. 82. Lat. 50–61°. Alt. 0–200 yds., E. Highlands. Tem. 52–45°.

Root tapering, vertical. Stems several, the central one erect, the lateral ones spreading, 8–12 inches high, branching. Leaves 2–3-pinnate, with oblong-linear and pointed segments. Flowers numerous, purple, in dense clusters (the clusters of fruit are rather lax). Bracts lanceolate, rather longer than the pedicels of the flowers. Sepals ovate, not half as long as the corolla. Fruit *broad at the apex, slightly depressed or truncate* (the horizontal diameter of the fruit is greater than its vertical diameter).

Fields, gardens, and roadsides. Annual; May–October.

Var. *β. scandens.*—*F. media* (Loisel. not. 102).—*F. capreolata,* Thuill. Fl. Par. 354, non Lin. Segments of the leaves ovate-oblong; petioles twisted. Flowers white or pale rose-colour, with larger sepals than the common form.—In bushy, moist, shady places.

F. capreolata, Lin. *Ramping Fumitory.*—E.B. 943. L.B.S. 50. A. 18. C. 70. Lat. 50–60°. Alt. 0–100 yds., in England. Tem. 51–46°.

Stems variable in length, sometimes several feet long, climbing with the aid of the twisted petioles. Leaves 2–3-pinnate, with oblong mucronate segments, on elongate, slender, primary and secondary petioles. Flowers in lax clusters, white or pale rose. Sepals ovate, pointed, *about half as long as the corolla,* and of the same breadth, excluding the spur. Fruit *globular,* not apiculate.

About hedges, in cultivated places. Annual; May–September.

Var. *α. recurva.* Pedicels of the fruit drooping.

Var. *β. patula.* Pedicels of the fruit more or less spreading, not drooping.

F. micrantha, Lag. E.B. 2876. L.B.S. 52.

A. 10. C. 50? Lat. 52–57°. Alt. 0–200 yds., in England. Tem. 49–47°?

Stems 8–12 inches high. Leaves bipinnate, with linear, acute, channelled segments (Grenier). Flowers in lax, not long clusters, with oblong, pointed, spreading bracts, which are nearly as long as the pedicels. Sepals *ovate-rounded, broader than the tube of the corolla,* and about half as long. Fruit nearly globular, broad (the horizontal diameter is greater than the perpendicular or axial), at an early stage pointed, afterwards obtuse and scarcely apiculate, rough. Seed depressed at the apex.

Cornfields, in Kent. Annual; July–September.—*F. densiflora,* DC. Cat. Mons. (1813).—*F. micrantha,* Lag. Fl. Matrit. (1816).

F. parviflora, Lam. E.B. 590. L.B.S. 53, 54.—*F. Vaillantii,* see Cybele, vol. i. p. 113.

A. 12. C. 55. Lat. 50–57°? Alt. 0–200 yds., in England.*

Stems shorter than in *F. micrantha.* Leaves 2–3-pinnate, with linear, flat, pointed segments. Flowers in lax clusters, with linear bracts, which are shorter than the erect spreading pedicels. Sepals *linear, pointed,* toothed, *broader than the pedicels,* and *one-sixth part* of the length of the petals. Petals white, tipped with purple. Fruit *globular, apiculate.*

Dry, sandy fields. Annual; May–August.

F. Vaillantii, Lois. E.B. 2877. L.B.S. 54.

For range and statistics see *F. parviflora.*

Stems 4–8 inches high. Leaves 2–3-pinnate, with flat, linear, pointed segments. Flowers in lax clusters, with linear bracts, which are shorter than the erect spreading pedicels. Sepals linear, acute, toothed, *narrower* than the pedicels, about one-sixth part of the length of the corolla, which is purple, not white as in *F. parviflora.* Fruit *globular, rounded at the apex,* not apiculate. Flowers and fruit smaller than in *F. officinalis,* and the segments of the leaves are narrower and more pointed.

Cornfields. Annual; June–September.

F. agraria, Lag.—*F. major,* Reich. 4455.—Is reported from

* "I remain unacquainted with any evidence or argument sufficing to show that we have more than one species under the two names of *parviflora* and *Vaillantii,* after separating *micrantha* therefrom." — *Mr. H. C. Watson, in Cybele, vol.* 1. *p.* 114.

Ambleside, Westmoreland, in Bot. Gaz. vol. ii. p. 54. The following character is drawn up from Grenier and Godron, 'Flore de France,' vol. i. p. 67:—Leaves bipinnate, with lanceolate segments. Flowers in lax clusters, with lanceolate bracts, which equal or exceed the pedicels of the flowers (shorter than the pedicels of the fruit). Sepals *ovate-lanceolate,* toothed, narrower than the corolla, and only one-third of its length. Fruit globular, *rough,* rounded at the summit and *pointed with the base of the style.* Seeds depressed at the summit, nearly round.

South of France. Annual; June–August.

The distinctive characters of these species are chiefly drawn up from the sepals and the fruit.

In *F. officinalis* the sepals are less than half as long as the corolla, and are nearly as broad as it is. The fruit is almost obcordate, depressed at the apex, and slightly apiculate.

In *F. micrantha* the sepals are broadly ovate, much broader than the tube of the corolla, and half as long. The fruit is globular, very slightly depressed, and faintly apiculate at the summit.

In *F. capreolata* the sepals are about as broad as the corolla, and about half as long. The fruit is globular, not apiculate.

In *F. Vaillantii* the sepals are very small, scarcely one-sixth part as long as the corolla, and much narrower. Fruit globular, rounded, and not apiculate at the summit.

In *F. parviflora* the sepals are broader than in *F. Vaillantii,* and about as long as they are in that species. The fruit is globular and apiculate at the summit.

In *F. agraria* the sepals are narrower than the corolla, and about one-third as long. The fruit is globular, rounded at the apex and apiculate.

CRUCIFERÆ, *Juss.* The Cruciferous Family.

Annual, biennial, or perennial, herbaceous (rarely half-shrubby) plants, with aqueous and usually acrid juice. Leaves alternate, sessile or stalked, usually more or less divided. Inflorescence racemose (in simple clusters, which are elongated after flowering). Flowers perfect, regular or nearly so. Sepals 4, free, rarely persistent, imbricated, rarely valvular in prefloration; the two sepals opposite to the valves of the fruit often larger than

the other two, and more or less turgid (gibbous) at the base. Petals 4, with a claw and an entire or notched or cleft limb, rarely wanting, on a glanduliferous receptacle. Stamens 6, unequal, the two lateral stamens (opposite to the enlarged sepals) shorter than the four interior ones. Ovary free, consisting of two carpels, with parietal placentas, two-celled, bearing several ovules, rarely one-celled, with one ovule. Style simple, sometimes wanting. Stigma entire or two-lobed. Fruit either elongated (siliquose) or short (silicular), opening by two valves from the base to the apex, many-seeded, sometimes one-seeded and indehiscent, and sometimes separating transversely into one-seeded joints. Seeds suspended without albumen (perisperm). Embryo oleaginous, plicate, very rarely coiled. Radicle lateral (applied to the edge of the cotyledons), or dorsal (applied to the back of the cotyledons), or the cotyledons are accumbent, incumbent, conduplicate, etc.

Fig. III. Cardamine pratensis.

Division I. *SILIQUOSÆ.*—Fruit linear or lanceolate (a pod), opening, rarely not opening, many-seeded.

Tribe 1.—Cotyledons flat, radicle applied to their *commissure* (radicle commissural).

SYNOPSIS OF THE GENERA.

Cheiranthus.—Stem shrubby at the base. Leaves entire. Sepals connivent. Stigma two-lobed. Pod linear, *somewhat four-angled.*

Matthiola.—Stem erect. Leaves entire or sinuate. *Pod cylindrical.*

Barbarea.—Herbage glabrous. *Leaves lyrate-pinnate.* Flowers yellow.

Arabis.—Leaves toothed, rarely lyrate-pinnatifid. *Flowers white.* Pods linear, compressed; valves nearly flat.

Dentaria.—Leaves pinnate. Calyx erect; *sepals not gibbous.*

Cardamine.—Leaves pinnate. Calyx not erect; sepals spreading, rarely gibbous. *Seeds in one row.*

Fig. III.—1. Fruit (pod) of *Diplotaxis tenuifolia; a a*, valves; *b*, replum or partition, with the seeds attached. 2. Fruit (pouch) of *Capsella Bursa-pastoris; a*, partition; *b*, horizontal section of the pouch, with the seeds attached.

NASTURTIUM.—Leaves pinnate or pinnatifid. Flowers yellow, rarely white; sepals spreading. *Seeds in 2–4 rows.*

TURRITIS.—*Root-leaves toothed; stem-leaves entire, clasping.* Seeds in two rows.

CHEIRANTHUS, *Brown.*—Perennial half-shrubby plants, with entire, oblong-lanceolate leaves, tapering at their base, with odoriferous yellow flowers. Sepals connivent, the lateral pair gibbous at their base. Lobes of the stigma curved outwards. Pod linear, nearly four-angled, with convex valves, which have a prominent longitudinal nerve. Seeds compressed, in one row.

C. Cheiri, Lin. *Wallflower.*—E.B. 1934. L.B.S. 109.

A.? C. 14. It is found between the latitude 50° and 58°, or from the British Channel to the Murray Frith, and from the Atlantic to the German or British Ocean.

Stem 12–18 inches high, shrubby and branched at the base; branches angular, pubescent with appressed hairs. Leaves lanceolate or oblong-lanceolate, tapering at the base, thick or fleshy, pale green beneath. Flowers odorous. Pods slightly pubescent. Per.; March–May.

Var. *α. fruticulosus,* Lin. Petals more or less of a deep yellow colour, not *veined.*—On old walls. In France it grows on calcareous rocks. Per.; April–June.

Var. *β. hortensis* (*C. Cheiri,* Lin.). Petals veined or striped with purple.—In gardens. A variety with very narrow petals is found upon the walls of the Abbey of Bury St. Edmunds, *Mr. Babington.*

MATTHIOLA, *Br.*—Herbaceous or half-shrubby plants, with stellate (star-like) pubescence. Stems erect. Leaves simple, toothed or sinuated. Sepals enlarged at the base. Petals entire, equal. Stigma cleft, with two *ovate, obtuse connivent lobes, enlarged after flowering.* Style short, thick, conical. Pod *cylindrical* or slightly compressed; valves convex, with a dorsal nerve. Placentas linear. Seeds in one row, round or ovate, compressed, often winged, usually with a membranous border.

M. incana, Br. *Hoary Stock.*—E.B. 1935. L.B.S. 110.

A. 2. C. 1. Lat. 50–51°.

Root branched. Stem *shrubby,* erect, bushy, leafy, hoary, about two feet high. Leaves lanceolate, rounded at the apex, thick and leathery, with dense pubescence, tapering at the base. Flowers large, purple; petals with greenish claws. Pod 2–3

inches long, *cylindrical, without glands,* crowned with the sessile stigma. Seeds with a *white filmy border.*

On maritime cliffs in the south of England. Isle of Wight, in several places. Per.; May, June.—This plant is said to be the parent of the celebrated Brompton Stock, and of all its numerous varieties.

M. sinuata, Br. *Sea Stock.*—E.B. 462. L.B.S. 111.

A. 3. C. 10. Lat. 50–54°. Tem. 52–49°.

Root tapering. Stem *herbaceous,* branched, leafy, two feet high. Leaves oblong, the *lower ones sinuated,* upper entire. Flowers like those of *M. incana,* but they are fragrant only at night or in the evening. Pods compressed, 3–4 inches long, *muricated with glands.* Seeds with a *membranous border.*

On the sea-coast of many parts of Wales, Cornwall, and Jersey. Biennial; July, August.

BARBAREA, *Br.*—Biennial or perennial plants, with erect, branched, leafy stems. Lower leaves lyrate-pinnatifid; stem-leaves clasping. Flowers yellow. Sepals erect, somewhat gibbous at the base. Stigma entire. Pod linear, nearly cylindrical (*tétragone,* four-cornered, *Grenier*); valves keeled, with a prominent dorsal nerve; placenta filiform, *not prominent.* Seeds in one row, elliptical, slightly compressed.

B. vulgaris, Br. *Bitter Winter Cress.*—E.B. 443. L.B.S. 95.

A. 16. C. 70. Lat. 50–58°. Alt. 0–200 yds., in England. (*B. vulgaris, B. arcuata,* and *B. stricta* are connected by Mr. Watson in treating of their distribution: see 'Cybele,' vol. i. p. 145.)

Root vertical, tapering. Stem erect, simple, branching near the top, sulcate, leafy. Leaves lyrate, with a large oblong or round terminal lobe, which is entire and slightly cordate in the lower leaves; the upper leaves are partly lyrate and partly entire or toothed, sessile and clasping; the terminal are obovate and toothed. Pods four-angled, spreading, terminated by a long beak.

B. arcuata, Reich., is distinguished from *B. vulgaris* by its larger and deeper yellow flowers, by its horizontal pedicels, and by its curved spreading-ascending pods.

B. stricta, Andrzj. Reich. 4355. L.B.S. 96.—*B. parviflora,* Fries?

Stems erect, several, branched, 1–2 feet high. Lower leaves lyrate, with 2–3 pairs of small lateral lobes; terminal lobe obo-

vate or oblong, sharply toothed. Petals about twice the length of the sepals, smaller than in *B. vulgaris*. Pods four-cornered, straight, erect, contiguous to the stem, with a beak nearly half the length of the pedicel.

Yorkshire, between Sheffield and Halifax, and between Weedon and Blisworth, plentifully, *Mr. Borrer*. It is one of the excluded species in Grenier and Godron's 'Flore de France:' these authors say, "*Barbarea stricta*, Andrz., n'a été indiqué en France que par confusion avec le *B. vulgaris*." We have not seen fresh wild specimens, but we have no doubt about its being distinct from *B. vulgaris*. *Qy.* Naturalized, or a genuine native?

B. præcox, Br. E.B. 1129. L.B.S. 97.

A. 10. C.?

Stems erect, grooved, glabrous, branched, leafy. Root-leaves lyrate, with a terminal ovate lobe; stem-leaves pinnatifid, *with linear-oblong lobes;* uppermost *with a narrow, cuneate,* terminal lobe. Clusters of fruit lax. Peduncles curved, ascending. Pods spreading, slightly compressed. Seeds greyish, alveolate.

In waste places, south of England, Mitcham, Brentford. Biennial; May–July. *Qy.* Naturalized?

Grenier and Godron, 'Flore de France,' p. 92, intimate their doubts about the specific distinctness of these species as follows:—"Il serait possible que la longueur et la direction des siliques n'aient pas autant de valeur, comme caractères spécifiques, qu'on leur en a attribué jusqu'ici; et dans ce cas il faudrait réunir comme simples variétés plusieurs de nos espèces. Nous les avons conservés, toutefois, par respect pour les botanistes distingués qui les ont établies." Probably this is the only reason that can be given for the retention, in our lists, of many reputed species. In reference to the present genus, it may be said, that if the fruit does not afford reliable characters for distinguishing the species, it will be vain to rely on the leaves.

Arabis, *Lin.*—Annual or perennial plants, more or less invested with simple or forked hairs. Leaves simple, toothed, rarely lyrate-pinnatifid; stem-leaves clasping or nearly sessile. Flowers white, rarely rose-coloured. Sepals erect, sometimes enlarged (gibbous) at the base. Stigma entire or slightly notched. Pod linear, *compressed;* valves nearly flat, with a longitudinal nerve, or with several irregular faint nerves. Seeds *in one row, compressed and bordered.*

A. hirsuta, Br.—*A. sagittata,* DC.—*A. hirsuta β,* Koch? *Hairy Rock-cress.*—E.B. 587. L.B.S. 92.

A. 17. C. 70. Lat. 50–58°. Alt. 0–1000 yds., in the East Highlands.

Root annual. Stems several, usually simple, leafy and hairy, 6–12 inches high. Root-leaves oblong, tapering at the base; stem-leaves sagittate, clasping, oblong, toothed, ciliated and hairy. Calyx equal, about as long as the pedicel. Petals oblong-linear, double the length of the sepals. Pods erect, very much longer than the pedicels, compressed. Seeds finely reticulate or punctate, ovate, with a narrow wing, in one row.

Banks and rocks. Biennial; June–August. A very variable plant.

A. ciliata, Br. *Fringed Rock-cress.*—E.B. 1746. L.B.S. 91.

Root tapering, vertical. Stems erect, 4–6 inches high, more or less according to situation, quite simple, round, leafy. Root-leaves obovate or oblong, tapering below, slightly toothed, glabrous, tufted; stem-leaves linear-oblong, *with a rounded base, quite sessile and half-clasping,* with a few cilia, and somewhat toothed. Petals longer than the sepals, nearly erect. Pods erect, long, linear, compressed, straight, erect, five times as long as their pedicels; valves undulated. Seeds without wings.

Ireland and Scotland? on rocks. Cunnamara, by the sea. Glen Esk? Biennial; July, August.

A. stricta, Huds. *Erect Rock-cress.*—E.B. 614. L.B.S. 90.

A. 2. C. 2. Lat. 51–52°? Alt.? Tem. 49–48°.

Stem erect, rigid, simple or branched, 4–6 inches high. Root-leaves in a rosette, crenulate or toothed, oblong, tapering; stem-leaves very few (1–3), ovate, toothed and slightly ciliated, not auricled (two projecting lobes at the base). Calyx about as long as the pedicel. Pods compressed and angled, large compared with the size of the plant. Seeds truncate and slightly winged at the apex.

On the high rocks that skirt the Avon, below Bristol and Clifton. Per.; April, May.

A. petræa, Lam., Crantz. *Alpine Rock-cress.*—E.B. 469. L.B.S. 89.—*A. hispida,* Lin. Sup. 298.—*A. hastulata,* English Botany, as above.

A. 6. C. 12? Lat. 53–61°. Alt. 300 yds., in East Highlands, to 1400 yds. in the same. Tem. 44–33°.

Root perennial. Stem erect, simple, glabrous. Root-leaves

pinnatifid, in tufts (rosettes), glabrous, slightly fringed at the margin. Stem-leaves entire, *lanceolate, narrow.* Flowers in elongated lax clusters (the lower flowers barren?), large, pink or rose-colour or white. Sepals hairy. Petals twice as long as the sepals. Pods spreading, erect, slender, about twice the length of their pedicels. Seeds slightly winged.

Per.; June–August. Alpine rocks in England and Scotland.

A. Turrita, Lin. *Tower Wall-cress.*—E.B. 178. L.B.S. 93.

Root tapering, simple. Stem a foot high, simple, erect, leafy. Leaves obovate or elliptical, tapering into the petioles; stem-leaves *cordate at the base, clasping.* Flowers in corymbose clusters, subtended by oblong bracts, of a pale sulphur-colour. Pods 3–4 inches long, flat, striated, curved downwards, with slightly undulated valves. Seeds with a membranous margin.

Old walls. Biennial; May. On walls at Cambridge and Oxford; and on Cleish Castle, Kinrosshire. "Allowed to be an introduced plant, and only of late admitted into our floras."—Mr. Watson, in Cybele, vol. i. p. 143.

DENTARIA, *Tourn.*—Perennial smooth plants, with scaly or tooth-like horizontal fleshy rhizomes, pinnate leaves, and rosy, lilac, or white flowers. Sepals erect, not turgid at the base. Stigma entire, or nearly so. Pod lanceolate, compressed, with nearly flat valves, which are without a nerve, or are only indistinctly nerved at the base, coiling up from the base with elasticity. Seeds *in one row,* compressed, with a dilated funicle (the connective of the seed and the placenta).

D. bulbifera, Lin. *Coralwort.*—E.B. 309. L.B.S. 83.

A. 3. C. 6. Lat. 51–56°. Alt. ? Tem. 49–47°.

Stem simple, erect, leafless below, smooth, 1–2 feet high. Lower leaves stalked, pinnate, nearly opposite, with 2–3 pairs of lanceolate or oblong, laxly toothed segments; the uppermost simple, reduced to the terminal segment. The axils are generally furdished with bulbs.

Woods. Per.; April and May. Old Park Wood and Garret Wood, both near Harefield, abundantly.

CARDAMINE, *Lin.*—Annual, biennial, or perennial, herbaceous plants, with pinnate, petiolate leaves, and white or lilac flowers. Sepals more or less spreading, seldom gibbous. Petals sometimes abortive. Stigma entire. Pod linear, compressed; valves flat,

without a nerve, or faintly nerved at the base, separating with elasticity. Seeds in one row; funicle not dilated.

Sect. I. Perennial plants, with petals thrice as long as the calyx.

C. pratensis, Lin. *Meadow Pink, Cuckoo-flower, Lady's Smock.*—E.B. 776. L.B.S. 85.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1100 yds. in East Highlands. Tem. 52–36°.

Root *short, truncate,* oblique or nearly horizontal. Stems *glabrous,* erect or ascending, 8–12 inches high. Leaves pinnate, with numerous leaflets; leaflets obovate or round, faintly toothed or angular, the terminal lobe often large; leaflets of the upper leaves linear. Flowers large, lilac or white. Petals about three times as long as the calyx. Stamens about half as long as the petals. Beak of the pod short and blunt.

Moist meadows. Per.; April, May.

Var. *C. dentata,* Schultes. Segments of the stem-leaves oblong and toothed.

C. amara, Lin. *Bitter Cress.*—E.B. 1000. L.B.S. 84.

A. 14. C. 50. Lat. 50–58°. Alt. 0–200 yds. in England. Tem. 50–46°.

Root slender, branching, knobby. Stems erect or ascending, flexuous, *angular and furrowed,* very leafy. Leaves pinnate; *leaflets obovate or oblong, angular, sinuate.* Sepals ovate, twice or thrice shorter than the petals. Anthers *purple or violet.* Pods slender, spreading, slightly turgid. Seeds ovate, yellowish-green.

Banks of rivers and other moist places, not common. Per.; April–June.—This plant, which is readily distinguished from *C. pratensis* by its angular furrowed stems and more bushy habit, agrees with the following in its more straggling growth and dentate leaves. In habit the variety *C. sylvatica* approaches to *C. pratensis,* and *C. hirsuta* to *C. amara.*

Sect. II. Annual or biennial plants. Petals about double the length of the sepals.

C. hirsuta, Lin. *Hairy Bitter Cress.*—E.B. 492. L.B.S. 86.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1000 yds. in East Highlands. Tem. 52–37°.

Roots vertical, fibrous. Stems solitary or several, erect, hairy, sulcate, branched, leafy. Leaves pinnate, with 3–4 pairs of leaflets, which are unequal at the base, rounded or oblong, obscurely toothed or angular, the terminal one is the largest. Petioles not auricled. Flowers small, white. Petals double the length of the

sepals, sometimes wanting by abortion. Beak of the pod short, obtuse. Wet places. Annual; March–June.

Var. *sylvatica.*—*C. sylvatica,* Link. This is a much slenderer form; the stem is quite smooth, not furrowed; and the flowers are smaller than in the type. It grows in dry sandy places in woods, and flowers earlier than *C. hirsuta.* In 'Cybele' its distribution is combined with that of *C. hirsuta.*

C. impatiens, Lin.

A. 6. C. 10. Lat. 51–55°. Alt. 0?–200 yds.* Tem. 48–46°.

Stems erect, angular, furrowed, with erect branches, rarely simple, leafy. Leaves pinnate, with numerous oblong-ovate or elliptical-lanceolate entire or toothed leaflets; petioles auricled at the base. Sepals oblong. Petals caducous, small, often abortive. Fruit (pods) in long lax clusters on slender spreading pedicels; pods slender, slightly turgid, valves opening with elasticity. Seeds ovate, yellow, with a brown rim.

In shady places, rare. Annual; June, August.

Nasturtium, *Br.*—Herbaceous, branching, smooth, perennial, rarely biennial, plants, with round or slightly angular stems, and pinnate or pinnatifid leaves. Flowers corymbose. Calyx equal at the base. Petals equal, entire. Stigma entire, or slightly notched; style cylindrical. Pod *cylindrical or slightly compressed;* valves convex, *without a dorsal nerve.* Seeds in 2 rows, rounded-compressed, not winged (irregularly disposed, or in 2–4 rows, *Coss et Ger.*).

Sect. I. Flowers yellow; dorsal nerve of the valves indistinct.

N. amphibium, Br.—*Roripa amphibia,* Bess. *Great Yellow Cress, Water Radish.* E.B. 1840. L.B.S. 101.

A. 12. C. 40. Lat. 50–56°. Alt. 0–200 yds. in England. Tem. 51–47°.

Root perennial. Stems robust, erect, or ascending, bluntly angled and furrowed, branched, leafy. Leaves *oblong-lanceolate,* tapering below, entire or toothed, the lower ones usually pinnatifid. Petals *slightly longer than the calyx.* Pod *roundish-oblong, four times shorter than the pedicel,* abruptly terminating in a slender cylindrical beak. In watery places. Per.; June–August.

Var. *a. indivisum.* Leaves all undivided, entire, rarely toothed.

* It grows at Godalming, Surrey, which is only a few yards above the level of high water. The tide flows nearly to Hampton Court, and the vale of the Wey has only a very gentle acclivity.

Var. *β. heterophyllum.* Lower leaves pinnatifid or pinnate, with incised segments; the upper undivided, entire, or toothed.

Grenier and Godron make two varieties:—*a. longisiliquum.* Pods elliptical, tapering at both ends, 2–3 times longer than the styles. *β. rotundisiliquum.* Pods globular, as long as the styles.

N. terrestre, Sm., Br. ?—*palustre,* DC. *Land-cress.*—E.B. 17. L.B.S. 99.

A. 16. C. 60. Lat. 50–58°. Alt. 0–200 yds. in England. Tem. 51–47°.

Root biennial? Stems erect, branching, furrowed, glabrous, leafy. Leaves deeply pinnatifid, with toothed or incised lobes, clasping. Petals *small, not longer than the sepals.* Pods oblong, turgid, reflexed, rather shorter than the pedicels, terminated by a short cylindrical beak. Seeds ovate-roundish, minutely granular, numerous.

In wet places. Biennial or perennial? June–September.

The auricles of the clasping petioles are much more dilated than they are in the following species.

N. sylvestre, Br. *Creeping Yellow Cress.*—E.B. 2324. L.B.S. 100.

A. 14. C. 50. Lat. 50–56°. Alt. 0–200 yds. in England. Tem. 51–47°.

Root perennial. Stems spreading, ascending or erect, branching, leafy. Leaves pinnate (deeply pinnatifid), with toothed or incised, oblong, lanceolate, or linear segments. Petals *longer than the calyx.* Pod *linear usually curved,* about as long as the pedicel, rarely shorter (longer than the peduncle, *Grenier and Godron*), terminated by a cylindrical beak. Seeds roundish, brown, scarcely alveolate, irregularly two-rowed.

In moist places usually. Per.; June–August.

N. anceps, DC.—The subjoined description of this species, or variety, which we have not seen, is from Grenier and Godron's 'Flore de France,' vol. i. p. 98. "This plant is distinguished from *N. sylvestre,* its near relation, by its larger flowers, thicker stigma, and especially by its linear-oblong *indistinctly compressed* (comprimées, ancipitées) pods, which are shorter than the peduncles, by its larger usually auricled leaves, and by its more robust growth."—Grows in the same places as the preceding.

Per.; June–August.

We leave our readers to judge for themselves, only reminding

the juniors that *anceps* means *doubtful* and *uncertain*, and that the term by which the plant is known expresses the nature of its distinctive characters.

Sect. II. Petals white; valves of the fruit with a distinct dorsal nerve.

N. officinale, Br. *Common Water-cress.*—E.B. 855. L.B.S. 98.

A. 18. C. 80. Lat. 50–60°. Alt. 0–200 yds. in England. Tem. 52–46°.

Root perennial. Stems prostrate, rooting, erect at the upper part, branched, thick, succulent, leafy. Leaves pinnate, with rounded or oblong toothed segments, the terminal one being larger and slightly cordate at the base. Petals about double the length of the sepals. Pods curved upwards, rather longer than their pedicels, slightly torulose (with round elevations on the valves), with a short thick point.

In rivulets, ditches, and watery places. Per.; June–September.

Var. *siifolium.* Stem very luxuriant, robust, often an inch thick, and many feet long. Segments of the leaves nearly equal, oblong or obovate, tapering at the base. In deep water.—This plant varies considerably in the form and size of its leaves. Smith says, "the varieties are of no moment."

Turritis, *Lin.*—Erect, herbaceous, rough or rigid, biennial plants. Root-leaves toothed or lobed. Stem-leaves clasping. Sepals spreading, scarcely enlarged at the base. Petals not double the length of the calyx. Stigma entire, or almost entire. Pod linear, elongate, *compressed.* Valves flat, with a prominent longitudinal nerve. Seeds in *two rows,* compressed.

T. glabra, Lin.—*Arabis perfoliata,* Lam. *Smooth Tower Mustard.*—E.B. 777. L.B.S. 94.

A. 10. C. 30. Lat. 50–56°. Alt. 0–200 yds. in England. Tem. 50–47°.

Root woody, with lateral fibres. Stems erect, rigid, leafy, glabrous, simple or slightly branched (we have seen forms branched from the base, or several stems springing from the same root); the branches, when present, are erect. Root-leaves in a rosette, spreading, sinuate, toothed, petiolate, perishing before the plant flowers; stem-leaves lanceolate, glabrous (sometimes pubescent), clasping the stem, auricled. Clusters of pods elongated, erect. Pods erect, somewhat unilateral, elongate, compressed. Seeds minute, in two rows.

On dry banks and open places. Biennial; June–September.

TRIBE 2.—Cotyledons flat, radicle applied to back of one of them (*radicle dorsal*).

SYNOPSIS OF THE GENERA.

HESPERIS.—Leaves *simple*, toothed. *Lobes* of the stigma converging. Pod *nearly cylindrical.*

ERYSIMUM.—Leaves entire, sinuate or toothed. Pod *quadrangular.*

SISYMBRIUM.—Leaves entire, or pinnatifid or pinnate. Stigma *entire.* Pod cylindrical.

HESPERIS, *Lin.*—Perennial plants, with round, leafy, erect stems and simple leaves. Flowers corymbose. Sepals erect, the lateral pair gibbous at the base. Stigma *2-lobed, lobes oblong, connivent:* style short conical. Pod *linear-cylindrical,* dorsally compressed, tapering at the base and apex; valves convex, with a dorsal nerve (with three faint nerves, *Cos. et Ger.*). Seeds in one row, oblong or angular, often winged at the apex (not bordered, *Sm.*).

H. matronalis, Lin. *Dame's Violet* (Lady's Violet).—E.B. 731. L.B.S. 112.

Found in fourteen counties, but not "fairly established."—See Cybele, vol. i. p. 157. About Paris it is only subspontaneous. In the South of France its nativity is unquestioned.

Stems erect, rigid, hairy, leafy, simple or branched near the summit. Root-leaves oblong, tapering, and petiolate; stem-leaves ovate-lanceolate, acuminate (a tapering point), toothed, rough. Flowers large, in panicled clusters, lilac or white. Petals obcordate, with a minute apiculus (a short point). Pods ascending, slightly torulose, 8–10 times as long as the pedicels.

Said to grow in shady places and in mountainous woods. Scarcely naturalized in England. In the environs of Paris it is stated to be *only* subspontaneous. Bien. or per.; May, June.

ERYSIMUM, *Lin.*—Annual or biennial plants, with entire, sinuate, or toothed leaves, and yellow flowers. Sepals erect, equal, or the lateral ones slightly enlarged at the base. Petals equal, entire. Stigma entire or notched; style cylindrical. Pods linear, *four-angled,* with *convex keeled valves, and a strong dorsal nerve.* Seeds ovate-oblong, in one row.

E. cheiranthoides, Lin. *Treacle Mustard.*—E.B. 942. L.B.S. 105.

A. 4. C. 10. Lat. 50–53°. Alt. 0–100 yds., South of England. Tem. 51–48°.

Stem round, erect, rigid, with shallow furrows and sharp ridges, bristly, leafy. Leaves narrow-oblong, tapering at both ends, en-

tire or faintly toothed, rough with short trifid hairs. Calyx about half as long as the pedicel. Limb of the petals about as long as their claws. Clusters elongate. Pods 4-angled, *longer than their pedicels, spreading, erect* (the pedicels are nearly horizontal, and the pods form with them a more or less obtuse angle). Seeds ovate-cylindrical, not winged.

Fields. Annual; June–October.

E. orientale, Br.—*E. perfoliatum,* Crantz. Smith says, Eng. Fl. vol. iii. p. 202, "I find no such name anywhere in Crantz." *Hare's-ear Treacle Mustard.*—E.B. 1804.

Of very uncertain occurrence. It has been noticed in some of the southern counties of England.

Stem erect, simple or branched, 1–2 feet high. Root-leaves obovate, petiolate. Stem-leaves elliptical, *cordate and auricled* at the base, slightly notched at the apex. Calyx slightly gibbous at the base, as long as the peduncle. Petals cuneate. Pods in a long, lax cluster, on thick spreading stalks, very much elongate, turgid, glabrous, tapering towards the apex. Seeds shagreened, not winged.

In fields and cliffs near the sea. Smith, in the Eng. Fl., quotes the authority of Petiver, Hudson, and Dale, who found it in Essex, Sussex, and Suffolk respectively. In flax-fields, Dingle, Kerry. In France it is found in dry calcareous fields.

Sisymbrium, *Lin.*—Annual or biennial plants, with more or less pubescence or hairiness. Leaves entire or toothed, pinnatifid or pinnate, stalked or sessile. Flowers white or yellow. Sepals slightly spreading or erect, not gibbous. Stigma entire or notched. Pod linear-cylindrical, with convex valves, which have 3 longitudinal nerves, with several indistinct lateral nerves. Seeds ovate or oblong, in one row (one or two rows, not winged, *Grenier et Godron*).

† *Flowers white.*

S. thalianum, Gay et Monnard in Gaud. Helv. 4. p. 348—*Arabis Thaliana,* Lin., L.B.S. 88. *Wall-cress.*—E.B. 901.

A. 18. C. 80. Lat. 50–60°. Alt. 0–300 yds. Tem. 51–45°.

Stems solitary or several, usually branched, slender, erect, with few leaves, hairy below, glabrous above. Root-leaves ovate-oblong, in a rosette, often decayed before the plant flowers, laxly toothed. Stem-leaves oblong, entire and sessile. Pods spreading, cylindrical, curved, longer *than their pedicel.* Seeds minute,

ovate-round, not striated. Sandy fields, banks, and walls. Annual; April–June.

S. Alliaria, Scop.—*Alliaria officinalis,* DC. *Erysimum Alliaria,* Lin.—L.B.S. 107. *Jack-by-the-Hedge.*—E.B. 796.

A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Stems erect, simple or branching above, solitary or several, hairy below, leafy. Leaves *cordate or reniform,* with broad teeth (crenatures), the lower on long petioles. Flowers larger than is usual in the British species of this genus. Pods spreading, erect, above *six times as long as their pedicels.* Seeds *oblong, striated,* truncate obliquely at both ends.

Hedges and ditches. Biennial; April–June.

†† *Flowers yellow.*

S. officinale, Scop. *Hedge Mustard.*—E.B. 735. L.B.S. 102.

A. 18. C. 81. Lat. 50–60°. Alt. 0–200 yds: we believe we have seen it at this altitude in Scotland. Tem. 52–46°.

Root very long, hard, and tapering. Stems several or solitary, erect, rigid, simple, branching above the middle; branches often spreading horizontally. Root-leaves runcinate-pinnate (the direction of the pinnæ, or wings, is toward the centre of the plant, viz. the stem), with angular, unequally-toothed lobes; the terminal lobe is large, *hastate, with narrow lateral lobes.* Petals small, but larger than the sepals. Pods *oblong, conical,* hairy, closely applied to the stem, tapering into a slender point, and on a thick short pedicel.

Waysides and waste places near dwellings. Annual? Biennial? May–September.

S. Irio, Lin. *London Rocket.**—E.B. 1631. L.B.S. 103.

A. 8. C. 7. Lat. 51–56°. Alt. 0–50 yds. Tem. 49–48.

Stem erect, simple or branching above, glabrous or slightly pubescent, leafy. Root-leaves runcinate-pinnate, with 5–11 oblong, toothed leaflets (lobes); the upper ones *hastate,* with narrow lobes, the terminal leaf oblong-lanceolate, entire or sinuate. Petals longer than the calyx. Pods glabrous, *linear, slender, spreading, ascending,* five times as long as their pedicel, curved.

At the base of walls and waste places near towns; rare. Annual; June–July.

* The London Rocket of certain villages near London, Southgate for example, is *Hesperis matronalis,* or some *Hesperis.* We have seen it in cottage gardens, emulating the more famed Brompton Stock, to which indeed it was a not insignificant rival.

S. Sophia, Lin. *Flixweed.*—E.B. 963. L.B.S. 104.

A. 16. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Root annual, tapering, with lateral fibres. Stem erect, branching, leafy, round, pubescent. Leaves 2–3, pinnate (*bipinnate, with pinnatifid linear narrow segments*). Petals shorter than the calyx (very *minute, erect, spatulate, greenish, inconspicuous;* sometimes obsolete). Pods slender, linear, torulose, spreading, ascending, twice as long as the pedicels, with a very short point.

In waste places and sandy fields; not common. Annual; June–October.

S. polyceratium, Lin. Reich. 4403.

Stems erect, simple, or prostrate, with spreading erect branches, leafy. Lower leaves runcinate, upper leaves hastate and toothed. *Flowers in pairs or in threes, rarely solitary in the axils of the leaves.* Sepals erect, longer than the peduncles. Clusters of the fruit erect, leafy. Pods curved from the stems, glabrous or hairy, with a thick spongy partition. Herbage fetid, and more or less glabrous.

Waste places and old walls; France, about the Mediterranean.

"In the outskirts of Bury St. Edmund's; an escape from cultivation." (What is it cultivated for?) Annual; June–August.

A writer in the 'Magazine of Natural History' remarks: "I think that it emanated from the garden of the late Sir T. G. Cullum, Bart."

S. pannonicum, Jacq.—A plant corresponding with the characters of *S. pannonicum* as understood by Grenier (Flore Française, p. 94) has been collected at Wandsworth Steam-boat Pier for some years. Our plant has the following characters:—Stem erect, much branched, round, glabrous (upper and younger branches only slightly downy). Upper leaves all pinnatifid, with long, linear, narrow lobes. Pods spreading, curved upwards, very long (9–10 times as long as the stout pedicel), rounded, compressed, with a thick spongy dissepiment. Seeds brown, shagreened.

S. Columnæ, Jacq.—Stem rigid, erect, much branched. Leaves rough; the lower runcinate, the upper pinnate or hastate. Pedicels stout, $\frac{1}{8}$–$\frac{1}{4}$ of an inch long, spreading, erect. Pods spreading, erect, cylindrical, 3–4 inches long, crowned with the 2-lobed stigma, hairy. Seeds finely punctate, cylindrical.

Both these exotics have grown at Wandsworth, plentifully (es-

pecially the last), during the last four or five years. They appear so completely naturalized that they may be expected to outlast the station itself, which, like Barnes Common, will soon be diverted to more utilitarian purposes than the production of foreign weeds.

TRIBE 3.—Cotyledons conduplicate, embracing the dorsal radicle (radicle included).

SYNOPSIS OF THE GENERA.

BRASSICA.—Lower leaves lyrate, pinnatifid (*glaucous*). Pod linear, with a cylindrical beak (style).

SINAPIS.—Leaves lyrate, pinnatifid, seldom glaucous. Beak angular, compressed.

DIPLOTAXIS.—Pod compressed. Seeds in two rows.

ERUCASTRUM.—Seeds in one row, slightly compressed.

BRASSICA, *Lin.*—Annual or biennial, usually glaucous, plants. Root and lower leaves lyrate, pinnatifid; stem leaves entire, sinuate or toothed, sessile or clasping. Sepals erect, equal at the base, or the lateral pair slightly gibbous, spreading. Stigma entire, discoid, style conical, rarely four-cornered. Pod *linear-cylindrical or slightly quadrangular* (the pod is four-angled in *B. nigra*), often with a slight dorsal compression. Valves convex, with a prominent dorsal nerve and anastomosing veins (veins uniting). Seeds in one row, globular, not winged.

B. oleracea, Lin. *Sea-Cabbage.*—E.B. 637. L.B.S. 113.

A 5. C. 10. Lat. 50–54. Alt. 0. Tem. 52–49°.

Stems robust, thick, branched, glaucous and glabrous. Leaves thick, the lower ones lyrate-pinnatifid, petiolate, the upper oblong, sessile, *but scarcely clasping,* crisp and toothed; the uppermost oblong-linear, slightly toothed or entire, all glaucous. Flowers yellow or lemon-coloured, larger than they are in the other species. Pods nearly cylindrical, smooth, with a thick blunt beak, which is crowned with the sessile stigma. Seeds large, globular.

Sea-coast, Dover Cliffs, and many other parts of the coast of England. Biennial; June–August.

B. Rapa, Lin. *Turnip.*—E.B. 2176. L.B.S.—*B. campestris,* 114.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Stems usually stout, erect, glabrous (slightly hispid at the base), glaucous, branched, leafy. Root and lower leaves lyrate-pinnatifid, slightly ciliated, petiolate; the upper leaves oblong or ovate,

deeply cordate at the base, and clasping the stem. Flowers *in dense clusters,* the expanded blossoms higher than the unexpanded buds. Sepals spreading. Pods spreading, ascending, with several flexuous nerves.

This plant is very common on the Surrey side of the Thames, especially about Kew, Mortlake, and Putney. Annual or biennial; April, or rather May, to July or August.

B. Napus, Lin. *Rape or Coleseed.*—E.B. 2146. L.B.S. 115.

A. 18. C. 70. Lat. 50–59°. Alt. 0–200 yds. Tem. 51–46°.

Stem and lower leaves as in *B. Rapa;* upper leaves oblong, *narrowed below with a dilated cordate clasping base.* Flowers *distant when they are expanding.* The sepals and fruit are as in *B. Rapa.* Mr. Babington truly says it is difficult to find any character by which to distinguish this plant from the preceding. It is often cultivated, like tares, for spring food, and it, like *B. Rapa,* is occasionally seen in cornfields; but we have never seen it naturalized, as the other is.

In fields, only subspontaneous. Annual or biennial; May–July.

B. nigra, Koch. *Black Mustard.*—E.B. 969. *Sinapis nigra,* Lin. L.B.S. 118.

A. 14. C. 50. Lat. 51–56°. Alt. 0–100 yds. Tem. 52–48°.

Stems erect, robust, bristly or tubercular, round, glaucous, branched, leafy. Root and lower leaves rough, lyrate-pinnatifid, with a large terminal more or less sinuated lobe; the upper leaves lanceolate, tapering at both ends, glabrous, or nearly so. Flowers contiguous at the summit of the stem, as branches. Sepals spreading. Pods erect, *closely applied to the stem,* oblong-linear, *four-angled, with a cylindrical short beak.*

On waste grounds, banks, and similar places. Annual; June–August. This plant varies both in its foliage and in its fruit. Specimens have been collected on rubbish about Battersea and Wandsworth with pinnate radical leaves, or pinnatifid, not lyrate leaves. In these varieties the leaves are rather more glabrous, and the pods are more compressed (flatter) than in the commoner form, and they are rather patent-erect than appressed. Another form has been observed with very turgid, quadrangular, closely appressed pods, and with rougher herbage.

SINAPIS, *Lin.*—Annual, biennial, or perennial plants, with

lyrate or pinnate leaves and yellow flowers. Sepals equal at the base. Stigma entire, discoid; style angular or compressed. Pod oblong or linear, *cylindrical*, with a slight dorsal compression; valves very convex, thick at the summit (morticed into the base of the style, *Grenier*), having 3–5 longitudinal prominent contiguous nerves. Seeds in one row, globular, not winged. The prominent difference between this genus and *Brassica* consists in the style, which in *Sinapis* is angular or flattened—in *Brassica* conical or 4-cornered. The strong dorsal nerve of the valve in *Brassica*, and the three less prominent nerves in *Sinapis*, may perhaps be another distinctive character, if constant.

S. arvensis, Lin. *Charlock.*—E.B. 1748. L.B.S. 116.

A. 18. C. 82. Lat. 50–61°. Alt. 0–400 yds. Tem. 52–43°.

Stem erect, branched, hispid. Lower leaves lyrate, or irregularly pinnatifid: the upper unequally toothed or sinuated, on shorter stalks, or nearly or quite sessile, usually hairy. Sepals spreading. Pods usually glabrous.

In fields, often too plenteous. Annual; June–September.

Var. *glabra.* Stem and leaves quite glabrous, the latter entire, at least the upper leaves. Fruit cylindrical, torulose, with an angular beak, quite glabrous, and prominently nerved.

About Chelsea, Battersea, and Kew.

S. alba, Lin. *White Mustard.* E.B. 1677. L.B.S. 117.

A. 18. C. 60. Lat. 50–59°. Alt. 0–200 yds. Tem. 51–46°.

Stems erect, branched, glabrous (sometimes hispid). Leaves *all lyrate-pinnatifid,* glabrous (or hispid), with unequally sinuated or toothed lobes. Sepals spreading. Pods *hairy* (hispid), with 2–3 seeds; valves shorter than the *flattened ensiform* beak (sword-shaped beak). Seeds yellowish, finely punctate.

Fields and waste places. Annual; June–August.

Var. Stem and leaves as in the common form? Sepals spreading, partly glabrous. Petals more than twice the length of the sepals. Style flat, not so long as the pod in the matured specimen. Pod twice as long as in *S. alba,* and not half so thick, hairy, or bristly, as well as the beak. Seeds *ovate,* small.

At Wandsworth Steam-boat Pier a subvariety of this, with the pods not so hairy, and another, with the pod quite glabrous, are found at the same place.

S. dissecta, Lag. Hort. Madr. This species may perhaps

have been confounded with *S. alba*, from which it is sufficiently distinct.

Stems erect, branched and bushy, glabrous, or only with a few spreading hairs. Leaves pinnate or pinnatifid, with oblong pinnatifid or toothed segments, glabrous, fleshy. Flowers smaller than in *S. alba*. Sepals spreading, shorter than the peduncles (pedicels). Pods *short, smooth, ovate* or *oblong*, spreading, ascending with a very long, flat, attenuated beak, which is glabrous, except a few marginal fringes. This is readily distinguished from *S. alba* by its smaller flowers, and especially by its glabrous, few-seeded pods, as well as by its pinnatifid leaves. The whole herbage is glabrous and fleshy.

Abundant this year, 1855, on mud spread out on Battersea fields (park), with several exotics; also at Wandsworth Steam-boat Pier, where it has been observed for several years.

S. monensis, Bab.—*Brassica monensis*, Huds. *Isle of Man Cabbage.*—E.B. 962. L.B.S. 122.

A. 6. C. 12. Lat. 51–57°. Alt. 0. Tem. 50–48°.

Root tapering, woody. Stem solitary, or several from the same root, slightly branched, round, glabrous, or somewhat bristly, or smooth, leafy. Leaves mostly radical, deeply pinnatifid, with toothed or jagged linear lobes; in the upper leaves (when present) the lobes are linear and almost entire. Sepals converging. Pods almost erect (slightly spreading), on short pedicels, large, smooth, veiny, quadrangular. Beak about one-third as long as the pod, tapering, ribbed, containing 1–3 seeds.

Isle of Man, and Lancashire and Cheshire coasts. Perennial. Biennial? June–July. It has been gathered, with many exotic *Crucifers*, at Wandsworth Steam-boat Pier. *Qy.* Is this species unknown on the Continent, or is it included in the following?

S. Cheiranthus, Koch.—E.B.S. 2821.

A. [6].

Stem erect, glaucous, branching above, rough, with long, distant, spreading hairs. Leaves all pinnatifid, lobes unequally toothed; upper leaves with linear, entire lobes. *Sepals erect, close to the petals,* rather longer than the pedicels, slightly unequal. Petals large, yellow. Fruit (pods) glabrous, spreading; valves with 3 dorsal nerves and anastomosing veins. Seeds black.

Var. *a. genuina.* Stem solitary, rather leafy; leaves with obtuse lobes; flowers large.

Var. *β. cheiranthiflora.* Gren. et God. Stems slender, with few leaves; lobes of the leaves acute; flowers small.

Var. *γ. montana,* DC. Stems short, numerous, not leafy; flowers deep yellow. Annual or biennial; June–August.

A stray plant or plants were found at Chelsea; probably introduced with coals or iron from South Wales. Sea-coast. The two varieties *a* and *β* are probably British. Var. *γ* is an alpine plant, of Switzerland, etc.

Eruca.—Annual or biennial plants, with lyrate or pinnatifid leaves and white flowers, veined with violet. Sepals erect, not gibbous at the base, closely applied. Pod oblong, nearly cylindrical, hairy, with convex, keeled valves, and a single prominent nerve. Beak compressed, ensiform, smooth, without a seed at its base.

E. sativa. Stem spreading, much branched, smooth. Leaves slightly fleshy, smooth, lyrate-pinnatifid; the upper narrow, oblong, and toothed. Claws of the petals very long. Pods erect, not closely applied to the stem, hairy or glabrous (we have only noticed hairy pods). The pods are usually spinous; the beak flattened and smooth, except on the margin, which has spinous fringes; beak large, smooth, compressed.

Fields and waste places in France. Annual. June–September. Very abundant at Wandsworth Steam-boat Pier for several years.

Diplotaxis, *DC.*—Annual, biennial, or perennial plants, with pinnate-pinnatifid, or toothed, or sinuated leaves. Sepals slightly spreading, equal at the base. Stigma discoid; style compressed. Pod *linear-compressed* (4-cornered); valves convex, with a single dorsal nerve; beak short, conical. Seeds in one or in two rows, ovate, not winged.

D. tenuifolia, DC. *Narrow-leaved Wall Mustard.*—E.B. 525. *Sinapis tenuifolia.*—L.B.S. 120.

A. 14. C. 30. Lat. 50–57°. Alt. 0–100 yds. Tem. 52–48°.

Root perennial, *woody.* Stems erect or ascending, branching and leafy, glabrous or nearly so. Leaves usually pinnatifid, with oblong, elongated lobes, rarely simple and sinuate; the upper often entire. Pedicels *much longer than the flowers.* Flowers

large. Calyx glabrous or slightly hairy, or ciliate at the apex. Petals much longer than the calyx, *abruptly contracted into short narrow claws; pods nearly equal to the pedicels.*

Waste places near maritime towns. Per.; June–October. It is frequently seen on old walls, where the whole plant is much smaller and the leaves are more entire than when it is in a more luxuriant state.

D. muralis, DC. *Sand Mustard.*—E.B. 1090. *Sinapis muralis.*—L.B.S. 121.

A. 6. C. 12. Lat. 50–53°. Alt. 0–100 yds. Tem. 51–49°.

Root annual. Stem erect, herbaceous, leafy at the base, not usually so tall as the preceding, simple, with deflexed hairs. Leaves usually pinnatifid, or sometimes only toothed or sinuate (in luxuriant forms pinnatifid, in small plants nearly entire); the root-leaves in a rosette. Sepals erect, much shorter than the pedicels. Pods *longer than the spreading pedicels,* with a short, stout cylindrical beak.

Waste places about London, especially near the Thames; not rare. Annual; June–August.

Erucastrum, *Schimper and Spenner.* Hirschfeldia, *Mœnch.*—Annual or biennial plants, with pinnatifid petiolate leaves and yellow flowers. Calyx equal at the base. Petals entire, unguiculate, stigma entire; style conical or compressed with one seed at its base. Pod short, cylindrical-linear, with convex valves, a dorsal nerve and anastomosing veins. Seeds ovate, slightly compressed, finely alveolate.

E. incanum, Koch.—*Sinapis incana,* Lin.? See Babington, Prim. Flor. Sar.

Stem erect or ascending, rigid, with spreading branches. Lower leaves lyrate, with ovate, sinuate, or crenulate lobes; the upper oblong or lanceolate. Sepals spreading. Petals large, veined. Cluster of fruit very long, rigid. Pods glabrous or slightly hairy, turgid, appressed, on short pedicels, with a short beak.

Sandy places in Jersey and Alderney. Annual or biennial; June–September.

This plant has been collected during several seasons on the waste ground between the Steam-boat Pier, Wandsworth, and Mr. Watney's distillery, with several other exotic Cruciferous plants.

Division II. *SILICULOSÆ.*—Fruit not linear nor elongated (the length does not much exceed the breadth), ovate-oblong or roundish, opening, rarely not opening, 1–4- or many-seeded.

Tribe 1.—Silicle opening.

† Silicle compressed parallel to the partition, which is as broad as the greatest diameter of the pouch (silicle); valves flat or convex, not keeled or winged.

†† Silicle compressed perpendicularly to the partition, which is narrow, often linear; valves keeled and often winged.

Tribe 2.—Silicle not opening, or rarely opening, and in this case the seeds remain attached to the valves.

SYNOPSIS OF THE GENERA.

Alyssum.—Stems almost woody; leaves entire, tapering at the base; flowers yellow; *pouch roundish, or ovate and rounded; cells one–two–four-seeded.*

Koniga.—*Pouch ovate, compressed;* seeds 1–2 in each cell.

Draba.—Pouch ovate or oblong, slightly convex; *cells many-seeded.*

Cochlearia.—Pouch *globular*, with very convex valves; seeds numerous.

Armoracia.—Leaves entire, toothed or incised; valves *without nerves;* seeds numerous (fruit often abortive).

Camelina.—Pouch *angular, somewhat obovate*, with a linear appendage united to the base of the style.

Vella.—Pouch ovate, *with a dilated, winged, leaf-like, flat appendage* (style ?).

Alyssum, *Lin.*—Annual or perennial plants, with rigid or almost woody stems, and entire, tapering leaves. Sepals erect, not enlarged at the base. Stamens with basal appendages (the lateral ones especially). Pouch roundish or ovate-rounded, notched at the apex, compressed, surmounted by the persistent style; valves convex in the centre, flat at the margin; cells 1–2–4-seeded. Seeds compressed.

A. calycinum, L.—E.B.S. 2853. L.B.S. 82.

A. ?. C.? Lat. 50–56°. Tem. ?

Stems several, prostrate or ascending, rigid, simple at the base, leafy. Leaves oblong or oboval (the whole herbage is hoary, pubescent, and somewhat tubercular). Flowers yellow at first, then white, in long simple clusters. Calyx persistent. Petals slightly notched, a little longer than the sepals. Pouch orbicular, notched at the summit, crowned by the short style, covered with spreading hairs.

Said to grow on ploughed land and commons. (See 'Phytologist,' ii. 284.) Annual; May–June.

Koniga, *Br.*—Herbaceous or shrubby plants, with entire, mostly narrow leaves, and white or yellow flowers. Pouch ovate,

compressed (orbicular or elliptical), two-celled, with one or two seeds in each cell.—Differs from *Alyssum* in having simple filaments (often furnished with a lateral tooth, *Sm.*), and especially by the 1–2-seeded cells.

K. maritima, Br. *Sweet Alyssum.*—E.B. 1729. L.B.S. 81.
A. 7. C. ? Lat. 50–57°. Tem. ?

Root annual. Stem ascending or erect, rigid, angular, much branched, leafy. Leaves entire, oblong-linear, or linear tapering at the base, keeled. Flowers white, in elongated clusters, sweet-scented. Pedicels spreading. Sepals erect. Petals twice as long as the sepals, with a roundish limb and abruptly-contracted claw. Clusters of fruit elongate, leafy at the base, lax. Pouch erect, elliptical, convex on both sides; cells one-seeded.

On the coasts of the Mediterranean. It has been reported as naturalized near the sea at Aberdeen. It is not uncommon in gardens. Annual; June–August.—This plant is described as a perennial by most authors, but cultivators call it an annual.

Draba, *Lin.*—Annual and perennial plants, usually with rosaceous tufts of root-leaves, which are entire or toothed, and more or less hairy. Flowers very small, white. Sepals slightly spreading. Pouch oblong, entire at the apex, crowned by the persistent stigma, compressed; valves flat, or slightly convex; cells many-seeded. Seeds compressed.

D. verna, Lin. *Vernal Whitlow-grass.*—E.B. 586. L.B.S. 79.
A. 18. C. 80. Lat. 50–60°. Alt. 0–800 yds. Tem. 52–39°.

Root annual, fibrous. Stems several, leafless, slender, smooth, more or less branched above. Leaves all radical, oblong-lanceolate, tapering at the base, entire or slightly toothed, hairy, in a rosette. Clusters corymbose, lax. Petals white, cleft. Pouch oblong, shorter than its pedicel.

On walls and sandy fields. Some light-soiled fields in the neighbourhood of Bromley, Kent, have been noticed in spring white with the blossoms of this pretty little plant. Annual; March–May.

Var. *β. inflata.* Pouch turgid. This we have seen near Settle, in September, and we have a specimen from Ben Lawers. It is difficult to distinguish these varieties when dried.

D. muralis, Br. *Wall Whitlow-grass.*—E.B. 912. L.B.S. 78.
A. 6. C. 6. Lat. 51–55°. Alt. 0–300 yds. Tem. 48–45°.

Root annual. Stems slender, branched, erect, leafy, 4–12 in. high. Root-leaves obovate, tapering below, in a lax rosette, entire or toothed at the summit; stem-leaves ovate, acute, toothed all round, clasping with *two rounded ears* (auricles or lobes). Petals longer than the sepals, rounded at the apex, abruptly contracted into the claw. Style nearly obsolete. Pouches elliptical or oblong, more or less spreading, and inclined towards the general peduncle (stalk) in long lax clusters.—A slenderer and less erect plant than *D. incana*.

On limestone rocks. Yorkshire and elsewhere, on elevated calcareous places. Annual; April–May.

D. incana, L. *Hoary Whitlow-grass.*—E.B. 388. L.B.S. 77.

A. 9. C. 15. Lat. 53–61°. Alt. 0–1100 yds. Tem. 46–36°.

Root long and tapering. Stem 12–18 in. high, but often less and sometimes more, erect, simple, very leafy; herbage hoary, with crowded, appressed hairs. Root-leaves elliptic-lanceolate, in a rosette; stem-leaves ovate, sessile, clustered, elongate. Pedicels not more than half the length of the pouch. Petals white, obcordate, twice as long as the sepals. Pouch elliptic-oblong or lanceolate, nearly *half an inch long, slightly twisted,* crowned with the short thick style and depressed capitate stigma.

On limestone rocks near Settle, and in North Wales. Perennial; June–July.

D. rupestris, Br. *Simple-haired Whitlow-grass.*—E.B. 1338. L.B.S. 76.

A. 2. C. 3. Lat. 56–59°. Alt. 900–1300 yds. Tem. 36–34°.

Root somewhat creeping, subdivided at the crown, and bearing several tufts of oblong-linear, long-fringed leaves. Stem branched, very short, each branch bearing a short, slender flower-stalk and a shorter barren stalk ending in a tuft of leaves. Leaves nearly radical, flat, lanceolate-elliptic, with forked hairs or bristles. Flowers white, in small terminal clusters. Petals twice as long as the sepals, with a notched limb. Fruit (pouch) much longer than the pedicel, slightly twisted, hairy, with a short, stout, cylindrical rounded beak.

Alpine places. Perennial; July.

D. aizoides, Lin. *Yellow Whitlow-grass.*—E.B. 1271. L.B.S. 75.

A. 1. C. 1. Lat. 51–52°. Alt. ? Tem. 50° ?

Root perennial. Stems several, branched, each branch bearing

a dense tuft of linear-lanceolate, rigid, fringed leaves (the leaves like little cushions surround the base of the flower-stalk or peduncle). Flowers yellow, corymbose. Petals notched. Pouch elliptical, about as long as its pedicel, crowned by the slender style, which is about half as long as the pouch.

On rocks and walls near Pennard Castle, Swansea, South Wales. Perennial; March–April.

Cochlearia, *Lin.*—Annual or perennial plants, with branched succulent stems, and thick or fleshy leaves, and white flowers. Sepals equal at the base. Pouch globular or ovate, somewhat dorsally compressed; valves convex, slightly keeled; cells many-seeded. Seeds somewhat cylindrical, not winged, pendulous, in two rows.

C. officinalis, Lin. *Common or Officinal Scurvy-grass.*—E.B. 551. L.B.S. 72.

A. 18. C. 50. Lat. 50–61°. Alt.? Tem. 52–46°.

Stems erect, smooth, angular, branched, more or less leafy. Root-leaves cordate or reniform or roundish, on long stalks, quite smooth in alpine forms, fleshy; stem-leaves oblong, slightly toothed, the lower on short stalks, the uppermost sessile or clasping. Flowers white, in corymbose clusters. Pouch nearly globular, tipped with the short style.

Sea-coast, and in mountainous places. Annual; May–September.—We have seen plants in the channel of the Ribble, near Settle, which had the appearance of a longer duration than that of a year.

C. alpina.—C. grœnlandica, Lin.? L.B.S. 72 *b.* Root-leaves entire, stem-leaves lobed; fruit and flowers as in *C. officinalis.* On lofty hills between Malham and Settle, Yorkshire?

C. danica, L. *Danish Scurvy-grass.*—E.B. 696. L.B.S. 72 *c.*

A. 15. C. 40. Lat. 50–61°. Alt. 0.

Stems several, spreading, very much branched, leafy. Leaves 3–5-lobed, triangular or deltoid, all, both root and stem leaves, on longer or shorter stalks. Clusters much longer than in *C. officinalis,* and the pouches are on longer pedicels. Pouch *ovate,* crowned with the very short style.

Sea-coast. Annual; May–September.—Smith says it is unchanged in cultivation; this we can confirm. Whether it and the following be distinct from the preceding, is not yet so certain.

C. anglica, L. *English Scurvy-grass.*—E.B. 552. L.B.S. 72 *d.*
A. 14. C. 30. Lat. 50–58°. Alt. 0. Tem. 52–47°.

Stems erect, numerous, much branched (the lateral lower branches are sometimes prostrate). Root-leaves ovate, entire; stem-leaves oblong, entire or toothed, usually sessile; uppermost clasping, entire, often linear. Flowers large. Pouch *elliptical, twice as large as in C. officinalis,* crowned with a rather long style.

Sea-coast and tidal rivers, in muddy places. Annual; May–July.

Armoracia, *Fl. Wett.*—Root very long, cylindrical, white and highly pungent. Stems erect, leafy, 2–3 feet high. Root-leaves ovate-oblong, cordate at the base, crenate and strongly nerved, on long stalks; stem-leaves lanceolate, sessile, serrated or sometimes deeply pinnatifid. Sepals erect, not enlarged at the base. Pouch roundish, finely reticulate (netted).—This genus differs but slightly from *Cochlearia,* with which it was associated by Linnæus and his followers. It is placed by Besser in the genus *Roripa,* which includes, among other species, *Nasturtium amphibium.*

A. rusticana, Fl. Wett. *Horse Radish.*—E.B. 2323. L.B.S. 73.
A.B. Lat. 50–60°.

Roots vertical, fleshy, persistent. Stems erect, stout, furrowed, hollow, branched above, leafy. Root-leaves large, on very long stalks, ovate-oblong, cordate at the base; the lower stem-leaves often pinnatifid, the upper lanceolate-linear, entire. Sepals green, erect, shorter than the petals. Fruit in elongated clusters. Pouches globular, on long filiform pedicels. Seeds ovate, smooth.

In moist meadows, but more commonly on waste, rubbishy places. Perennial; June–July.

Camelina, *Crantz.*—Erect, branching plants, with clasping leaves, and yellow flowers in corymbose clusters. Sepals equal, or almost equal, at the base. Pouch ovate or turbinate (top-shaped), with a slight dorsal compression; valves very convex, with a dorsal nerve, abruptly pointed, and confluent with the style. Seeds in two rows, numerous in each cell, oblong, compressed, not winged (bordered), pendulous.

C. sativa, Cr. *Gold of Pleasure.*—E.B. 1254. L.B.S. 80.
A. 15. C.? Lat. 50°–58°.

Stem erect, rigid, branched, hairy, 12–18 inches high. Lower leaves oblong, tapering at the base; upper leaves lanceolate, clasping, sagittate, with pointed auricles (basal lobes), entire or

toothed. Pouches large, with a long beak (persistent style), spreading.

Var. *α. pubescens.* Whole plant hairy, especially the lower part of the stem.

Var. *β. glabrescens.* Plant glabrous, or only with a few scattered hairs. Pouches yellowish-green.—This form is much taller than *pubescens*, which has been noticed only at Wandsworth Steam-boat Pier, associated with many exotics.

Fields. Annual; June.—This plant is an introduced species. *C. dentata* may be a synonym of *C. sativa*, in which the leaves are sometimes entire and sometimes toothed.

VELLA, *Lin.*—Herbaceous or shrubby plants, with yellowish flowers. Sepals erect, equal at the base. Pouch ovate, terminated by the dilated, elliptical hardened style; valves concave? Seeds few, globular, pendulous.

V. annua, Lin. *Cress-rocket.*—E.B. 1442. L.B.S. *p.* 16 (extinct species).

A. 2? C. 2? Lat. 51–52°. Alt. ? Tem. ?

Root tapering. Stems erect, branched, leafy, rough, 6–10 inches high. Leaves 1–2-pinnatifid, with linear segments. Petals small, with purple veins. Pouches turgid, globular, bristly, reflexed, crowned by the ovate, dilated, rigid style. Seeds brownish, compressed, tubercular.

At Wandsworth Steam-boat Pier, noticed first in 1852, and in every subsequent year till the present (1855), in which it has not been visible. In 1853 it occurred but sparingly on soil laid on Battersea fields. The plant has disappeared at Battersea, and the Wandsworth station is at present (October, 1855) undergoing changes which will probably unfit it for the growth of any plants.

†† Silicle compressed perpendicularly to the partition (*Subularia* is laterally compressed); partition narrow, often linear; valves keeled, often winged.

SYNOPSIS OF THE GENERA.

TEESDALIA.—Leaves radical. Stem leafless. Pouch *roundish*, notched and keeled, with two seeds in each cell.

THLASPI.—Stem not leafless. Pouch roundish, notched. Seeds *numerous.*

HUTCHINSIA.—Stem branched, leafy. Leaves pinnate. Pouch *elliptical*, with two seeds in each cell.

IBERIS.—Pouch *ovate* or roundish, with *one seed in each cell.*

LEPIDIUM.—Pouch *roundish or oblong*, entire or notched, with one seed in each cell.

CAPSELLA.—Pouch *triangular-obcordate*. Seeds numerous.

SUBULARIA.—Pouch ovate-oblong, *laterally compressed, with many seeds.*

TEESDALIA, *Br.*—Annual, almost glabrous plants. Leaves mostly radical, in a rosette, lyrate-pinnatifid, rarely entire. Flowers white. Sepals broad, spreading, more or less coherent at the base. *Filaments furnished with basal appendages.* Pouch roundish, notched, crowned by the short, sessile stigma, with keeled and winged valves and two-seeded cells. Seeds lenticular-compressed.

T. nudicaulis, Br. *Naked-stalked Teesdalia.* — E.B. 327. L.B.S. 65.

A. 15. C. 50. Lat. 50–54°. Alt. 0–300 yards. Tem. 52–45°.

Stems usually numerous, the central one erect, the lateral spreading-ascending, 2–4 inches high, sometimes with 2–4 leaves which extend upwards about half the length of the stem. Root-leaves numerous, in a rosette, lyrate-pinnatifid, rarely roundish and entire, petiolate; stem-leaves, when present, entire or toothed, and sessile. Petals unequal. Filaments with membranous basal appendages. Pedicels of the fruit spreading or reflexed. Fruit concave on the upper side, in an elongated cluster.

Dry sandy heaths. Annual; April–June. On Barnes Common, Surrey, near London. This locality will soon be used for more lucrative purposes than the growth of botanical rarities. The line of railway to Windsor from London passes through it; and it is rapidly filling with houses now in the course of erection. A church and a cemetery occupy large portions of the ground where this plant formerly grew.

THLASPI, *Lin.*—Annual or perennial plants, with undivided, rarely pinnatifid leaves, and white flowers. Sepals equal. Pouch obovate or oblong, or orbicular (round), dorsally compressed, more or less notched at the apex; valves keeled, often winged. Seeds ovate, pendulous.

Sect. I. Pouch flat, orbicular.

T. arvense, Lin. *Penny Cress.*—E.B. 1659. L.B.S. 60.

A. 18. C. 60. Lat. 50–60°. Alt. 0–200 yds. Tem. 52–46°. The altitude of this plant may safely be stated at 300 yards. It was gathered in Clent, on the Walton hills, which are about 1000 feet high, and cultivation extends to their summit.

Root tapering. Stem erect, succulent, angular, leafy, simple. Root-leaves oblong-obovate, tapering at the base and petioled; stem-leaves oblong, toothed or sinuated, sagittate at the base, with short, acute lobes. Pouch large, orbicular, nearly flat, with a broad membranous border, notched or somewhat two-lobed at the apex; cells 5–8-seeded. Seeds striated.

In rich or somewhat moist fields. Annual; May–September. A rather uncommon plant.

Sect. II. Pouch obovate, more or less cuneate (wedge-like) at the base.

T. perfoliatum, Lin. *Perfoliate Penny Cress.*—E.B. 2354. L.B.S. 61.

A. 2. C. 2. Lat. 51–52°. Alt. ? Tem. 48°?

Stems solitary or numerous, simple or branched, leafy below, erect or ascending, glabrous-glaucous. Root-leaves obovate, tapering at the base and petiolate; stem-leaves deeply cordate at the base, oblong, mostly toothed. Pouch obovate, *somewhat turgid,* concave on the upper side, bordered by a *membranous rim* (wing), *which does not quite reach the base,* notched at the apex and crowned with the short style. Seeds smooth.

Annual; April–May. Limestone pastures (old quarries) in Oxfordshire and Gloucestershire.

T. alpestre, Lin. *Alpine Penny Cress.*—E.B. 81. L.B.S. 62.

A. 8. C. 12. Lat. 50–57°. Alt. 200–800 yds. Tem. 47–40°.

Stems erect or nearly erect, glabrous and slightly glaucous, 4–10 inches high, leafy. Root and lower leaves obovate or spathulate; the upper leaves ovate-lanceolate, clasping the stem with blunt auricles. Clusters of flowers dense, of the fruit lax and elongate. Sepals spreading, about half as long as the petals. Petals narrow and blunt at the summit. Pouch obovate, cuneate at the base, notched at the apex; style equalling or surpassing the lobes.

On mountainous pastures. North of England and Scotland. Perennial? June–September.

T. occitanum, Jord., differs slightly in the foliage, which is less glaucous than in *T. alpestre;* also in the form of the pouch, which is rather broader than in the above. The shortened clusters of fruit and the elongated styles are the characters relied on; and these, if constant, might be sufficient to distinguish the forms of this plant. In Yorkshire and North Wales.

T. virens, Jord.—This form is distinguished by its lively green colour and by bearing larger flowers than either of the preceding. The pouch is narrowly winged, and the style is exserted (considerably longer than the lobes). Matlock Bath. Perennial; May.

Hutchinsia, *Br.*—Annual or perennial plants, with pinnate, pinnatifid or undivided leaves and white flowers. Sepals equal at the base. *Filaments not enlarged at the base* (without a basal appendage). Pouch elliptical, dorsally compressed, entire at the apex; valves keeled at the back (keeled dorsally), not winged. Seeds ovate, pendulous, two or more in each cell.

H. petræa, Br. *Rock Hutchinsia.*—E.B. 111. L.B.S. 64.
A. 6. C. 10. Lat. 51–55°. Alt. 0?–450 yds. Tem. 49–44°.

Roots fibrous, slender, annual. Stems several, 2–4 inches high, erect or ascending, round, wiry, pubescent, leafy. Leaves pinnate, with numerous, elliptic-oblong, entire leaflets. Flowers white, small, corymbose. Pouches in clusters, oblong, obtuse, slightly notched, spreading, not half so long as their pedicels.

Limestone rocks, Yorkshire and Derbyshire. Annual; March–May.—Has long been known to grow on the churchyard wall at Eltham, Kent. The writer observed it on this locality about twenty-five years ago; it was noticed also in 1853.

Iberis, *Lin.*—Herbaceous or somewhat shrubby plants, with entire or pinnatifid leaves, and white or purple irregular flowers. Sepals equal. Petals *very unequal,* the outer pair much larger than the inner pair. Pouch ovate, dorsally compressed, notched or two-lobed at the apex; valves keeled, and often winged. Seeds ovate, pendulous, *one* in each cell.

I. amara, L. *Bitter Candytuft.*—E.B. 52. L.B.S. 66.
A. 2. C. 6. Lat. 51–53°. Alt. 0–100 yds. Tem. 49–48°. East part of England.

Stems erect, branching from the summit or from the base, angled, furrowed. Leaves scattered, usually toothed, oblong, obtuse, tapering below. Flowers white, in short corymbose clusters. Sepals beautifully coloured at the tips and margins, ovate and spreading. Petals very unequal, oblong or obovate, with a very narrow, slender claw. Pouches winged from the base, with pointed lobes, which are shorter than the persistent style.

Fields in Berkshire (Pangbourne and Streatly), and Kent (Greenhithe). Annual; June–October.

LEPIDIUM, *Lin.*—Hoary or glaucous plants, with large clusters of white flowers, and a hot pungent flavour. Sepals equal at the base. Petals *equal,* sometimes abortive. Pouch ovate or orbicular, compressed, often notched at the apex; valves keeled, often winged. Seeds ovate or oblong, pendulous, *one* in each cell.

† Pouch ovate, notched; valves keeled, with broad wings.

L. campestre, Br. *Field Pepperwort.* (*Mithridate Pepperwort.*)—E.B. 1385. L.B.S. 70.

A. 16. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–46°.

Stems erect, slightly pubescent or densely hairy, and branched towards the top, leafy. Leaves glabrous or pubescent; the root-leaves in a spreading rosette, oblong, tapering, more or less toothed or incised; stem-leaves oblong-lanceolate, sagittate and clasping at the base, toothed, with large, sharp-pointed auricles. Pedicels of the fruit spreading, about as long as the pouches. Pouches rough, scaly, *with broad wings, especially towards the apex,* notched, lobes not diverging; style very short.

On gravelly fields. Annual; June–August.

L. hirtum, Sm.?—*Smithii,* Hook.—*L. heterophyllum,* Benth., *β, canescens,* Gren. *Smooth Pepperwort.*—E.B. 1803. L.B.S. 69.

A. 16. C. 60. Lat. 50–58°. Alt. 0–350 yds. Tem. 52–43°.

Root woody, perennial. Stems several, much branched (or rather, several stems from the same root), round, hairy, leafy. Root-leaves oblong, tapering at the base, on long, slender stalks; stem-leaves oblong-lanceolate, clasping, with long, narrow auricles, toothed or entire. Pouches in dense clusters; pedicels spreading or reflexed, longer than the fruit, crowned with the style, which is considerably longer than the lobes.

Hedge-banks. Perennial; July–September.

The Surrey specimens of this plant resemble *L. campestre* in habit. Specimens from Southampton are of a more straggling habit, with broader, thinner, and more entire leaves, with wiry, slender, few-leaved stems, and with a shorter and laxer cluster.

†† Pouch orbicular or ovate, entire or slightly notched, not winged, or slightly winged.

L. ruderale, Lin. *Narrow-leaved Pepperwort.*—E.B. 1595. L.B.S. 71.

A. 6. C. 12. Lat. 50–53°. Alt. 0–? Tem. 52–49°.

Stem 6–12 inches high, erect or ascending, usually diffuse, with spreading branches. Root-leaves pinnatifid, with linear,

entire, or incised lobes; the upper linear, *not sagittate*, entire, somewhat fleshy. Petals *often wanting*. Pedicels of the fruit spreading, slightly pubescent. Pouches ovate-roundish, notched at the apex, with scarcely any remains of the style. Stamens seldom more than two, by abortion.

Near the sea: Harwich, Lynn, etc. It is not rare at Gravesend, and it has been gathered at Wandsworth, with several exotics. Annual; June, July.

This species is distinguished by a strong, unpleasant smell.

L. latifolium, Lin. *Broad-leaved Pepperwort.*—E.B. 182. L.B.S. 67.

A. 6. C. 10. Lat. 50–55°. Alt. 0–? Tem.?

Root perennial, creeping. Stems erect, smooth, branched towards the summit, 3–6 feet high, leafy. Leaves (lower) ovate-lanceolate, sharply serrated on long stalks; upper ones lanceolate or linear, quite entire, not clasping; all glabrous, fleshy, and slightly glaucous. Flowers in dense clusters, on erect branches, forming a terminal panicle. Sepals spreading. Petals twice as long as the sepals. Pouch orbicular, on long, capillary, spreading pedicels, scarcely notched; valves not winged.

Shady moist places (near the sea?). Per.; June–August.

A plant very like *L. graminifolium,* Lin., was collected at Wandsworth Steam-boat Pier this summer (1855). We were told at Kew that this plant is *L. Iberis,* Poll.

††† Pouch cordate, neither winged nor keeled.

L. Draba, Br. *Whitlow Pepperwort.*—E.B.S. 2683. L.B.S. 68.

A. 4? C. 6? Well established in Kent and Surrey.

Root creeping. Stems erect or ascending, 8–12 inches high, branching at the summit, slightly pubescent; branches erect. Root-leaves tapering at the base, and petiolate; stem-leaves *cordate at the base, ovate,* toothed, sessile and half-clasping, with small, pointed auricles. Flowers corymbose. Pedicels of the fruit spreading. Pouches *triangular-cordate,* entire at the apex, turgid, terminated by the style; valves not winged.

Battersea-fields and Wandsworth: in both stations by the river-side. Per.; May–July.

L. sativum, L. *Common Cress.*

Stems erect, glabrous and glaucous, branching. Leaves quite smooth, glaucous; lower ones petiolate, pinnate, with pinnatifid

leaflets and entire or toothed lobes; upper leaves sessile, linear, entire. Pedicels not longer than the fruit. Fruit oblong, roundish, notched, broadly winged above.

Annual; July. Partially naturalized on waste places where the refuse of gardens has been thrown. The flowers vary between white, pink, and lilac.

Capsella, *Vent.*—Annual, more or less pubescent plants, with erect stems, and lyrate-pinnatifid or sometimes pinnate leaves (rarely entire). Sepals erect, not enlarged at the base. Stamens without appendages. Pouch obcordate-triangular, compressed perpendicularly to the partition, terminated by the short style; valves keeled, not winged; cells many-seeded. Seeds oblong, compressed.

C. Bursa-pastoris, DC. *Shepherd's Purse.*—E.B. 1485. L.B.S. 63.

A. 18. C. 82. Lat. 50–61°. Alt. 0–350 yds. Tem. 52–43°.

Stems erect, glabrous or pubescent below, rigid, solitary or several, 8–12 inches high, round, leafy. Root-leaves in a rosette, usually pinnatifid or lyrate-pinnatifid, with triangular, or oblong, or linear, entire or toothed lobes, hairy; upper leaves elongate, usually entire, but occasionally toothed, sagittate and clasping at the base, with elongate, pointed lobes. Pouches in very long clusters.

Everywhere in the vicinity of human abodes, waysides, and other places. Annual. It is in flower during nearly the whole year.

Sub-var. *integrifolia.* All the leaves entire.—A variety, with doubly pinnatifid leaves and acute segments, also with dense, abortive clusters, and very large, spreading, fertile pouches, was observed on the Walton hills, above the church of Clent, near Stourbridge.

Subularia, *Lin.*—Small aquatic plants. Sepals equal, uniform. Filaments without appendages. Pouch ovate-oblong or elliptic-oblong, compressed transversely (laterally compressed), entire; valves concave (boat-shaped), not keeled; partition membranous, crossing the pouch where the diameter is least. Seeds ovate, four in each cell.

S. aquatica, Lin. *Awl-wort.*—E.B. 732. L.B.S. 74.

A. 4. C. 10. Lat. 53–59°. Alt. ?–700 yds. Tem. 47–39°.

Root annual, fibrous. Stem erect, 2–4 inches high. Leaves all radical, in a rosette, tapering, subulate, recurved. Flowers few, white, on short, spreading-erect pedicels. Petals entire, oblong. Pouch ovate-elliptical, rather longer than the pedicel. Seeds few.

In alpine lakes. Annual; July.

TRIBE 2.—Silicle not opening, or rarely opening (in this latter state the seeds remain attached to the valves).

SYNOPSIS OF THE GENERA.

SENEBIERA.—Pouch *two-celled*, not opening; cells one-seeded.

ISATIS.—Pouch *one-celled* by abortion, not opening, one-seeded.

CAKILE.—Pouch (silicle) consisting of two one-seeded joints, not opening.

CRAMBE.—Pouch two-jointed, upper joint globular, one-seeded.

RAPHANUS.—Silicle (moniliform pod?) oblong, transversely divided into one-seeded cells, the lowermost one barren and imperfectly two-valved.

SENEBIERA, *Poir.*—Annual plants, with spreading stems and pinnate, petiolate leaves. Flowers small, in short clusters. Sepals spreading, not gibbous at the base, sometimes persistent. Stamens sometimes 2–4 by abortion. Pouch two-celled, compressed, reniform at the base, entire at the apex, or notched both at the apex and base; cells one-seeded; valves thick, not opening. Seeds oblong, somewhat triangular.

S. Coronopus, Poir.—*Coronopus Ruellii,* Gaert. *Swine's Cress.* —E.B. 1660. L.B.S. 58.

A. 15. C. 50. Lat. 50–58°. Alt. 0–100 yds. Tem. 52–47°.

Stems numerous, quite prostrate, branching, the central axis becoming or terminating in a dense cluster of fruit. Leaves pinnatifid at the apex, entire and linear below; lobes entire or toothed, fleshy; all the herbage is more or less glaucous. Calyx *persistent.* Petals longer than the sepals. Clusters of fruit oblong, sessile, opposite to the leaves, on stout peduncles; pedicels shorter than the pouches. Pouch reniform, notched at the base and *rounded* at the apex, strongly wrinkled.

Waste places; common. Annual; June–August.

S. didyma, Pers.—*C. didyma,* Sm.—*S. pinnatifida,* DC. *Lesser Swine's or Wart-cress* E.B. 248. L.B.S. 57.

A. 4. C. 10. Lat. 50–54°. Alt. 0–100 yds. It abounds at Kingswood, near Bristol.

Stems numerous, round, wiry, branching, prostrate or ascending, with lateral ascending branches, somewhat hairy and leafy.

Leaves pinnate, on short petioles. Flowers on short, lateral or terminal clusters. Calyx spreading. Petals minute or abortive. Clusters of fruit oblong, nearly sessile. Pedicels spreading, filiform, about as long as the pouch. Pods notched both at the base and summit, granulate.

Waste places. Annual; June–August.—It has been noticed in several parts about London, as at Highgate, close to the Archway; Brixton, near the church; Kew churchyard; and in gardens between the river and Kew Green. It may be said that it owes its existence in the last-mentioned locality to the Botanic Gardens; its existence however in the Royal establishment appears more precarious than in the churchyard, where it has now maintained itself several years.

Isatis, *Lin.*—Biennial, glaucous plants, with entire leaves and yellow flowers. Sepals spreading, not enlarged at the base. Stamens without appendages (lateral enlargements). Pouch one-celled by abortion, one-seeded, not opening, oblong or ovate-oblong, flattened as if winged; valves united, compressed almost flat; partition rudimentary (imperfect). Stigma sessile. Seed oblong.

I. tinctoria, L. *Woad.*—E.B. 97. L.B.S. 59.
A. 9? C.?

Root biennial. Stem erect, branching above, rigid, glabrous or only slightly hairy at the base. Root-leaves oblong, tapering towards the base, hairy; stem-leaves lanceolate-sagittate, clasping, glabrous or nearly so. Flowers numerous, small. Pouch oblong-linear, obtuse or with a blunt point, tapering at the base, pendulous on elongate filiform pedicels.

Guildford, in a chalky field, in which there is a chalk-quarry, on the cliffs of which, and on the *débris* of the quarry itself, the plant has grown very plentifully for many years. (Since the beginning of the present century.) I never observed the plant at Albury, nor even on the west side of the river Wey, except an occasional straggler.—*A. I.* Biennial; May–June.

Cakile, *Tourn.*—Annual, succulent plants, with branching stems, pinnatifid leaves, and purplish or white flowers. Outer sepals protuberant at the base. Pouch, not opening, of two joints; lower joint persistent, cylindrical or turbinate (like a top) at the base, dilated above, and forming two lateral enlarge-

ments; upper joint oblong, tapering (indistinctly four-angled), one-celled, deciduous (easily separated); each joint one-celled and one-seeded (the lower is often abortive). Seed in upper joint erect, in the lower pendulous.

C. maritima, Scop. *Purple Sea Rocket.*—E.B. 231. L.B.S. 55.
A. 18. C. 50. Lat. 50–61°. Alt. 0. Tem. 52–46°.

Stem smooth, succulent or fleshy, much branched, spreading, 1–2 feet high. (Stem and branches remarkable, twisted and zigzag, *Sm.*) Leaves pinnatifid, with obtuse segments, fleshy, glaucous. Flowers large, lilac colour, in corymbose clusters. Pouches compressed, ridged, on short, stout, spreading or reflexed pedicels.

On sandy sea-coasts, Isle of Wight, etc. Annual; June–September.

Crambe, *Lin.*—Herbaceous or slightly-shrubby plants, with succulent leaves and clustered panicles of white flowers. Sepals equal at the base. Stigma peltate, often sessile (obtuse, *Sm.*). Pouch (silicle) not opening, two-jointed, the lower joint short, like a pedicel, barren, the upper one ovate or globular, one-celled and one-seeded. Seed smooth, roundish, suspended from the summit of a long and erect funicle (capillary organ which unites the seed to the placenta).

C. maritima, L. *Sea Kale.*—E.B. 924. L.B.S. 56.
A. 12. C. 25. Lat. 50–56°. Alt. 0. Tem. 52–48°. West.

Stems erect, branched, arising from underground stolons produced by the perennial root. Leaves fleshy, undulate, the lower ones irregularly pinnatifid or pinnate, the upper lanceolate or linear. Sepals spreading. Petals twice as long as the sepals, with a rounded, spreading limb. Pedicels spreading-erect. Pouch globular, with a bony endocarp, crowned with the very short style and stigma.

Sea-coasts, on the sandy shore. Perennial; June–August.

Raphanus, *Lin.*—Erect, branching plants, with lyrate leaves and large yellow, white, or purple (often veined) flowers. Sepals gibbous at the base. Stigma entire or notched, on a conical style. Pods oblong, jointed (cell separated by transverse partitions), the lower joint short, barren or obliterated (abortive); upper joint longer, with several seeds. Seeds round, pendulous, isolated by spongy matter, which fills up the interstices in the cell.

R. Raphanistrum, Lin. *Wild Radish.*—E.B. 856. L.B.S. 124.
A. 18. C. 80. Lat. 50–61°. Alt. 0–350 yds. Tem. 51–43°. This plant has been seen in one of our midland counties at an elevation of 300 yards.

Root tapering, vertical, slender. Stem erect, branching, 1–2 feet high, rigidly hairy. Leaves lyrate, rough, with a large toothed terminal lobe. Flowers large, yellow or white with bluish-violet veins. Pod linear-oblong, moniliform (necklace-like), when ripe separated by transverse partitions forming one-seeded cells, abruptly contracted into a long subulate beak.

Fields. Annual; May–August.—A very variable plant.

R. maritimus, Sm. *Sea Radish.*—E.B. 1643. L.B.S. 124 *b*.
A. 7. C. 10. Lat. 50–56°. Alt: 0. Tem. 52–48°.

Root large and succulent. Stem 3–4 feet high, rough chiefly at the base. Root and lower stem-leaves more serrated than in *R. Raphanistrum;* upper simple and serrated. Flowers yellow, and less veiny than in the above species. Pods more strongly and broadly furrowed, not rough.

Smith in Eng. Flora, vol. iii. p. 227.

R. Landra, Moretti.—The upper leaves of what we suppose may be this species are coarsely serrated, with very unequal sharp teeth. The flowers are much smaller than in the preceding species (forms?). The style is three times as long as in *R. sativa,* becoming a long tapering beak, usually longer than the pod, which consists of 3–4 joints.—Is this plant, which grows about Wandsworth and Battersea, a variety of *R. maritimus?*

Neslia paniculata, Desv., has been collected during the last four years in the vicinity of Chelsea and Battersea, and especially near the Steamboat-pier, Wandsworth.

It may be readily distinguished from the genera and species in this section by its rounded, bony, wrinkled pouches, which are in lax panicled clusters. The stem is quite erect, usually simple, rough and hairy. Leaves oblong-linear or lanceolate-clasping, toothed, more or less rough.

Annual; June–August.

The following plants were also abundant in the Wandsworth locality:—

Diplotaxis erucoides, DC.—Flowers large, white veined with violet. Root-leaves lyrate; stem-leaves pinnatifid, with short blunt lobes.

Enarthrocarpus lyratus, DC., has abounded in this locality for some years. This plant is enumerated among the excluded in Grenier and Godron's 'Flore de France,' with the following remark: "Introduites accidentellement dans cette localité: Juvenal, près de Montpellier, où elles ont depuis longtemps disparu." It cannot be permanent in the Surrey locality, for the space will probably be soon occupied with buildings.

Several other *Crucifers* grew with the above, but we have not yet been able to identify them with the described species of authors.

RESEDACEÆ, *DC.* The Mignonette Family.

Annual, biennial, or perennial, herbaceous plants, with alternate, sessile, entire or cleft or pinnate leaves. Flowers in terminal, spike-like clusters, perfect, irregular. Sepals 4–7, unequal, united at their base, persistent. Petals 4–7, very unequal, the upper ones parted, the lateral ones cleft or trifid (cleft into three), the lower very small, entire. Stamens 10–30, on an oblique, almost unilateral disc. Anthers two-lobed, introrse. Ovary composed of 3–5 carpels, united and forming a one-celled ovary, with parietal placentas, rarely with distinct carpels. Stigmas 3–6, nearly sessile. Fruit capsular, one-celled, opening at the apex, consisting of 4–6 one-seeded follicular carpels. Seeds reniform, without perisperm. Embryo cylindrical, plicate. Radicle approaching the hilum.

Reseda, *Lin.*—Annual or biennial plants, sometimes slightly woody at the base. Flowers yellow or white. Fruit capsular, consisting of 3–5 united carpels, forming a one-celled, many-seeded capsule, which opens at the apex.

R. Luteola, Lin. *Weld* or *Dyers' Weed.*—E.B. 320. L.B.S. 125. A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Stem erect, angular, leafy, and branched. Leaves oblong-lanceolate, tapering at the base, entire, undulate, especially the lower ones. Flowers in long narrow clusters (almost spiked). Sepals four, *linear-lanceolate*, entire. Petals cleft. Capsule roundish, crowned by three usually elongated, tapering, connivent teeth; pedicels of the fruit *much shorter than the bracts.*

Waste places. Common near chalk or limestone. Bien.; June–August.

R. lutea, Lin. *Wild Mignonette.*—E.B. 321. L.B.S. 126.

A. 12. C. 30. Lat. 50–58°. East. Alt. 0–100 yds. Tem. 51–47°.

Root rather woody, annual or biennial. Stems rigid, branching, reclining or ascending, diffuse, leafy, 1–2 feet high. Lower leaves oblong-obovate, narrow at the base, entire or trifid; stem-leaves *bipinnatifid,* rarely palmate, with linear, undulate lobes. Flowers in more or less dense clusters, pale yellow. *Sepals six, spreading, not enlarging after flowering.* Capsule rigid, oblong, triangular, with three teeth. Pedicels of the fruit erect, *much longer than the short caducous bracts.*

Chalky fields. Bien.; June–August.

Var. *gracilis,* Ten. Plant slenderer than *R. lutea.* Leaves trifid, with linear-lanceolate, mucronate divisions; *fruit enlarged above, with spreading stigmas.*—On rubbish at Wandsworth, near the Steamboat-pier.

R. suffruticulosa, Lin.—E.B. 2628. L.B.S. 127, 127 *b.*

A. 10.

Stem erect, glabrous, round, hollow, with many prominent, sharp ridges, branching above, leafy. Leaves pinnate, with linear-lanceolate, entire, decurrent lobes. Flowers *white,* in lax elongate clusters (the cluster is dense when in flower, but lax in fruit), on pedicels scarcely longer than the linear-pointed bracts. Sepals 5–6, linear, acute, spreading. Petals twice as long as the sepals, with a trifid limb and obtuse linear lobes. Capsule oblong, quadrangular, with *prominent angles,* twice or thrice as long as the calyx, crowned with *four triangular teeth.* Seeds punctate.

Waste places, here and there. *Qy.* Naturalized? Annual or biennial; June–September.

Grenier and Godron give *R. alba,* Lin., as a synonym of this plant. They also quote Reichenbach, 4448 and 4449, as pictorial representations of this species. Hence it may be inferred that they unite *R. suffruticulosa* and *R. alba.*

CISTACEÆ, *Juss.* (*part.*) The Cistus Family.

Perennial or annual, half-shrubby or woody or herbaceous plants, with opposite (rarely scattered), entire leaves. Flowers regular and perfect, in terminal clusters, rarely in umbel-like cymes or nearly solitary. Sepals five, free, persistent, the two

outer ones smaller or absent, the three inner twisted in prefloration. Petals five, free, caducous (speedily falling off), twisted in prefloration (arrangement of the petals or sepals before expansion). Stamens indefinite, free. Anthers two-lobed, usually introrse. Ovary free, consisting of 3–5, rarely 6–10, united carpels (syncarpous and one- or many-celled), with many ovules (rarely with several complete or incomplete cells); placentas parietal. Style filiform; stigma entire or scarcely lobed. Fruit capsular, one-celled, many-seeded, rarely with imperfect cells. Seeds easily separating from the trophosperm (the medium which attaches them to the placenta). Embryo curved or spiral. Radicle directed to a point diametrically opposite to the hilum, rarely directed towards it.

HELIANTHEMUM, *Tourn.*—Flowers yellow or white. Sepals five, the outer two small or deficient. Petals five. Stamens indefinite. Fruit capsular, three-valved, bearing the partitions (placentas) in their centre.

Sect. I. Leaves (at least the upper ones) stipulate.

H. vulgare, Gært.—*Cistus Helianthemum,* Lin. *Common Rock-rose.*—E.B. 1321. L.B.S. 128.

A. 16. C. 70. Lat. 50–58°. Alt. 0–650 yds. Tem. 51–41°.

Stems half-shrubby, diffuse, spreading, simple or slightly branched, hairy, leafy. Leaves oblong or oblong-narrow, opposite, on short petioles, green on the upper side, whitish or tomentose below, and with slightly reflexed margins; stipules linear-lanceolate, *slightly longer than the petiole.* Flowers in terminal short clusters, yellow, but sometimes pale-white or cream-coloured, and occasionally of a coppery hue. Pedicels of the fruit usually reflexed. *Style twice as long as the ovary.*

Dry, hilly places. Per.; June–September.

Var. *α. tomentosum.* Leaves whitish or tomentose on the under side.—A common state.

Var. *β. virescens.* Leaves green on both sides.

Var. *γ.* Flowers white or rosy.—*? roseum,* DC.

Var. *leptopetalum.* Petals narrow.—*? surrejanum,* Mill.

A variety with copper-coloured petals occurs at Sanderstead, near Croydon, a locality which abounds in varieties of this species.

H. polifolium, Pers. *White Mountain Cistus.*—E.B. 1322. L.B.S. 129.

A. 1. C. 2. Lat. 50–52°. Alt. 0–? yds. Tem. 51–50°.

Stem shrubby, procumbent. Leaves oblong-linear, revolute, hairy on both sides, but chiefly beneath, on short stalks. Flowers white, in bracteate racemes. Sepals hairy; petals like those in *H. vulgare*, but in this species they are smaller and white.—There is little to distinguish it from the above but the colour and smaller size of the flowers, and the hairiness of the upper surface of the leaves.

Torquay, Devon, and Brean Downs, Somersetshire. Per.; June–August.

H. ledifolium, Willd.—*H. niloticum et ledifolium*, Dun. in DC. Prodromus, vol. i. p. 272. *Ledum-leaved Cistus.*—E.B. 2414. L.B.S. p. 16. Some error is conjectured to have occurred in reference to this plant, but an annual herbaceous species is not very likely to be confounded with a perennial and shrubby one.

Stem simple, hairy, leafy. Leaves elliptical-lanceolate, flat, hairy, the lower ones oblong, the upper lanceolate. Sepals ovate-lanceolate, *strongly acuminate*. Capsule shorter than the calyx. Petals obovate, entire, pale yellow, sometimes absent. Seeds pale, smooth.

Brean Downs or Brent Downs, Somersetshire. These localities are often confounded. In Smith's 'English Flora' only Brent Downs are recorded as the locality for both *H. polifolium* and *H. ledifolium*, though we know that the former grows only on Brean Downs in this county. Is it improbable that *H. ledifolium* was found on either one or on both of these stations? Annual; June, July.

Sect. II. Leaves without stipules.

H. guttatum, Mill. *Spotted Cistus.*—E.B. 544. L.B.S. 131.

Root annual. Stem erect, herbaceous, branched, round, hairy, leafy. Leaves oblong-lanceolate, three-nerved, hairy, sessile, opposite; the upper alternate, with linear-elongate stipules. Petals yellow, with a red spot at the base of each, in lax elongate groups, *without bracts*. Pedicels spreading in fruit; calyx erect. *Stigma nearly sessile.*

Dry sandy places; Ireland and Jersey. Ann.; July, August.

H. Breweri, Planchon.

A. 1. C. 1. Lat. 53–54°. Alt. 0–? yds. Tem. 49 or 48°.

The stem in this resembles the stem of the preceding species. Leaves *obovate-obtuse;* the upper leaves linear. Petals narrow, yellow, *not spotted*. Pedicels of the fruit erect, patent, bracteate.

Holyhead and near Amlwch, Anglesea. Ann.; June–August.

This is entered in Hooker and Arnott's 'British Flora' as a variety of *H. guttatum:* a judicious view. We retain it as a species, in deference to the learned compilers of the London Catalogue.

H. canum, Dun. in DC. Prod. vol. i. p. 277.—*Cistus marifolius,* Lin. and Smith, Eng. Fl. *Hoary Dwarf Cistus.*—E.B. 396. L.B.S. 130.

A. 4. C. 8. Lat. 51–55°. Alt. 0–650 yds. Tem. 50–42°.

Stem woody, a few inches high. Leaves ovate or ovate-lanceolate, densely hairy (hoary with pubescence), on broad hoary petioles (Sm.). Flowers yellow, corymbose, on reddish pedicels. Calyx hairy. Petals obovate (sometimes only four present). Capsule ovate, smooth, with three or four hairy lines.

Alpine rocks, in the north of England and Wales. Shrub. Flowers May and June.

VIOLACEÆ, *DC.* The Violet Family.

Annual or perennial, herbaceous plants, with toothed or crenulate or entire, petiolate, radical or alternate leaves. Stipules toothed or incised, persistent, often leaf-like, free or united at the base. Flowers solitary, drooping on axillary or radical bracteate peduncles, perfect, not regular. Sepals five, imbricated in prefloration (before expansion), prolonged at the base, free or slightly united. Petals five, unequal, withering, twisted in prefloration, the lower one with a spur. Stamens five, with short and enlarged filaments. Anthers flattened, two-lobed, connivent, embracing the ovary, terminated by a membranous appendage; the two lower are furnished each with a green fleshy prolongation which enters the spur of the lower petal. Ovary one-celled, with many ovules, which are inserted on the parietal placentas. Stigma simple or somewhat lobed. Fruit capsular, one-celled, three-valved, with valvular opening (dehiscence). Seeds horizontal or pendulous. Embryo straight, in a thick fleshy albumen (perisperm). Radicle towards the hilum.

Viola, *Tourn.*—Annual or perennial, stemless or caulescent (having a stem) plants, with blue or white flowers, or the petals are variegated with yellow and violet; peduncles hooked at the summit with minute bracts, which are usually remote from

the flower. Sepals five, prolonged at the base. Petals five, unequal, the lower one prolonged into a spur, the two lateral ones bearded above the claw. Stamens connivent, on very short, enlarged filaments. Style undivided, geniculate, ascending, turgid, perforated at the apex.

Sect. I. The spurred and two lateral petals erect, the other two horizontal or pendulous; stigma with a hooked and usually pointed beak.

† *Stemless, or nearly so.*

V. odorata, Lin. *Sweet Violet.*—E.B. 619. L.B.S. 133.

A. 15. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Root fleshy and fibrous, *stoloniferous.* Leaves radical or *on the rooting stolons,* deeply cordate, reniform, or ovate, crenulate, pubescent. Stipules lanceolate, ciliate, scarious, or herbaceous. Flowers blue or white, *very odoriferous.* Peduncles of the fruit reclining. Capsule roundish, hairy.

Shady and grassy places. Per.; March–May.

The stolons often bear abortive flowers as well as leaves, which shows that the tendency of the plant is to become caulescent.

V. hirta, Lin. *Hairy Violet.*—E.B. 894. L.B.S. 134.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Root without *stolons.* Leaves like those in *V. odorata,* but hairy; stipules lanceolate, acute, feebly fringed. Sepals ovate, rounded at the apex. Petals slightly notched (emarginate), the lateral pair closely fringed. Capsule downy.

On chalky banks. Common. Per.; April, May.

Mr. Baker, in the new series of the 'Phytologist,' pp. 76–79, maintains the identity of the two usually received species, and asserts that "*they are modifications of a single specific type produced by the influences of situation.*" We cannot say that they are distinct species, as species is commonly understood, nor can we say that they are identical, but our own observations are rather corroborative of the latter view. We do not remember ever seeing the two species or varieties together, but we have often noticed the absence of *V. odorata* where *V. hirta* begins to make its first appearance.

V. palustris, Lin. *Marsh Violet.*—E.B. 444. L.B.S. 132.

A. 18. C. 70. Lat. 50–60°. Alt. 0–1300 yds. Tem. 50–34°.

Roots creeping, rhizomatous, *without stolons.* Leaves *rounded,* reniform, delicate, *smooth,* with shallow notches (crenatures), and often purplish on the under sides. Stipules ovate, acuminate.

Sepals ovate, obtuse. Lateral petals slightly bearded. Spur obtuse, longer than the calycine appendages. Capsule oblong, angular, glabrous.

Marshy places on turfy heaths, or in moist mountainous woods. Per.; April–July.

†† *With a stem.*

V. sylvestris, Lam.—*V. sylvatica,* Fr.—*V. canina?* Smith in English Flora.—*Dog's Violet,* E.B. 620.—*V. flavicornis,* Forst. in E.B.S. 2736. ? L.B.S. 135.

Root simple or branching, fleshy or woody, surrounded near the crown with the bases of the decayed leaves, not stoloniferous. Primary or central stem woody at the base, barren. Flowering stems lateral, ascending, more or less leafy and branched. Leaves reniform or cordate, crenulate, pointed, stalked; stipules toothed, lanceolate. Pedicels axillary, elongate, bracteate near the flower. Sepals narrow, lanceolate, scarious at the margin, two of them produced at the base, the three others shorter. Spur pale blue or somewhat white. Capsule oblong, triquetrous, glabrous, with two intermediate rounded ridges and with a tapering point. Seeds smooth, shining, obovate.

On banks and open places. Per.; April–September.

A variety of this Violet from Barnes Common and other open places in Surrey agrees with the above in specific characters, though much reduced in the size of its organs. The leaves are rather more leathery and more finely crenulate. The bracts are also similarly situated, and the lateral petals have a similar tuft of hairs on one side above the claw.

Var. *α. sylvatica,* Fr. The common form as described above.

Var. *β. flavicornis.*—E.B.S. 2736.—This is distinguished from the former, *α. sylvatica,* by its more leathery (coriaceous), plane, not wrinkled, leaves, and its deeper blue flowers with a pale yellowish spur.

On dry open places.

In all these forms there is always present a barren or flowerless stem which bears only a rosette of leaves, whence flowering-shoots are developed next season.

V. canina, Lin. ?—*V. flavicornis,* Sm. and of L.B.S. 135*.—*V. pumila,* Hooker and Arnott.

Primary and lateral stems elongated and flowering. None of the stems or shoots in this form are barren. Leaves cordate,

oblong, *rounded* at the apex (not acuminate, as in *V. sylvestris*). Stipules ciliated or toothed. Bracts contiguous to the flower. Sepals acute, protracted, and notched at the base. Spur longer than the calycine appendages.

Sandy places. Near New Brighton. Cheshire, *Mr. Sansum.*

V. lactea, Sm.—*V. pumila,* Vill.? *Dillenius' Violet.* E.B. 445. L.B.S. 135*.

Primary and lateral stems producing flowers. Leaves *ovate, oblong, or lanceolate,* the lower ones somewhat cordate at the base. Stipules *serrated* or fringed. Bracts membranous, lanceolate, toothed. Sepals acuminate. Spur longer than the calycine appendages. Flowers pale blue or whitish.

Heathy, dry, sandy places. Per.; April–September.

Var *α. V. canina,* Fries? Leaves cordate at the base; stipules fringed or toothed.

Var. *β. V. flavicornis,* Sm. Leaves rounded at the base; stipules serrated or incised.

V. stagnina, Kit. *Haller's Violet.* Reich. 4507. According to Reichenbach this is *V. lactea,* Sm. L.B.S. 135*.

Root slender, rhizomatous. Primary and lateral stems producing flowers. Leaves ovate-lanceolate, somewhat cordate at the base; petioles winged towards the top (Hooker and Arnott); stipules serrated or incised, *linear-lanceolate,* shorter than the petioles. Sepals acuminate. *Spur short* and blunt. Flowers pale blue, nearly white.

Turfy bogs; rare. Botisham Fen, near Cambridge. Per.; May–July.

Sect. II. All the petals erect, except the lower, which is pendulous or horizontal; stigma roundish, urceolate.

V. lutea, Huds. *Yellow Mountain Violet* or *Yellow Pansy.*—E.B. 721. L.B.S. 137.

A. 14. C. 50. Lat. 51–59°. Alt. 0–900 yds. Tem. 47–38°.

Stem ascending, diffuse, filiform underground, branched (stem unbranched, *Sm.*). Lower leaves ovate or cordate, upper ovate or lanceolate, crenate or serrate, slightly fringed; stipules *pinnatifid,* with a large entire terminal lobe. Spur about as long as the calycine appendages. Sepals acute. Flowers large, handsome.

Mountainous pastures. Common in Wales and in the north-west of Derbyshire, Yorkshire, and Scotland. Per.; May–Sept.

Var. *α*. Petals all yellow, or the upper pair only deep purple.
Var. *β*. *amœna*, Syme. Petals all purple.

V. Curtisii, *Curtis's Violet.*—E.B.S. 2693.

Stipules pinnatifid, with lanceolate-linear lobes; upper lobe only slightly more dilated than the lateral ones.

Said to grow on sandy places near the sea.

V. tricolor, Lin. *Heartsease Pansy.*—E.B. 1287. L.B.S. 136.

A. 18. C. 82. Lat. 50–61°. Alt. 0–350 yds. Tem. 52–43°.

Stem angular, glabrous, leafy, procumbent, branched. Leaves cordate-ovate, crenate, all more or less stalked; petioles pinnatifid, with a leaf-like, dilated, ovate lobe. Sepals prolonged and notched or crenate at the base, lanceolate, pointed. Claws of the three lower petals densely bearded, all except the middle petal, which is yellow, violet, or bluish, marked with dark radiating violet lines or streaks. Fields. Ann.; May–Sept.

Var. *V. arvensis*, Mur. *Field* or *Corn Pansy.*—E.B.S. 2712.

Sepals more dilated, and with larger basal appendages than in the type. Petals shorter than the sepals; all whitish except the middle one, which is yellow.

Corn-fields; common. Ann.; May–October.

DROSERACEÆ, *DC.* The Sundew Family.

Perennial, herbaceous plants, with radical, petiolate leaves, and with usually terminal, clustered, regular, and perfect flowers. Sepals five, rarely four, equal, and more or less united at the base, persistent. Petals five, rarely four, caducous or withering, imbricated in prefloration. Stamens as many as the petals or twice as many, free. Anthers extrorse, opening by two slits or two terminal pores. Ovary free, 1-celled, with parietal, rarely basal, placentas, or 2–3-celled, with angular placentas. Ovules numerous, horizontal or ascending. Styles as many as the placentas or as the cells. Stigmas capitate. Fruit capsular, either 1-celled and 3–5-valved or 2–3-celled, with loculicidal dehiscence (that is, when the entire carpels composing the fruit separate, carrying the seeds and placentas along with them), rarely with septicidal dehiscence (when the capsule or carpels open through the rupture of the partitions, *septa*). Seeds horizontal, ascending or pendulous, with a lax, reticulate testa, which is rarely tight.

Perisperm fleshy, surrounding the embryo. Embryo straight. Radicle directed towards the hilum.

SYNOPSIS OF THE GENERA.

DROSERA.—Flowers in terminal clusters; corolla withering.
PARNASSIA.—Flowers terminal and solitary; corolla caducous.

DROSERA, *Lin.*—Herbaceous plants, with rosettes of radical glanduliferous leaves, and clusters of small, unilateral, white flowers. Sepals 5, slightly united at the base. Petals five, withering. Stamens five. Anthers opening by two longitudinal slits. Styles 3, rarely 4–5, free, deeply cleft. Stigmas entire or notched. Capsule 1-celled, with parietal placentas and loculicidal dehiscence, and with 3, rarely 4–5, valves. Seeds in a lax testa.

D. rotundifolia, Lin. *Round-leaved Sundew.* — E.B. 867. L.B.S. 138.

A. 18. C. 80. Lat. 50–61°. Alt. 0–700 yds. Tem. 52–40°.

Stems erect, 3–6 inches high, springing from the centre of a rosette of radical leaves. Leaves *quite prostrate, roundish,* tapering into long footstalks. Seeds fusiform, elongate, in a lax, reticulate testa. (A loose, chaffy coat).

Turfy bogs. Per.; July, August.

Var. *β. ramosa,* Leight.? Cluster forked or branched; plant stouter and taller, with more numerous leaves.—Bomere, Pool.

D. longifolia, Sm.—*D. intermedia,* Hayn. *Intermediate-leaved Sundew.*—E.B. 868. L.B.S. 139.

A. 13. C. 40. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Stem 3–6 inches high, reclining at the base and then erect, slightly longer than the leaves. Leaves *erect,* with an obovate-cuneate, tapering limb. Sepals obovate, obtuse. Capsule pear-shaped, furrowed. Seeds ovate, oblong, in *a rough, not chaffy, closely investing coat.*

Boggy, peaty commons. Per.; July, August.

Var. *β. ramosa.* Stalk branched about its middle. "A variety, with the stalks shorter than the leaves, is found in Scotland and Ireland."—Babington.

D. anglica, Huds.—*D. longifolia,* Hayn. *Great Sundew.*—E.B. 869. L.B.S. 140.

A. 14. C. 40. Lat. 50–61°. Alt. 0–600 yds. Tem. 48–41°.

Stems *twice as long as the leaves, not curved at the base.* Leaves erect, linear-oblong (obovate-lanceolate, *Bab.*), tapering

gradually at their base. Sepals linear, obtuse. Capsule bluntly angular. Seeds oblong, in a lax, slightly rough coat.

In bogs, Norfolk, Lancashire, and in Scotland.

Var. *D. obovata*, M. and K. Leaves obovate, broader than in the type. Capsule ovate, shorter than the calyx. This variety is not rare in Ireland.

Parnassia, *Tourn.*—Herbaceous, perennial, glabrous plants, with cordate, coriaceous leaves and terminal white flowers. Sepals five, slightly united at the base. Petals five, caducous. Stamens five. Anthers opening by two longitudinal slits. *Nectariferous scales five, opposite to the petals, and deeply divided into numerous fringes, which have each a glandular enlargement.* Stigmas four, nearly sessile, entire. Capsule one-celled, with parietal placentas and four valves. Seeds in a lax, reticulate testa.

P. palustris, Lin. *Grass of Parnassus.*—E.B. 82. L.B.S. 436. A. 16. C. 60. Lat. 50–61°. Alt. 0–900 yds. Tem. 50–38°.

Root thick, horizontal. Stems solitary or several, simple, erect, angular. Root-leaves cordate on long stalks; stem-leaf cordate, clasping. Sepals ovate-oblong, blunt, shorter than the petals. Capsule ovate.

Wet places, especially in the north. Per.; August-Sept.

POLYGALACEÆ, *Juss.* The Milkwort Family.

Perennial, herbaceous or half-shrubby plants, with entire, alternate, sessile leaves, and clustered, terminal, irregular flowers. Calyx persistent. Sepals five, very unequal, the three outer ones small, herbaceous, the two inner or lateral very large and petaloid (like petals). Corolla caducous. Petals three, very unequal (in European species), connate, the lower petal (keel) large and concave, with a deeply laciniate limb (crest). Stamens eight, combined in a tube and adhering to the petals. Anthers erect, one-celled, opening by terminal pores, in two parcels. Ovary free, consisting of two compressed carpels, with solitary, suspended ovules. Fruit capsular, two-celled, compressed, with one pendulous seed in each cell, with an aril (an expansion of the medium by which the seed is connected with the placenta). Perisperm fleshy. Embryo straight or slightly bent. Radicle short, approaching the hilum.

Polygala, *Lin.*—Stems usually numerous, tufted. Leaves lan-

ceolate or linear or oblong. Flowers blue, roseate, or white, pendulous, with coloured, very caducous bracts. Sepals five, very unequal, the two inferior ones (wings) large and petal-like, changing into herbaceous-membranous when ripe. Capsule oblong or obovate, more or less notched, compressed perpendicularly to the partition, with a border. Seeds oblong, hairy, black, crowned with a white three-lobed aril.

P. vulgaris, Lin. *Common Milkwort.*—E.B. 76. L.B.S. 141, 141b, 141c.

A. 18. C. 82. Lat. 50–60°. Alt. 0–900? yds. Tem. 51–38°.

Root tapering, vertical, woody. Stems 6–12 inches high, reclining at the base, ascending or erect, leafy; stems shrubby only at the base, wiry and prostrate, or slightly ascending. Lower leaves scattered, *oblong or obovate,* much shorter than the upper ones; upper leaves lanceolate-linear, alternate. Flowers blue or pink, rarely white, in many-flowered terminal clusters, often unilateral. Wings oblong or oblong-obovate, three-nerved, *anastomosing with an oblique branch of the central nerve* (the two lateral nerves ramify repeatedly, so that, in fact, for nearly the whole length of the wing there are 5 principal nerves, and at the centre or middle of the leaf there are 7 nerves; the branches of the nerves are all directed towards the margin), or the two lateral nerves are joined to the central one near the apex by two horizontal nerves, and very much ramified towards the margin.

Dry upland pastures, especially on a chalky or limestone soil. Perennial; May–September.

Var. *P. oxyptera,* Reich.—*P. calcarea,* Schultz.—*P. amara,* Don.—E.B.S. 2827. Lower leaves obovate, blunt, in an irregular tuft. Calyx-wings oblong. "Lateral nerves distinct from the central nerve," *Babington.* Flowers pale pink, rather small.

In Jersey.

P. austriaca, Crantz.—*P. uliginosa,* Reich.

Stems *herbaceous,* with a terminal raceme of flowers. Lower or radical leaves obovate, obtuse, in a rosette. Stem-leaves oblong-elliptical, much smaller than the root-leaves. Calyx-wings oblong or ovate, blunt, with simple or slightly branched nerves. Capsule broader than the wings, roundish, cuneate.

Var. *a.* Leaves of the rosette larger than the leaves of the branching stem; flowers smaller than in the following; capsule rounded below.

Var. β. Stem nearly simple (flower-shoot almost constantly simple); flowers larger; capsule wedge-shaped.

Var. β is said to be the only form as yet discovered in Britain; its locality is the back of Cronkley Fell, Yorkshire.

FRANKENIACEÆ, *St. Hil.* The Sea-heath Family.

Maritime, partly shrubby (half herbaceous), decumbent plants, with small, simple, entire, opposite leaves. Flowers regular, solitary, almost sessile. Calyx tubular, 4–5-lobed. Petals 4–5, with a claw. Stamens 4–6, rarely 5, with the filaments surrounding the ovary. Anthers extrorse. Ovary one-celled, with 3–4 parietal placentas. Ovules in two rows. Stigmas 3–4. Capsule one-celled, with 3–4 valves, which bear the placentas on their centre. Seeds umbilicate, with a coriaceous integument. Embryo straight in the midst of the albumen (perisperm); radicle short, approaching the hilum (umbilicated base).

Frankenia, *Lin.*—Stems prostrate, leafy. Calyx cylindrical-angular, with a toothed, spreading border. Claws of the petals as long as the calyx. Filaments six, broad, subulate. Style filiform, three-parted. Stigmas internal. Capsule one-celled and three-valved (3–5-valved), many-seeded.

F. lævis, L. *Smooth Sea-heath.*—E.B. 205. L.B.S. 142.

A. 3. C. 7. Lat. 50–53°. Alt. 0– yds. Tem. 51–49°.

Root woody. Stems round, branched. Leaves *linear,* revolute at the margin, *glabrous,* ciliated at the base, convex above, with axillary, leafy tufts. Flowers solitary, sessile, either terminal or in the forks of the stem, with a scale attached to the claw of each petal (*Sm.*).

Salt-marshes on the eastern coast. Per.; July–August.

F. pulverulenta, L. Root slender, annual. Stems downy. Leaves *obovate,* glabrous above, hoary or powdery on the under side.

Found on the Sussex coast by Mr. Brewer (Dillenius) and by Mr. Hudson between Bognor and Brighton, a rather extensive locality. Annual; June–August. It grows with the former on the shores of the Mediterranean.

ELATINACEÆ, *Camb.* The Waterwort Family.

Annual or perennial, herbaceous plants, with opposite or

whorled stipulate leaves and axillary flowers. Sepals 3–4, united at their base. Petals 3–4, caducous. Stamens as many as the petals or twice as many, with two-lobed introrse anthers. Ovary consisting of 3–4 carpels, with the ovules on the inner angles of the cells. Styles short. Stigmas capitate. Fruit capsular, 3–4-celled. Seeds cylindrical, straight or curved, without albumen. Embryo shaped like the seeds (as there is no albumen). Radicle directed towards the hilum.

Elatine, *L.*—Aquatic or palustral, annual or perennial plants, with creeping or rooting or with prostrate or partly erect stems, and linear or lanceolate or spathulate leaves. Flowers very small, axillary. Sepals and petals 3–4. Stamens 3–8. Styles 3–4. Capsule rounded, depressed, 3–4-lobed, and 3–4-celled. Seeds cylindrical, more or less curved.

E. hexandra, DC.—*E. tripetala,* Sm.—*E. paludosa,* Seub. *Small Waterwort.*—E.B. 955. L.B.S. 143. Reich. 599.

A. 10. C. 15. Lat. 50–58°. Alt. 0–100 yds. Tem. 52–46°.

Stems numerous, slender, prostrate or erect above, sometimes swimming, usually forming tufts, mostly under water, 2–4 inches long. Leaves opposite, spathulate, blunt, *attenuated into the very short footstalks* (the petiole is shorter than the limb). Petals three. Stamens six (usually). Seeds only *slightly curved.*

There is a variety, viz. *β. octandra,* with four sepals, four petals, eight stamens, and a four-valved capsule.

Sandy margins of ponds, etc. Uncommon. Annual? July–September.

E. Hydropiper, L. *Rooting Waterwort.*—E.B.S. 2670. L.B.S. 144.

A. 3. C. 3. Lat. 51–54°. Alt. 0–50 yds. Tem. 49–48°.

Stems prostrate, rooting. Leaves opposite, *shorter than their footstalks,* broader than in *E. hexandra.* Flowers sessile or stalked. Sepals and petals four respectively. Stamens eight. Capsule four-valved. Seeds *bent like a horseshoe.*

In ponds with the former. Cutmill Ponds, near Frensham, Surrey, and in a mill-pond near Churchill railway-station, about midway between Hagley and Kidderminster. Noticed in September, 1855, by Mr. Irvine.

This plant has creeping roots or rooting stems, yet it is by all Botanists described as of annual duration. Does it flower twice or in two successive years from the same root?

CARYOPHYLLACEÆ, *Juss.* The Pink Family.

Annual or perennial, herbaceous plants, rarely shrubby at the base. Stems usually forked (dichotomous), jointed, often enlarged at the articulations (junctions). Leaves entire, opposite, often sessile and connate at the base, rarely furnished with scarious stipules. Flowers perfect and regular, in terminal forked cymes, which are sometimes unilateral by abortion, sometimes clustered or panicled. Sepals five, rarely four, free or united at the base, and forming a tubular calyx, usually persistent, imbricate in prefloration. Petals five, rarely four, more rarely wanting. Stamens as many or twice as many as the petals, with two-lobed introrse anthers. Ovary stipitate, one-celled, with many ovules. Ovules inserted on a central placenta or at the internal angles. Styles 2–5, filiform, with internal stigmas (the stigmas are on the inner face of the styles). Fruit capsular, many-seeded, rarely few-seeded, one-celled, rarely having 2–5 incomplete cells, opening by valves or teeth, which are as many or twice as many as the styles, rarely baccate and indehiscent. Seeds more or less reniform, ovate, or lenticular, with a shagreened or tubercular shell (testa). Perisperm farinaceous. Embryo annular or half-annular, embracing the perisperm. Radicle pointing to the hilum.

Sub-Order I. Sileneæ.—Sepals united in a tube (at least for some distance above the base), free at the apex. Petals with an elongated claw.

SYNOPSIS OF THE GENERA.

Dianthus.—Calyx *calyculate* (surrounded by bracts or scales at the base); styles two.

Saponaria.—Calyx *without bracts* at the base; styles two.

Silene.—Calyx tubular, more or less tumid, without bracts (calycule); styles three.

Lychnis.—Sepals and petals as in *Silene;* styles five.

Cucubalus.—Styles three; fruit baccate.

Sub-Order II. Alsineæ.—Sepals free or but slightly cohering at the base. Petals with very short claws. (See *infra.*)

Dianthus, *Lin.*—Perennial, rarely annual plants. Stems turgid at the articulations (junctions or joinings). Leaves linear. Flowers in terminal cymes, rarely solitary. Calyx tubular, with five teeth, surrounded at the base by a *calycule* (outer calyx) of 2–6 *scarious or herbaceous imbricate bracts.* Petals with long claws and a flat horizontal limb. Stamens ten. Styles two.

Capsule opening at the summit by four valves. Seeds compressed, lenticular; embryo straight.

Sect. I. Bracts of the calycule at least half as long as the calyx-tube; flowers several.

D. prolifer, Lin.—E.B. 956. L.B.S. 145.

A. 3. C. 4. Lat. 50–53°. Alt. 50 yds. Tem. 51–48°.

Stems simple or branching, slender, wiry, with prominent knots, leafy. Leaves linear, rough on the edges. Stem-leaves very small, tapering, enlarged at the base. Flowers few, *in sessile tufts,* terminal, surrounded by a scale-like or chaff-like involucre (the plant has two series of scales, viz. those surrounding the truss of flowers, and two large, ovate, obtuse scales which envelope the calyx). Calyx cylindrical, with green angles and short teeth. Petals a little longer than the calyx, with an *erect,* ovate limb, which is notched at the summit, much shorter than the claw. Capsule elliptical, tapering at both ends. Seeds nearly flat, shagreened, but not tubercular.

In dry, gravelly and sandy places. Annual; July–September.

D. Armeria, Lin. *Deptford Pink.*—E.B. 317. L.B.S. 146.

A. 12. C. 25. Lat. 50–57°. Alt. 200 yds. Tem. 51–47°.

Roots (biennial?) annual. Stems erect, pubescent, branched. Leaves (lower ones) rather blunt, linear-lanceolate; upper ones linear; all somewhat downy. Flowers purple, in terminal or axillary tufts of 3–8 in each. Bracts two, *linear, acute, herbaceous, hairy, as long* or longer than the calyx. Scales of the calycule somewhat herbaceous, of the same form as the involucral bracts, and about as long as the calyx.

In dry, sandy, waste places. Not common. Annual or biennial; May–August.

Sect. II. Bracts short; flowers few or solitary.

D. deltoides, Lin. *Maiden Pink.*—E.B. 61. L.B.S. 150, 150b.

A. 12. C. 40? Lat. 50–58°. Alt. 150 yds. Tem. 51–46°.

Roots tufted, branching. Stems reclining at the base, *roughly puberulent.* Leaves of the stem linear-lanceolate; those of the barren shoots shorter than those of the stem; all more or less rough. Scales of the calycule *ovate-lanceolate, acuminate,* about one-third of the length of the calyx. Flowers purple, dappled with white or deep purple. Petals toothed.

In dry, sandy or hilly pastures. Perennial; June–August.

Var. *β. glaucus.* Edinburgh, King's Park.

D. cæsius, Sm. *Cheddar Pink.*—E.B. 62. L.B.S. 149.

A. 1. C. 1. Lat. 51–52°. Alt.? Tem. 49°?

Roots perennial. Stems erect; barren stems elongate, branching, pubescent. Leaves linear, *rough at the margin.* Flowers usually single. Scales of the calycule *ovate, with a short abrupt point,* one-fourth part as long as the calyx. Calyx-teeth ciliated. Petals pale rose-colour, fragrant.

Cheddar Cliffs, near Wells, Somersetshire. Perennial; June–August.

D. plumarius, L. *Feathered Pink.* Reich. 5030.

A. 8.

Stems erect, 6–12 inches high, 2–5-*flowered,* with numerous prostrate, rooting, barren shoots. Leaves linear-subulate, rough at the margin. Calycule consisting of roundish, mucronate scales, one-fourth part of the length of the calyx. Petals *cleft to the centre;* the central part is ovate, entire.

On an old wall at Shalford, near Guildford, Surrey. Perennial; June.

This species grows on rocks and on sandy hills in the south of Germany. It is a very ornamental plant.

D. Caryophyllus, L. *Clove Pink.*—E.B. 214.

A. 8.

Root somewhat woody. Stems 12–18 inches high, *single-flowered,* with numerous prostrate barren shoots. Leaves linear, glabrous, glaucous, those of the barren shoots much elongate. Calycule consisting of rounded mucronate scales scarcely one-third of the length of the calyx. Flowers *solitary,* rosy-red or white, fragrant. Petals *toothed* or *slightly incised.* Seeds smaller than in the preceding species.

Old walls; Rochester Castle, Kent.

This species grows on old ruined castles in France. It is frequently cultivated, and the varieties are numerous.

Saponaria, *Lin.*—Perennial or annual plants, with elliptical or lanceolate leaves and with the flowers in lax cymes or in panicled tufts. Calyx tubular, cylindrical or angular, 4–5-toothed, without a *calycule* (naked at the base). Petals 5, with *long claws,* with or without scales above the claw. Stamens 10. Styles 2. Capsule opening on the summit by four valves. Seeds numerous, kidney-shaped, roughish, attached to a central column.

S. officinalis, Lin. *Common Soapwort.*—E.B. 1060. L.B.S. 151.

A. 15. C. 50. Lat. 50–56°. Alt. 0–150 yds. Tem. 52–47°.

Root perennial, creeping, branching, bearing scions. Stems cylindrical, leafy, 1–3 feet high, panicled (branched) above. Leaves elliptical-lanceolate or ovate, acute, 3-ribbed. Flowers erect, in a dense level-topped panicle, rosy or pale lilac. Calyx herbaceous, *cylindrical,* with 4 teeth (almost 2-lipped). Capsule opening by 4 short, *reflexed* teeth.

Roadsides, hedges, etc. Uncommon. Perennial; July–September.

Var. *Saponaria concava anglica,* Bauh., *Gentiana concava,* Ger. 435, is a curious variety, with a monopetalous corolla and with some of the upper leaves combined and sheathing. It was first found by Gerarde, in Northamptonshire. It has also been reported from some sandy hills seven miles north of Liverpool.

S. Vaccaria, Lin.—*Gypsophila Vaccaria,* Sm. Fl. Græc. 380.

A. 1.

Root annual. Stem erect, *repeatedly forked,* glabrous. Leaves sessile, ovate-lanceolate, slightly connate at the base. Flowers pink or rosy, in a lax cyme. Calyx with 5-winged angles, membranous. Petals not much surpassing the calyx. Capsule opening by four *erect* valves (teeth).

River-side, near the Steam-boat Pier, Wandsworth.

The habit and appearance of this species, as Smith says, agrees better with *Gypsophila* than with *Saponaria.*

Silene, *Lin.*—Annual or perennial plants, with glabrous, pubescent, or viscid stems, and with ovate-oblong or lanceolate or linear leaves. Flowers in panicles or cymes, rarely in apparent clusters, or solitary and terminal. Calyx tubular, more or less inflated, with 5 teeth, *without a calycule.* Petals 5, with long claws, with or without scales above the claws (with or without a crown). Stamens 10. *Styles* 3. Capsules 3-celled (imperfectly), opening by 6 teeth or valves. Seeds numerous, kidney-shaped, roughish, attached to the central column.

S. anglica, Lin.?—*S. gallica,* L. Sp. 595. *English Catchfly.* E.B. 1178.

A. 14. C. 40. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Roots annual, fibrous. Stem spreading, branched, hairy, more or less viscid, from half a foot to two feet high. Lower

leaves obovate, apiculate; upper linear, acute, entire. Flowers erect, solitary, in the bosoms of the upper leaves. Calyx cylindrical, with 5 hairy, viscid, green ribs, *becoming ovate and contracted,* at the apex not *umbilicate.* Limb of the petals obovate, slightly oblique, *entire or slightly notched,* with truncate or toothed scales. Filaments hairy. Capsule *ovate-conical, nearly sessile.* Seeds black, reniform, flat on one side.

Cornfields. Annual; June–September.

Var. *a. quinquevulnera,* Lin. Petals white or roseate, with a deep purple spot in the centre of the limb. Seam-boat Pier, Wandsworth.

We have gathered another variety of this plant in the above locality, chiefly distinguished from the common form by the following characters:—

Stem round, hairy, with swollen joints. Leaves linear-oblong, hairy, and glandular. Calyx beset with long, spreading, white, cartilaginous hairs. Petals spreading, notched, reflexed, pink. Crown erect, composed of five erect, pinkish-white, cleft laminæ.

S. nutans, Lin. *Nottingham Catchfly.*—E.B. 465.

A. 7. C. 12. Lat. 50–57°. Alt. 0–100 yds. Tem. 51–48°.

Root tapering, fleshy. Stems 12–18 inches high, reclining below, erect above, rather leafy, with numerous short, barren, leafy shoots. Leaves hoary; the lower spathulate or obovate, tapering below; the upper linear-lanceolate. Flowers *pendulous,* in a lax, elongate cluster, on short, lateral branches, the terminal one most erect (Sm.). Calyx attenuated at the base, *swelling upwards,* and *obovate* when at maturity. Limb of the petals 2-parted, with lanceolate acute scales and *linear segments.* Capsule ovate-conical, obtuse, bursting the calyx, much longer than its stalk. Seeds black, flat, with sharp tubercles.

On Nottingham Castle, Rocks in Dovedale, etc. Perennial; June, July.

Var. *S. paradoxa,* Sm. Leaves broader. Dover Cliffs.

In the 'English Flora,' vol. ii. p. 297, Smith repudiates *S. paradoxa* of Fl. Britannica, 1397, with this remark, "It seems, as Ray thought, not distinct from the common species *S. nutans,* though with somewhat broader leaves."

S. italica, Pers.—*Italian Catchfly.* ? *S. patens,* Poete.—E.B.S. 2748. L.B.S. excluded species.

Root woody. Stems erect or ascending, 6–18 inches high,

more or less hairy. Lower leaves spathulate, tapering into the petiole; the upper leaves linear-lanceolate. Flowers erect on short peduncles (pedicels?), in lax pyramidal clusters. Calyx inflated, slightly umbilicate, downy, and often glandular, with ovate, blunt teeth. Petals cleft. Capsule ovate-oblong, acuminate, with a long *stipes* (a column elevating the capsule, thecaphore). Seeds tubercled, and flat on both sides.

Said to be an escape from cultivation. Perennial; May–August.

S. Otites, Sm. *Spanish Catchfly.*—E.B. 85. L.B.S. 154.

A. 2. C. 3. Lat. 52–53°. Alt. 0–50 yds. Tem. 49–48°.

Stems erect, downy or slightly viscid, 6–30 inches high. Lower leaves spathulate; upper leaves nearly linear. Flowers *diœcious*, rarely polygamous, small, pale green, in an elongate, narrow, clustered panicle. Calyx tubular-campanulate, with short triangular teeth, often deeply cleft when in fruit. Petals linear, entire, without scales. Capsule sessile.

In dry, sandy or gravelly places in Norfolk, Suffolk, etc. Perennial; July–August.

S. inflata, Sm. *Bladder Campion,* or *Common Catchfly.*—E.B. 164. L.B.S. 153.

A. 17. C. 75. Lat. 50–58°. Alt. 0–250 yds. Tem. 52–44°.

Stems ascending, often reclining at the base, branching. Leaves oblong or ovate-lanceolate. Flowers in a terminal, many-flowered cyme. Calyx glabrous, ovate, much *inflated* and *veined*, with large triangular teeth. Petals deeply divided, sometimes with two tubercles above the claw. Capsule rounded and stipitate.

Fields, roadsides, and similar places. Perennial; June–August.

The hoary, tubercled variety, *hirsuta*, Leight., is very common in the south-east of England.

β. minor, Moris, Fl. Sard.—See Gr. and God.—This variety is uncommon; but it has been collected at Wandsworth, near the Thames, with many other foreigners.

S. maritima, With. *Sea Catchfly.*—E.B. 957. L.B.S. 153*.

A. 18. C. 60. Lat. 50–61°. Alt. 0–1000 yds. Tem. 52–36°.

Root perennial, ligneous. Stems diffuse, prostrate, ascending at the top, with numerous barren leafy shoots, round, slender, rough with short spreading bristles, leafy. Leaves oblong, acute, ciliated, thick, tapering below (the lower ones); upper ovate,

pointed (the bracts). Flowers few, terminal. Calyx obovate, inflated, umbilicate at the base, with broad triangular teeth. Limb of petal parted, with obovate, crenulate, overlapping lobes (slightly cloven, *Babington*). Capsule globular, purplish when ripe, on a spherical carpophore which is scarcely half the length of the seed-vessel. Seeds roundish, with both sides nearly flat, beautifully tuberculated, and of a deep purplish or black colour.

Seashores, on rocks, and on the sand; also on alpine rocks.

S. conica, Lin. *Striated Corn Catchfly.*—E.B. 922. L.B.S. 158.

A. 4. C. 5. Lat. 51–57°. Alt. 0–100 yds. Tem. 51–48°.

Stems erect, simple or branched, round, hairy and leafy. Leaves linear-lanceolate, hairy. Flowers erect, in forked cymes, with herbaceous, acuminate bracts. Calyx at first conical, then *ovate-conical,* with long acuminate teeth, and more or less umbilicate at the base. Petals small, with a cleft limb, and the throat fortified with scales. Capsule *ovate-conical,* sessile, nearly but not quite filling the calyx, and shorter than it. Seeds roundish, flat on two sides, slightly furrowed, between tuberculated and shagreened.

In sandy places. Annual; June–July.

S. noctiflora, Lin. *Night-flowering Catchfly.*—E.B. 291. L.B.S. 157.

A. 9. C. 25. Lat. 50–57°. Alt. 0–200 yds. Tem. 50–47°.

Root annual, white, branched. Stem erect, stout, very hairy, viscid, and leafy. Leaves oblong, hairy, and prominently ribbed; upper leaves lanceolate. Flowers axillary or terminal, on short stalks, pale rose-coloured or white, yellowish or cream-coloured externally. Calyx viscid, hairy, with 10 prominent blunt ribs, and *long subulate teeth.* Petals with a *deeply cleft limb,* and short blunt scales above the claw (at the throat). Capsule ovate-cylindrical or conical, sessile (on a very short, thick, hairy carpophore). Seeds black, reniform.

Cornfields, in the east of England. Annual; July–September.—We have seen this plant occasionally on waste ground near the Steam-boat Pier, Wandsworth.

S. Armeria, Lin. *Lobel's Catchfly.*—E.B. 1398.—L.B.S. excluded species.

Root annual, branched. Stems erect, forked, glaucous and glabrous, viscid above, leafy. Leaves large, the lower ones obovate, obtuse, attenuated into the petioles; upper ovate or ovate-

lanceolate, pointed, sessile, glaucous. Flowers in dense, level-topped cymes. Petals cleft, notched, or entire, crowned with a double, awl-shaped scale; claw tapering, not auricled. Capsule oblong, not longer than its stalk. (The capsule is usually shorter than its thecaphore, or stalk.)

On rubbish in England, where it is an alien, and in woods and rocky places in the south of France, where it is a native. Annual; June–September.—Steam-boat Pier, Wandsworth, where it has been noticed since 1851.

S. acaulis, Lin. *Moss Campion.*—E.B. 1081. L.B.S. 159.

A. 6. C. 15. Lat. 53–61°. Alt. 0–1450 yds. Tem. 44–32°.

Roots very long, deeply penetrating into the fissures and chinks of rocks. Stems densely tufted, and branching, leafy, and moss-like, each bearing a solitary flower. Leaves linear, opposite, crowded, slightly fringed at the base. Calyx campanulate, glabrous, with blunt teeth. Petals slightly cleft at the apex, rose-colour or white. Capsule ovate, becoming cylindrical, and twice as long as the calyx when ripe, opening by 6 valves.

Mountains of Wales and Scotland. Perennial; June–July.

S. alpestris, Jacq.

Root perennial, bearing rosettes of leaves, and erect, branching, flowering stems; the latter are wiry, rigid, somewhat viscid, and leafy. Leaves oblong, attenuated at both ends; the upper ones linear. Flowers in lax, usually 3-forked (trichotomous) cymes. Calyx campanulate, with blunt teeth. Petals toothed at the margin; claw crowned with two blunt scales, not auriculate. Capsule ovate, much longer than the calyx, on a very short carpophore (stipes or column). Seeds bordered with a fine fringe, tubercular, and slightly convex.

Clova, Forfarshire, *Mr. G. Don.*

The above description is drawn up from a cultivated example. We have not heard of the re-discovery of the plant in the original Clova locality; nor has it been as yet noticed in any other part of the British Isles.

Lychnis.—Perennial plants, with hairy, sometimes glandular stems, and ovate-oblong or lanceolate leaves. Flowers often dicœcious, in irregular, forked cymes. Calyx tubular, more or less inflated, with 5 teeth. Petals 5, with long claws, and crowned above the claw. Stamens 10. Styles 5. Capsules 1-celled, opening at the summit by 5–10 valves.

L. vespertina, Sib.—*L. dioica,* Lin.—*Silene pratensis,* Grenier and Godron. *White Campion.*—E.B. 1580. L.B.S. 164.

A. 17. C. 75. Lat. 50–58°. Alt. 0–350 yds. Tem. 52–43°.

Stem ascending, round, hairy, slightly glandular, and branching above, leafy. Leaves pubescent or hairy, the root-leaves and lower stem-leaves tapering at the base; the uppermost *lanceolate.* Flowers in a lax cyme, *white.* Calyx turgid in the fertile flowers (ovate), cylindrical in the barren ones. Petals cleft. Capsule ovate, sessile, *with erect teeth.* (This last character cannot be detected till the seeds are ripe and when the capsule opens.)

Fields and waste places. Perennial; June–Oct.

L. diurna, Sibthorp.—*Silene diurna,* Gren. *Red Campion.*—E.B. 1579. L.B.S. 163.

A. 18. C. 81. Lat. 50–61°. Alt. 0–900 yds. Tem. 52–38°.

Stems erect or ascending, hairy, leafy. Root-leaves attenuated towards the base; the upper *ovate-oblong,* acuminate, hairy. Flowers roseate or purple, smaller than they are in *L. dioica.* Calyx-teeth *lanceolate, acute* (in *L. dioica* the calyx-teeth are triangular, blunt). Capsule ovate, sessile, *teeth strongly reflexed.*

Woods and shady places. Perennial; May–July.

L. Githago, Lam.—*Agrostemma Githago,* Lin. *Corn Cockle.*—E.B. 744. L.B.S. 165.

A. 18. C. 80. Lat. 50–60°. Alt. 0–200? yds. Tem. 52–46°.

Root annual. Stems erect, 2–3 feet high, branching above, and covered with long silky hairs. Leaves linear, very long, covered with hairs like those on the stem. Flowers large, reddish-violet or purplish, on very long peduncles (flower-stalks). Divisions of the calyx *linear, much longer than the petals.* Petals entire, slightly obcordate, the throat is without a crown (the claws are not crowned with the scaly appendages common in this genus), and with tapering claws. Capsule ovate, sessile, 1-celled, with prominent ribs, hairy, like all the other parts of the plant.

Cornfields and rubbish. Annual; July–September.

L. Viscaria, Lin. *Red German Catchfly.*—E.B. 788. L.B.S. 161.

A. 3. C. 6. Lat. 52–57°. Alt. 0–300 yds. Tem. 47–46°.

Root perennial, woody, with rosettes of radical, oblong leaves. Stem erect, simple, fistular, smooth, viscid at the top and junctions, leafy. Leaves of the stem linear-lanceolate, thick. Flowers in paniculate tufts, on short peduncles. Calyx glabrous, with short, triangular teeth, ultimately umbilicate at the base. Petals

with an entire or slightly notched obovate limb, with 2 long, truncate scales, and auriculate claw. Capsule globular or ovate, about as long as the carpophore. Seeds finely tuberculate, reniform, flat on both sides.

Dry rocks. ? Naturalized. Perennial; June.—It grows in dry mountainous woods in the centre of France.

L. alpina, Lin. *Red Alpine Campion.*—E.B. 2254. L.B.S. 160.

A. 2. C. 2. Lat. 56–57°. Alt. 700–1000 yds. Tem. 40–37°.

Stems about 6 inches high, not viscid. Leaves not fringed at the base; the upper linear; the lower oblong, and tapering into the petiole. Flowers on short pedicels, in a trichotomous (3-forked) corymbose cluster. Calyx campanulate, not umbilicate at the base, with roundish teeth. Petals wedge-shaped, flat, and cleft, with 2 truncate scales and a non-auriculate claw. Capsule stalked. Seeds small, black, reniform, convex on both sides, and finely tubercled.

Near the summits of the Clova Mountains, *Mr. G. Don.* Perennial; June, July.

L. Flos-cuculi, Lin. *Cuckoo-flower.*—E.B. 573. L.B.S. 162.

A. 18. C. 82. Lat. 50–61°. Alt. 0–650 yds. Tem. 51–40°.

Root tufted. Stems erect or ascending (slightly reclining at the base), rigid, with tubercles and hairs, ridged, furrowed, and leafy. Root- and lower leaves oblong, attenuated below; upper lanceolate-linear, glabrous. Flowers roseate. Calyx coloured, with prominent ribs and triangular teeth. Petals deeply divided into four linear, unequal lobes; the two external ones being the narrowest, with scales above the claw. Capsule ovate, sessile, 1-celled.

In moist meadows. May–June.—This is the real Cuckoo-flower; the cuckoo is in full song when this plant is in flower.

CUCUBALUS, *Gært.*—A perennial, pubescent, *almost climbing* plant, with ovate, acuminate, petiolate leaves. Calyx campanulate, deeply 5-cleft, without a calycule. Petals 5, with long claws and a crown. Stamens 10. Styles 3. Fruit baccate, not opening.

C. bacciferus, L.—*Berry-bearing Cucubalus.*—E.B. 1577.

Root creeping, producing very much branched, brittle stems. Leaves ovate, apiculate, soft, petiolate. Flowers drooping, on short pedicels, in forked clusters. Calyx inflated, 5-cleft. Petals deeply divided, with two acute lobes, and with a lateral tooth at

their base. Berry globular, red, then black, on a short stalk. Seeds large, black, shining.

Isle of Dogs, near London. Perennial; July–September.

SUB-ORDER II. ALSINEÆ.—Sepals 4–5, free or slightly united at the base. Petals 4–5, equal in number to the sepals. Stamens as many as the petals or twice as many. Capsule one- rarely five-celled, opening by valves or by teeth; which are as many or twice as many as the styles. Embryo curved or annular, surrounding the perisperm (*albumen*).

Tribe I. *SABULINEÆ.—Leaves without stipules.* Capsular valves entire, and as many as the styles.

Tribe II. *STELLARINEÆ.—Leaves without stipules.* Valves entire and as many as the styles, or cleft or bidentate (2-toothed) and equal in number to that of the styles.

Tribe III. *SPERGULEÆ.—Leaves stipulate.* Valves as many as the styles.

Tribe I. *SABULINEÆ.*—Capsular valves entire, and as many as the styles.

Sub-Tribe 1. *SAGINEÆ.*—Sepals, petals, and styles of an equal number and alternate; valves opposite to the sepals.

Sub-Tribe 2. *EUALSINEÆ.*—Calyx 4–5-parted; styles 2–3; valves alternate, etc. (See *infra.*)

SYNOPSIS OF THE GENERA.

SAGINA.—Leaves setaceous, filiform, or linear. Sepals opposite to the valves of the capsule.

BUFFONIA.—Capsule 2-valved. Seeds 2, basilar, erect.

ALSINE.—Sepals and petals 5 respectively, rarely 4. Seeds numerous.

HONCKENYA.—Whole plant fleshy. Leaves dilated, ovate. Sepals 5. Petals 5. Stamens 10.

SAGINA, *Lin.*—Annual or perennial, herbaceous plants, with linear or subulate leaves and white flowers. Sepals 4–5 (calyx 4–5-parted). Petals 4–5, entire, sometimes none by abortion. Stamens 4–5–10. Styles 4–5. Capsule opening *by* 4–5 *valves, which are opposite to the sepals.*

† *Sepals, petals, stamens, styles, and valves, 4 respectively (Flowers tetramerous).*

S. procumbens, L. *Procumbent Pearlwort.*—E.B. 880. L.B.S. 167.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1250 yds. Tem. 52–35°.

Stems tufted (matted), *prostrate and rooting,* with rosettes of

barren leaves in their axils. Leaves glabrous, subulate or awned. Peduncles *hooked* at their summit after flowering, then erect, scarcely *longer* than the internodes (portions of the stem between the joints). Sepals ovate-obtuse, spreading after flowering. Petals about half as long as the sepals, sometimes absent. Capsule ovate, obtuse, longer than the calyx. Seeds small, reniform, furrowed on one side.

At the foot of walls and in moist places. Perennial; May–October.

S. maritima, Don. *Sea Pearlwort.*—E.B. 2195. L.B.S. 168.

A. 14. C. 40. Lat. 50–61°. Alt. 0– ? Tem. 52–46°.

Stems several, glabrous, spreading or erect, bearing a rosette of barren leaves in their axils. Leaves plano-convex (rounded on one side and flat on the other), linear-lanceolate, scarcely apiculate (very short point), never awned, glabrous, very short. Peduncles long, straight, smooth, ascending. Sepals obtuse, not mucronate. Petals lanceolate, nearly as long as the calyx, rarely absent. Capsule erect, subsessile.

Seashore. Annual; May–September.

Grenier, 'Flore de France,' describes a variety, var. *β. elongata,* which has long and almost solitary stems. Mr. Babington states that the petals are absent, and Fries that his plant is produced on the Norwegian mountains.

S. apetala, Lin. *Apetalous* or *Erect Pearlwort.*—E.B. 881. L.B.S. 169.

A. 15. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Stems *spreading or erect* (elongated, forked, with ascending branches), never rooting, glabrous or downy, branching from the root. Leaves *subulate or awned,* ciliate at the base, glabrous or pubescent like the stem. Peduncles about as long as the internodes (see *S. maritima*), *straight* or slightly *curved* at the summit, often invested with glandular hairs. Sepals oblong, spreading and cruciate when ripe, the two outer are slightly mucronate. Petals very small or absent. Capsule longer than the calyx.

At the base of walls, generally in dry places. Annual; May–September.

† † *Sepals, petals, styles, and valves,* 5 *respectively (Flowers pentamerous).*

S. ciliata, Fr. Stems spreading. Leaves linear, awned, furrowed, subulate-awned, rarely ciliate. Peduncles as in *S. apetala* (reflexed after flowering and ultimately erect). Sepals *adpressed*

to the ripe capsule, mucronate. Capsule scarcely longer than the calyx.

This is said to grow in cultivated places. Annual; June.

We have seen the following diagnostics of these forms or species, but we cannot vouch for their accuracy:—"*Sagina ciliata, S. depressa,* and *S. apetala* appear to differ but slightly. The first has ciliated pedicels, and the petals are longer than the sepals. The second is procumbent and smaller. The third has ciliated sepals, and the petals are scarcely longer than the sepals."

S. saxatilis, Wimm.—*Spergula saginoides,* Sm. *Rock Pearlwort.*—E.B. 2105. L.B.S. 170.

A. 3. C. 6–8. Lat. 56–59°. Alt. 650–850 yds. Tem. 40–38°.

Stems tufted, decumbent below, erect above; barren shoots prostrate, leafy. Leaves linear, pointed, smooth, fleshy. Flowers solitary, on long smooth peduncles (slightly leafy stalks), which are reflexed after flowering, erect in fruit. Sepals blunt, smooth. Petals obovate, scarcely so long as the sepals. Fruit recurved at the apex, about as long as the calyx, sometimes twice as long. Seeds roundish, brown, smooth, without a border.

Highland mountains. Perennial; June, July.

This species is distinguishable from *S. procumbens* chiefly by the more fleshy tapering sepals, and by the valves of the capsules being more narrowed upwards.

Highland mountains. Perennial; July.

S. subulata, Wimm. *Subulate* or *Awl-leaved Pearlwort* or *Spurrey.*—E.B. 1082. L.B.S. 170*.

A. 15. C. 40. Lat. 50–61°. Alt. 0–800 yds. Tem. 51–40°.

Stems solitary, longer than the leaves, procumbent. Leaves linear-acuminate, *fringed with glandular hairs* and with *very long awns.* Peduncles erect, very long, with glandular hairs at the summit. Sepals hairy and glandular, obtuse. Petals *as long as the calyx.* Capsule 5-valved, longer than the sepals.

Gravelly and sandy places. Perennial; June–August.

S. nodosa, Mey.—*Spergula nodosa,* Lin. *Knotty* or *Knotted Spurrey.*—E.B. 694. L.B.S. 171.

A. 18. C. 75. Lat. 50–60°. Alt. 0–500 yds. Tem. 52–42°.

Stems numerous, spreading, erect-spreading (primary stem abbreviated, not flowering, *Babington*), simple or forked, 3–6 inches long. Leaves linear, filiform, glabrous, blunt or mucronulate,

bearing in their axils tufts of shorter leaves. Peduncles erect, about as long as the internodes. Sepals ovate-obtuse. Petals three times as long as the sepals. Stamens 10. Styles 5. Seeds scarcely grooved on the back, depressed on the sides. Smith says, "An *Arenaria* in habit and everything else but the 5 styles and 5 valves of the capsule, which last is seldom perfected."

In moist, sandy or turfy ground. Perennial; July, August.

Sub-Tribe 2.—*EUALSINEÆ.*—Calyx 4–5-parted; styles 2–3; valves alternate with the sepals or opposite to the inner ones when the sepals are more numerous than the valves.

Buffonia, *Lin.*—Calyx 4-parted. Petals 4, entire or 2-toothed. Stamens 4, opposite to the sepals, or 8, and then opposite and alternate, inserted on a disc which surrounds the ovary (perigynous disc). Styles 2, opposite to the 2 valves. Seeds 2, erect, basilar.

B. tenuifolia, Lin.—E.B. 1313. L.B.S. excluded species, page 16.

Roots slender, fibrous. Stem alternately branched, spreading. Leaves awl-shaped (subulate). Flowers on rough pedicels, in a thyrse (a panicle tapering at both ends). Sepals lanceolate, acuminate (an extended point), with three confluent nerves. Petals much shorter than the calyx. Filaments and styles very short. Seeds minute, scarcely tubercular.

Found near Boston by Plukenet, and on Hounslow Heath by Mr. Doody. Comp. Ray's Synopsis by Dillenius. Not found since. Annual; June.

Alsine, *Wahl.*—Annual or perennial plants, with linear, subulate, or setaceous leaves; these are often axillary and tufted. Flowers white. Sepals 5, rarely 4. Petals 5, rarely 4, or none by abortion. Stamens 10, rarely fewer. Styles 3, opposite to the external sepals (sometimes 2–4–5). Valves as many as stigmas (styles), opposite to the inner sepals (alternate when the sepals exceed in number the valves). Seeds numerous, reniform.

A. tenuifolia, Crantz.—*Arenaria tenuifolia,* Lin. and Lond. Catalogue.—E.B. 219. L.B.S. 179.

A. 6. C. 15. Lat. 50–53°. Alt. 0–100 yds. Tem. 51–48°.

Roots annual. Stems usually several, slender, rigid, erect or diffuse, forked and leafy. Leaves linear, subulate, usually with-

out fascicles of leaves in their axils. Flowers in erect panicles, on filiform, erect pedicels, which surpass the bracts. Sepals lanceolate, subulate, with scarious margins. Petals *much shorter than the sepals.* Capsule conical, cylindrical, triangular at the apex, longer than the sepals. Seeds minute, with a dorsal furrow, finely shagreened.

Chalky and sandy fields. Annual; June–September. Near Streatly, Berks.

A. verna, Jacq. *Vernal Sandwort.*—E.B. 512. L.B.S. 180.

A. 12. C. 25. Lat. 50–58°. Alt. 0–850 yds. Tem. 52–38°.

Root perennial, slightly woody, producing tufts of leaves and barren shoots. Stems erect or ascending, rigid, wiry, glabrous below, pubescent above, forked, leafy. Leaves of the barren shoots linear, subulate, more or less curved; leaves of the stem (bracts) very short, triangular, with scarious margins, 4–5 times shorter than the pedicels. Pedicels erect, much longer than the calyx, pubescent-glandular. Calyx ovate. Sepals ovate, acuminate, *longer than the petals.* Claw of petals very short. Capsule longer than the sepals. Seeds brown, finely shagreened.

Mountainous pastures on limestone. Perennial; June–Sept.

A. rubella, Wahl. *Reddish Sandwort.*—E.B.S. 2638. L.B.S. 181.

A. 2. C. 2. Lat. 56–59°. Alt. 850–1300 yds. Tem. 38–34°.

Stems numerous, matted, downy, mostly one-flowered, 2–3 inches long, with 1–3 pairs of leaves. Leaves linear-subulate, blunt, 3-nerved. Sepals ovate-lanceolate, acute, 3-nerved, with a membranous margin. Petals obovate, attenuated below, *shorter than the sepals* (Babington, from whose description this account is drawn up). Styles 3–5. Valves of capsule 3-5.

Summits of the Scottish mountains, very rare. Perennial; July-September.

Smith says that the solitary flowers constitute the chief difference between this and *A. verna,* to which he at one period referred it. We have never noticed *A. verna* densely tufted, as Smith tells us this species is.

Var. media.—Root woody. Stems numerous, thickly covered with glandular hairs. Leaves tipped with a minute horny point. Seeds with a thickened rough border.

Cliff at Tenby. Slate at Ilfracombe. Limestone, Plymouth and Torquay. Mr. F. J. A. Hort in Phytol., Nov. 1848.

A. stricta, Wahl. *A. uliginosa,* Schl.—E.B.S. 2890. L.B.S. 181*.

A. 1. C. 1. Lat. 54°. Alt.? Tem.?

Stems prostrate, matted, leafy below, naked above, bearing 1–3 flowers on very long pedicels. Leaves without nerves, filiform, obscurely angled. Sepals ovate-lanceolate, rather acute, without nerves when the plant is fresh (recent), 3-nerved when dry. Petals equal to the sepals, ovate-oblong. Capsule ovate-roundish, scarcely exceeding the calyx. Seeds rugose, obliquely reniform. (Similar to a *Spergula,* Kitel.)

Teesdale Moors, Yorkshire. Very rare. Perennial; June.

A. fastigiata, Sm.?—*A. fasciculata,* Jacq.—*A. Jacquini,* Koch. *Level-topped Sandwort.*—E.B. 1744. L.B.S. excluded species, p. 16.

Stems solitary or numerous, 4–5 inches high, branched, leafy, round, nearly smooth, often purplish (Sm.). Leaves slender, subulate, setaceous, erect, 3-nerved, sheathing at the base. Bracts linear-subulate, *equalling or surpassing the pedicels.* Flowers *in level-topped, crowded panicles* (Sm.) (the cymes approximate). Sepals unequal (nearly equal, *Smith*), lanceolate-subulate, finally indurated at the base (whitish, with one or two green ribs (striæ). Petals much shorter than the sepals. Capsule cylindrical-conical, *shorter than the calyx.* Seeds tubercular or toothed.

Scottish mountains. Annual; June.

Smith says, "The true *A. fasciculata* is very different, especially in the long unequal leaves of the calyx, whose lateral ribs are not dilated."

A. Cherleri, Fenzl in Endlicher's Genera, p. 965.—*Cherleria sedoides,* Lin.—E.B. 1212. L.B.S. 198.

A. 4. C. 8. Lat. 56–61°. Alt. 850–1300 yds. Tem. 38–34°.

Roots densely crowded, bearing close moss-like tufts of leafy stems (Sm.) Stems numerous, short and erect or long and trailing. Leaves rather fleshy, pale green, *strongly keeled,* minutely *fringed or toothed at the edges, contiguous.* Flowers *polygamous* or *diœcious.* Petals absent, when present equal to the calyx and greenish. Stamens 10, glandular. Styles 3. Capsule ovate, 1-celled, 3-valved. Seeds angular.

Scottish mountains, in moist spots. Perennial; July.

Smith says, "closely allied to *Arenaria,* but distinguished by

the situation of its nectaries and the want of petals." "Seguier," he adds, "describes five undivided greenish petals, alternate with the calyx, which nobody else has seen."

HONCKENYA (*Honkeneja*, Ehrh.).—Smooth, succulent, procumbent, perennial plants, with much-branched, angular, leafy stems. Flowers perfect and dicœcious. Sepals 5, one-nerved. Petals 5, entire, more developed in the male flowers, with *a disc and nectariferous glands.* Stamens 10, without pollen in the female flowers. Ovary barren in the male flowers. Styles 3. Capsule fleshy, globular or roundish, with as many valves as styles. Seeds few, large, pyriform, beaked, dotted, furrowed on one side.

H. peploides, Ehrh. *Sea Chickweed.*—E.B. 189. L.B.S. 173. A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–46°.

Stem spreading, many times forked. Leaves ovate, acute, fleshy, glabrous, one-nerved. Pedicels axillary, about as long as the calyx. Sepals ovate, obtuse, one-nerved, shorter than the petals. Capsule rugose, large, globular, one-third part longer than the calyx. The root creeps very extensively, and the stems are often more than half-buried in the sand. (Sm.)

Sandy seacoasts. Perennial; June–September.

Tribe II. *STELLARINEÆ.*—Valves entire, twice as many as the styles, or cleft or 2-toothed and equal in number to the styles.

Sub-Tribe 1. *ARENARIEÆ.*—Styles 2–3, opposite to the petals; capsule ovate, rarely conical.

SYNOPSIS OF THE GENERA.

MŒHRINGIA.—Sepals and petals 4–5. Seeds numerous, with an appendage at the hilum.

ARENARIA.—Sepals and petals 5, the latter entire or notched. Capsule opening by teeth, which are twice as many as the styles.

STELLARIA.—Sepals and petals 5, the latter *cleft or parted.* Capsule opening by valves.

HOLOSTEUM.—Petals entire or toothed. Capsule opening by 6 teeth. Seeds rough.

Sub-Tribe 2. *CERASTIEÆ.*—Styles 5, rarely 4–3, opposite to the sepals. Capsule cylindrical or somewhat conical; teeth of the capsule twice as many as the styles.

MŒNCHIA.—Glabrous and glaucous plants. Calyx in 4–5 divisions. Capsule not longer than the calyx.

CERASTIUM.—Mostly hairy plants. Capsule cylindrical, longer than the calyx.

Sub-Tribe 3. *MALACHIEÆ.*—Petals 5-cleft. Capsule ovate, 5-angled; valves deeply toothed.

MALACHIUM AQUATICUM is the only British representative of both Genus and Sub-Tribe.

MŒHRINGIA, *Lin.*—Annual or perennial plants, with filiform, linear or lanceolate leaves. Sepals and petals 4–5 respectively. Stamens 10. Styles 2–3–4. Capsule ovate, usually 4–6-valved. Hilum of the seed furnished with a strophiole (processes or tumours about the hilum).

M. trinervia, Clair. *Plantain-leaved Chickweed.*—E.B. 1483. L.B.S. 174.

A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–46°.

Stems numerous, brittle, spreading from the collar of the root, slender, slightly hairy. Leaves ovate-lanceolate, acute, ciliate, with three to five principal nerves, *the lower ones petiolate,* the upper almost sessile. Flowers on long, spreading, horizontal or deflexed pedicels. Sepals lanceolate, acuminate, 3-nerved. Petals much shorter than the sepals. Stamens 10; filaments shorter than the sepals. Capsule shorter than the calyx. Seeds black, smooth, and shining.

Moist hedges and shady places. Annual; June, July.

ARENARIA, Lin.—Annual or perennial plants, with usually dilated leaves. Sepals and petals 5. Stamens 10. Styles 3, rarely 2–4–5. Capsule ovate, opening by teeth, which are twice as many as the styles, ultimately separating to the base by 2–3 toothed or cleft valves. Seeds without a strophiole. (See *Mœhringia.*)

A. serpyllifolia, Lin. *Thyme-leaved Sandwort.*—E.B. 923. L.B.S. 178.

A. 18. C. 81. Lat. 50–60°. Alt. 0–200 yds. Tem. 52–46°.

Stems numerous, spreading, branching, leafy, with short pubescence. Leaves *ovate, acuminate,* nerved, with short fringing hairs. Flowers in contiguous cymes. Sepals herbaceous, lanceolate, acuminate, mucronate, 3–1-nerved; the central nerve ciliated, scarious at the margin. Petals scarcely so long as the calyx.

In dry sandy places, waysides, and walls. Annual; May–August.

A. ciliata, Lin. *Fringed Sandwort*—E.B. 1745. L.B.S. 176. Irish only.

Root branched at the crown. Stems numerous, round, procumbent, downy, leafy, 3–5 inches long. Leaves spathulate, obtuse, recurved, single-ribbed, *tapering and fringed at the base*, fleshy. Flowers terminal, conspicuous, on long, mostly solitary stalks. Sepals ovate, acute, concave, 2–3-ribbed, keeled, with a membranous margin. Petals white, spreading, longer than the sepals. Capsule ovate, 6-valved (Smith). This eminent authority states that the stems form "dense bright green tufts."

Limestone cliffs, Ben Bulben, Sligo. Perennial; August, September.

A. norvegica, Gunn. *Norwegian Sandwort.*—E.B. 2852. L.B.S. 177.

A. 1. C. 1. Lat. 60–61°. Alt. 0–100 yds. Tem. 46–45°.

Stems procumbent, much branched, nearly smooth (Babington). Leaves spathulate, obovate, fleshy, *not ciliated.* Sepals ovate, acute, *obscurely ribbed.* Petals ovate.—Said to be distinguished from *A. ciliata* by its obscurely ribbed calyx and by its leaves, which are not ciliated, and less tapering at the base than in *A. ciliata.*

On a hill in Unst, Shetland. Perennial; July, August.

STELLARIA, *Lin.*—Herbaceous, annual or perennial plants, with weak, straggling stems, entire pointed leaves, and white flowers. Sepals 5, lanceolate. Petals 5, cleft or parted, sometimes none. Stamens 10. Styles 3. Capsule opening to the middle by six valves (twice as many as the styles). Seeds with a strophiole. (See *Mœhringia.*)

S. cerastoides, Lin. *Alpine Stitchwort.*—E.B. 911. L.B.S. 190.

A. 2. C. 4. Lat. 56–58°. Alt. 900–1300 yds. Tem. 36–34°.

Root creeping. Stems spreading, 3–4 inches long, branching, leafy, with a hairy line. Leaves elliptical, pointed, smooth, recurved. Peduncles pubescent. Sepals with a hairy keel (Sm.). Petals twice as long as the sepals, cleft. Styles 3, rarely 4–5. Capsule twice as long as the calyx, cylindrical. Seeds rough.

Highland mountains. Per.; July, August.

Var. *β. nivale.* Leaves hairy.—*Cerastium nivale,* Don.

S. nemorum, Lin. *Wood Stitchwort.*—E.B. 92. L.B.S. 184.

A. 12. C. 30. Lat. 51–58°. Alt. 0–150 yds. Tem. 49–46°.

Root perennial. Stems spreading at the base, then erect, weak, soft and downy, forked. Lower leaves cordate, stalked;

upper ones ovate-elliptical, sessile (the leaves of the barren shoots are cordate and petiolate). Pedicels very long. Sepals lanceolate, obscurely nerved. Petals twice as long as the sepals, cleft beyond the middle, with divergent lobes. Capsule cylindrical, longer than the calyx. Seeds tubercular.

In moist woods. Yorkshire and north of England. Per.; May, June.

S. holostea, Lin. *Stitchwort.*—E.B. 511. L.B.S. 186.

A. 18. C. 80. Lat. 50–60°. Alt. 0–650 yds. Tem. 51–41°.

Root perennial, with barren, rooting shoots. Stems sharply four-angled, glabrous or slightly rough on the angles, leafy. Leaves lanceolate-linear, with long tapering points, rough at the margin, leathery. Flowers in a terminal cyme. Bracts *herbaceous,* with ciliate margins. Sepals ovate, acute, glabrous. Petals cleft, with slightly divergent limbs, twice as long as the sepals.

Grassy places in hedges and woods. Per.; May, June.

Var. *β. laciniata.* Petals scarcely as long as the calyx, deeply divided, almost to the base, in three segments.

Binstead Copse, Isle of Wight, *Dr. Bromfield,* in Phytologist, Nov. 1848.

S. glauca, With. *Glaucous Marsh Stitchwort.*—E.B. 825. L.B.S. 187.

A. 12. C. 40. Lat. 50–56°. Alt. 0–100 yds. Tem. 51–47°.

Stems reclining and rooting at the base, then erect, slender, *glaucous,* angular, leafy. Leaves *nearly linear,* pointed, quite glabrous. Flowers terminal, in an elongate, few-flowered cyme. Pedicels very long, spreading, erect. Bracts entire and scarious at the margin. Sepals ovate, faintly three-nerved. Petals about twice as long as the sepals, two-parted, with oblong divisions, only slightly divergent. Capsule longer than the calyx.

In water and watery places. Not common. Per.; June–August.

We are indebted to the famous Dr. Withering for this addition to the British Flora.

S. graminea, Lin. *Lesser Stitchwort.*—E.B. 803. L.B.S. 188.

A. 18. C. 82. Lat. 50–61°. Alt. 0–450 yds. Tem. 52–42°.

Root perennial, bearing barren shoots. Stems angular, smooth, branching and leafy. Leaves sessile, *linear-lanceolate,* slightly ciliate at the base. Bracts *scarious,* except their midrib, which

is herbaceous, *ciliate*. Sepals lanceolate, acute. Petals deeply parted, rather longer than the sepals. Anthers deep orange.

Grassy places. Per.; May–September.

S. scapigera.—E.B. 1269. L.B.S. 15. This species is ignored by the compilers of the London Catalogue. It is stated by Mr. G. Don that it grew by the sides of rivulets to the north of Dunkeld and about Loch Nevis, Scotland.

S. uliginosa, Murr.—*S. aquatica,* Pall. *Bog Stitchwort.*—E.B. 1074. L.B.S. 189.

A. 18. Lat. 50–61°. Alt. 0–1100 yds. Tem. 52–36°.

Root annual. Stems prostrate at the base, ascending, diffuse, weak, glabrous. Leaves glaucous, oblong-lanceolate, slightly ciliate at the base. Flowers in lateral (axillary) cymes. Bracts *scarious.* Sepals lanceolate, acute, with white scarious edges. Petals deeply divided, with spreading lobes, shorter than the sepals. Capsule ovate, equal to the calyx.

In ditches and watery places. Annual; June–August.

HOLOSTEUM, *Lin.*—Annual, herbaceous, erect or prostrate plants, with umbellate or panicled flowers. Sepals 5, ovate, concave. Petals 5, entire or toothed. Stamens 3–5, rarely 10, with a dorsal nectariferous pore. Styles 3. Capsule nearly cylindrical, opening first by 6 teeth, finally separating into 6 valves. Seeds rough, peltate (convex-concave), stalked.

H. umbellatum, Lin. *Umbelliferous Chickweed.*—E.B. 27. L.B.S. 173.

A. 1. C. 2. Lat. 52–53°. Alt. 0–50 yds. Tem. 49–48°.

Root small, fibrous. Stems solitary or several, simple (branched from the base), straight, more or less puberulent and glandulous, with two pairs of leaves below, naked above. Leaves oblong, tapering below, glaucous and somewhat succulent. Flowers umbellate, on unequal pedicels, with scarious bracts. Sepals lanceolate, scarious at the margin, only half the length of the petals. Petals variously jagged at each side, not cleft as in *Cerastium* (Sm). Capsule longer than the calyx. Seeds reddish.

On roofs and walls about Norwich. Annual; April.

Sub-Tribe 2. *CERASTIEÆ.*—Styles 5, rarely 4–3, opposite to the sepals. Capsule cylindrical or somewhat conical; teeth of the capsule twice as many as the styles.

MŒNCHIA, *Ehr.*—Minute annual plants. Stems numerous

or solitary, simple or branched, 2–3 inches high, slender, wiry and leafy. Sepals 4, rarely 5, lanceolate and scarious at the margin. Petals 4, elliptical, entire or nearly so. Capsule shorter than the calyx, cylindrical, straight, opening by 8, rarely by 10, teeth.

M. erecta, Sm. *Upright Mœnchia.*—E.B. 609. L.B.S. 166.

A. 12. C. 40. Lat. 50–55°. Alt. 0–400 yds. Tem. 52–45°.

Stems rigid, simple or forked, glabrous. Leaves lanceolate-linear, glabrous and glaucous. Flowers terminal, solitary or few. Bracts herbaceous or slightly scarious. Sepals pointed, with broad scarious margins. Petals entire or slightly emarginate, shorter than the sepals.

On bare sandy places. Annual; April and May.

This genus differs from *Cerastium* in the number of floral organs and in the smooth glaucous herbage.

CERASTIUM, *Lin.*—Annual or perennial plants, smooth, cottony or hairy. Leaves ovate or elliptical, rarely lanceolate, combined at the base. Sepals 5, rarely 4. Petals equal in number to the sepals, cleft or notched, rarely entire. Stamens 10–8–6, sometimes 5–4. Styles 5, rarely 4–3. Capsule cylindrical or cylindrical-conical, usually longer than the calyx, straight or curved (bent), opening by twice as many teeth as there are styles in the species. Seeds tubercular, globular, compressed.

C. triviale, Link. *Narrow-leaved Mouse-ear Chickweed.*—E.B. 790. L.B.S. 193.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1200 yds. Tem. 52–35°.

Roots annual or biennial? Stems usually numerous, reclining at the base and sometimes rooting, pubescent, 4–10 inches. Leaves ovate or oblong, hairy and ciliate. Bracts cordate and pointed, sometimes scarious at the edges. Pedicels *much longer than the bracts.* Sepals *blunt,* scarious at the margin. Petals about as long as the sepals.

Very common in grassy places, by roadsides and walls. Biennial or perennial? April–October.

C. semidecandrum, Lin. *Little Mouse-ear Chickweed.*—E.B. 1630. L.B.S. 194, etc.

A. 18. C. 82. Lat. 50–61°. Alt. 0–100 yds. Tem. 50–46°.

Stem solitary, simple or branched, slender, erect or spreading, sometimes viscid. Leaves ovate-oblong. Bracts membranous

above, *denticulate* (Grenier). Pedicels much longer than the calyx, *refracted after flowering, then erect.* Sepals lanceolate, with a broad, white, shining margin, toothed, erose at the apex. Petals rather notched than cleft. Stamens 5, rarely 10. Seeds finely tubercular.

On walls, sandy, open, and such-like places. Annual or biennial; April, May.

Smith says, "Indubitably a most distinct species, displaying itself on every wall in the early spring, and withering away before the *viscosum* (*triviale* of recent writers) begins to put forth its far less conspicuous blossoms" (Eng. Fl. ii. 332). In Coss. and Germ. 'Flore des Environs de Paris' this plant is described under the name *pellucidum*, Chaub., which is, according to them, a variety of their *C. varians*. (See p. 38 and plate v.) There are forms very like their figure of *C. varians*, var. *obscurum*.

C. glomeratum, Thuil.—*C. vulgatum*, Sm., E.B. 789.—*C. viscosum*, Fries. L.B.S. 192.

A. 18. C. 82. Lat. 50–61°. Alt. 0–350 yds. Tem. 52–43°.

Stems annual, solitary or numerous, 4–8 inches high, erect, spreading or ascending, leafy and clothed with soft hairs. Leaves ovate or obovate or oblong, hairy. Bracts herbaceous, not scarious, *about as long as the pedicels.* Sepals pointed, scarcely scarious at the margin, with long hairs. Petals usually shorter than the calyx. Filaments glabrous at the base.

On barren sandy places. Annual; April–June.

The colour of this plant is always a pale or light green.

C. alpinum, Lin. *Alpine Mouse-ear Chickweed.*—E.B. 472. L.B.S. 196.

A. 5. C. 12. Lat. 53–59°. Alt. 850–1300 yds.? Tem. 38–34°.

Stem hairy, ascending or erect, simple, leafy, 4–6 inches high, with many barren, leafy shoots. Leaves obovate, ovate or lanceolate, attenuated below, woolly or hairy. Lower bracts *herbaceous*, the upper with *narrow scarious margins.* Sepals ovate-lanceolate, with a scarious margin. Petals cleft, erect *during flowering.* Capsule longer than the calyx, with the curvature barely exserted.

Alpine parts of Britain. Per.; June–August.

Var. *α. hirsutum.* Hairs grey, not white.—*C. alpinum*, DC.

Var. *β. lanatum.* Plant covered with long flaxen hairs. Reich. 4967.

Var. γ. *glabratum.* Stem and leaves glabrous. Reich. 4977.

We are not acquainted with these forms, but some of our readers may be.

This plant varies much in hairiness, pubescence, and in the size and shape of the leaves. It is sometimes of a deep greenish colour; and its mostly single large flowers and shorter capsules are the only prominent characters which distinguish it from *C. triviale*, which often grows beside it on the less elevated parts of the Scottish mountains.

C. latifolium, Lin. *Broad-leaved Mouse-ear Chickweed.*—E.B. 473. L.B.S. 197.

A. 4. C. 8. Lat. 53–59°. Alt. 0–1250 yds. Tem. 37–34°.

Stems very short and tufted; whole plant of a yellowish hue (Smith). Leaves *ovate* or *roundish*, covered with simple glandular hairs; bracts herbaceous. Sepals blunt, with scarious margins. Petals large, obcordate, deeply cleft. Capsule large, turgid, longer than the calyx, with a very slight curvature. Seeds large, rugose (Babington).

Alpine places in Wales and Scotland; rare? Per.; June–Aug.

Var. β. *glaciale.* Stems very short; leaves roundish. Unst, Shetland.

Var. γ. *pedunculatum.* Stems short, filiform; leaves narrow, lanceolate; peduncles very long. Is this variety found in Britain? See Reich. 4974.

C. arvense. *Field Chickweed.*—E.B. 93. L.B.S. 195.

A. 12. C. 30. Lat. 50–58°. Alt. 0–100 yds. Tem. 50–46°.

Stems numerous, reclining and rooting below, ascending above, pubescent, sometimes glandular, simple or branching, leafy. Leaves linear-lanceolate or linear, recurved, rigid, often with axillary fascicles of leaves. Bracts herbaceous, scarious at the apex. Petals two to three times longer than the calyx, obcordate, bifid (cleft). Curvature of the capsule scarcely exserted.

Dry chalky places. Per.; June–August.

The flowers of this species are pure white, handsome, nearly as large as the flowers of *Stellaria holostea*, and very similar to them, but the petals are not parted to the base, as in the Stitchworts.

C. tetrandrum, Curt. *Four-cleft Mouse-ear Chickweed.*—E.B. 166. L.B.S. 194*.

Range the same as *C. semidecandrum.* See 'Cybele,' vol. i. p. 288.

Stems spreading or prostrate, branching, leafy. Leaves elliptical, oblong, the upper ones ovate, short. Sepals 4, pointed, two of them narrow, with a broad membranous margin. Petals 4, cleft halfway to the base. Capsule *reflexed*, with eight linear teeth.

Seacoasts in Scotland and the north of England. Is it found at Yarmouth?

Sub-Tribe 3. *MALACHIEÆ.*—Petals 5-cleft. Capsule ovate, 5-angled; valves deeply toothed.

Malachium, *Fr.*—Aquatic plants, with weak, straggling stems and rather large white flowers. Sepals 5, ovate, acute, hairy. Petals 5, deeply parted. Stamens 10. Styles 5, alternate with the sepals. Capsules ovate, opening with 5 bidentate (2-toothed) valves which are opposite to the sepals.

M. aquaticum, Fries. *Water Mouse-ear Chickweed.*—E.B. 538. L.B.S. 191.

A. 10. C. 40. Lat. 50–55°. Alt. 0–100 yds. Tem. 51–47°.

Stems prostrate or somewhat climbing [this plant has the habit of *Cucubalus*], branching and brittle, bright green, hairy, viscid. Leaves cordate-ovate, acuminate, undulate, petiolate; the upper ones sessile. Pedicels spreading horizontally, bent downwards after flowering. Sepals blunt. Petals much longer than the sepals, parted to the base and with diverging lobes. Capsule slightly longer than the calyx.

In watery places and about the margins of ditches. Per.; July.

Tribe III. *SPERGULEÆ.*—Leaves stipulate. Valves equal in number to the styles.

Spergula, *Lin.*—Annual weeds, with linear, fascicled leaves (apparently whorled). Sepals 5. Petals 5, obtuse. Stamens 5–10. Capsule 5-valved, valves opposite to the sepals, multiovular (with many ovules) on a central column. Styles 5. Seeds roundish, winged with a turgid funicle (medium of attachment to the placenta).

S. arvensis, Lin. *Common Spurry.*—E.B. 1535. L.B.S. 172.

A. 18. C. 82. Lat. 50–61°. Alt. 0–450 yds. Tem. 52–42°.

Stems spreading or erect, knotted (turgid at the junctions), simple or branched at the apex. Leaves fascicled (whorled), spreading, fleshy, filiform, with a groove on the under side. Sti-

pules broad, short. Petals obtuse. Capsule longer than the sepals. Seeds roundish, finely shagreened, with a narrow border and smooth wing.

Fields and rubbish. Annual; July–September.

S. pentandra, Lin.—E.B. 1536? Stems solitary or few, erect or ascending, glabrous or almost glabrous. Leaves *without a groove beneath;* stipules entire, connected in pairs. Pedicels spreading or refracted after flowering. Sepals herbaceous, with a narrow scarious margin. Petals *lanceolate, acute,* shorter than the calyx. Stamens 5. Seeds lenticular, *compressed, surrounded with a broad, scarious, undulate or plaited wing.*

Sandy places. Annual; June.

Grenier says, "It is distinguished from *S. arvensis* by its glaucous hue, fewer and slenderer stems, shorter leaves and earlier flowering."—This appears from Smith's 'English Flora,' vol. ii. p. 337, to be his variety β, figured in 'English Botany,' vol. xxii. fig. 1536. His distinctive character is, "seeds compressed, smooth, with a narrow, whitish, membranous border." Another variety is noticed by the same author, viz. var. γ, and the character given is, "seeds quite flat, pale, with a dark edge, and a white membranous, striated border or wing equal to the seed itself in breadth." The former, β, was found "about the Botanical Garden, Liverpool," and the latter, γ, "in sandy ground in Ireland." It would be satisfactory to ascertain if the seeds of our common field plant are constant in their colour, form, and width of margin.

PARONYCHIACEÆ,* *Aug. St. Hil.* The Knot-Grass Family.

Annual or biennial, herbaceous or half-shrubby plants, with opposite or scattered leaves, and usually scarious stipules. Flowers small, in cymes or clusters, terminal or axillary. Sepals 5, rarely 4, either free or slightly united at the base. Petals often rudimentary or absent, as many as the sepals. Stamens 5, rarely 4, inserted on a more or less developed disc. Ovary free, consisting of 2–3 carpels, one-celled by abortion, rarely three-celled, either indehiscent or opening by 3 valves. Styles 2–3. Seeds either numerous or solitary and pendulous, with a farinaceous, usually central, perisperm (albumen). Embryo annular, curved around the perisperm. Radicle approaching the hilum.

Sub-Order Polycarpeæ.—Fruit many-seeded.

SYNOPSIS OF THE GENERA.

Lepigonum.—Leaves *linear or subulate* or linear-subulate.
Polycarpon.—Leaves *obovate-oblong.*

Sub-Order Illecebreæ.—Fruit one-seeded.

SYNOPSIS OF THE GENERA.

Corrigiola.—Petals *oblong*, slightly longer than the sepals. Stigmas 3.
Herniaria.—Petals *filiform.* Stigmas 2.
Illecebrum.—Petals *absent* or subulate.

Sub-Order Scleranthеæ.—Calyx campanulate or urceolate by cohesion of the sepals.

Scleranthus.

Lepigonum, *Fr.*—*Spergularia,* Pers.—*Arenaria,* Lin.—Annual plants, with linear or subulate leaves and scarious stipules. Flowers red or white, in cymes. Sepals 5. Petals 5, entire. Stamens 10, or fewer by abortion. Styles 3. Capsule opening to the base by 5 valves.

L. rubrum, Wahl. *Purple Sandwort.*—E.B. 852.—*Spergularia rubra,* L.B.S. 175. 'Cybele,' 182.

A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–46°.

Stems usually numerous, spreading, ascending, branched, pu-

* In the Botanical Text-book of Asa Gray, M.D., *Alsineæ*, *Illecebreæ*, *Scleranthеæ*, and *Molluginеæ* are placed as Sub-Orders of *Sileneæ* (*Caryophyllaceæ*); and Mr. Babington says that "they might be united with the last-named Order." In accordance with these judicious views, we have ventured to make a slight alteration of the usual arrangement. The affinity of these plants with the Chickweed Family is greater than that of the Mallows with the Pinks.

bescent, glandular in their upper part. Leaves *linear-subulate*, mucronate, slightly fleshy, usually with axillary tufts of small leaves. Stipules entire, united in pairs. Flowers rosy-purple, in one-sided leafy clusters on short pedicels. Sepals *herbaceous, glandular, scarious only at the margin.* Petals about as long as the sepals. Seeds triangular-ovate (pyriform), not winged, rough.

Sandy places. Annual; June–September.

Var. *β. medium*, Fr.—This variety was printed by mistake between *Alsine rubella* and *A. stricta* (p. 93), under var. *media*. We repeat both the description and the localities, viz.—Root woody. Stems numerous, thickly covered with glandular hairs. Leaves rather more fleshy, tipped with a minute, horny point. Capsule slightly longer than the calyx. Seeds with a thickened, rough border.

Cliff at Tenby; slate at Ilfracombe; limestone, Plymouth and Torquay. Mr. F. J. A. Hort, in 'Phytologist,' November, 1848.

L. marinum, Fr. *Sea Purple Sandwort.*—E.B. 958. *Spergularia marina*, E.B.S. 174. 'Cybele,' 183.

A. 18. C. 50. Lat. 50–61°. Alt. 0– yds. Tem. 52–46°.

Stems spreading, erect. Leaves fleshy, *flat on one side?* (subcylindrical). Flowering branches erect, leafy. Sepals lanceolate, obtuse, scarious at the margin, without the dorsal nerve. Petals obovate, longer than the sepals. Capsule much larger than in *L. rubrum*. Seeds variable (Sm.).—This eminent authority considers the seaside state of *L. rubrum* a distinct species.

On muddy shores of the sea and tidal rivers. Annual; June–August.

Grenier describes two varieties, viz.—

Var. *α. Spergularia heterosperma*, Fenzl.—Stamens 5, or fewer. Two or three seeds at the base of the capsule, winged, the rest without wings.

Var. *β. S. marginata*, Fenzl.—Stamens 10. All the seeds, or nearly all of them, surrounded with a membranous wing.

Var. *α*. Some seeds with a border.

Var. *β*. Nearly all the seeds bordered!!!

POLYCARPON, *Lin.*—Annual plants, with obovate-oblong leaves, the lower ones in verticils of 4. Flowers small, in forked cymes. Sepals 5, slightly cohering at the base. Petals 5, entire or notched, shorter than the sepals. Stamens 5, or fewer by abortion. Styles

3, very short. Capsule opening to the base by 3 valves. Seeds scarcely curved.

P. tetraphyllum, Lin. *Four-leaved Allseed.*—E.B. 1031. L.B.S. 398.

A. 3. C. 4. Lat. 50–52°. Alt. 0–? yds. Tem. 52–50°.

Stems slender, forked (branches unilateral), swollen at the joints. Leaves glabrous, ovate, oblong, the lower verticillate (in whorls), the upper opposite. Stipules scarious. Flowers in forked cymes. Sepals triangular, very fleshy, cucullate, tapering and mucronate, scarious at the margin. Petals notched. Stamens 3.

Seacoast, Devon and Cornwall. Annual; June–August.

SUB-ORDER ILLECEBREÆ.—Leaves dilated, ovate or oblong.

CORRIGIOLA, *Lin.*—Annual plants, with prostrate stems, and scattered, very entire, and slightly fleshy leaves. Flowers very small, in lateral and terminal clusters, surrounded by the floral leaves. Sepals 5, *concave,* cohering at the base. Petals 5, persistent, oblong, slightly longer than the sepals. Stamens 5. Stigmas 3, very short, nearly sessile. Capsule crustaceous, ovate-trigonous (three-sided), one-seeded, indehiscent, enveloped in the persistent calyx.

C. littoralis, Lin. *Sand Strapwort.*—E.B. 668. L.B.S. 396.

A. 1. C. 2. Lat. 50–51°. Alt. 0–? yds. Tem. 52°.

Stems prostrate, slender, branched, elongate, leafy, furrowed. Leaves oblong, tapering below, glaucous. Flowers in dense, terminal clusters at the extremity of the stem or branches. Calyx more or less coloured. Sepals scarious, whitish at the margins. Petals notched, pure white.

In the south-west of England, near the coast. Annual; June–September.

HERNIARIA, *Lin.*—Annual or biennial plants, with prostrate stems and opposite or alternate leaves. Flowers small, herbaceous. Sepals 5, *slightly or scarcely concave,* cohering at the base. Petals 5, filiform, inserted on a fleshy disc (ring), which covers (?) the throat of the calyx. Stigmas 2, very short, nearly sessile. Capsule membranous, oblong, one-seeded, indehiscent, enveloped by the persistent calyx.

H. glabra, Lin. *Smooth Rupture-wort.*—E.B. 206. L.B.S. 397.

A. 4. C. 8. Lat. 50–54°. Alt. 0–100 yds. Tem. 52–48°.

Stems prostrate, much branched, round, nearly glabrous, flow-

ering from the base. Leaves *glabrous, shining,* ovate-oblong, somewhat ciliate at the apex and mucronate. Clusters of flowers almost contiguous, forming a sort of leafy spike. Sepals glabrous, green on the outside, slightly yellow internally. Petals filiform, longer than the stamens.

Sandy places, Suffolk, etc. Annual (?) or perennial; June–September. Rare.

H. ciliata, Bab. *Fringed Rupture-wort.*—E.B.S. 2857. L.B.S. 397b. It has probably been confounded with *H. glabra.*

Range?

Stems prostrate, spreading, with minute, decurved (reflexed?) hairs. Leaves obovate or roundish, tapering at the base, fringed the whole extent of their margin. Flowers in small clusters of about 4 or 5 together. Clusters solitary or 2 or 3 together in the axils of the leaves of the lateral branches. Sepals fringed.

Lizard Point, Cornwall, on gravelly soils, walls, and banks. Perennial? July–September.

This plant, whether it be a variety or a species, approaches nearer to *H. hirsuta* than to *H. glabra,* both in the shape of its leaves and in the laxer clusters and fewer flowers.

H. hirsuta, Lin. *Hairy Rupture-wort.*—E.B. 1379. L.B.S., excluded species, p. 16.—Stems as in *H. glabra,* but hairy, more elongate, with fewer flowers and fewer leaves. Leaves oblong or ovate-oblong (much longer than in *H. glabra*), pubescent, and strongly ciliated (fringed) on the margin. Calyx *hairy,* with long fringes. Clusters of flowers smaller and less numerous than in *H. glabra.*

Sandy fields; a very doubtful native of Great Britain. Annual or perennial? June–September.

ILLECEBRUM, *Lin.*—Annual or biennial plants, with prostrate, often rooting stems, and very entire opposite leaves. Flowers small, in axillary clusters. Sepals 5, slightly cohering at the base, thickened, concave, cucullate (horned) at the back, terminating in a subulate point. Petals 5, filiform, minute or absent. Stamens 5, with very short filaments. Stigmas 2, sessile, cohering below. Capsule membranous, oblong, one-seeded, enveloped by the persistent calyx, bursting along the 5 furrows.

I. verticillatum, Lin. *Whorled Knot-Grass.*—E.B. 895. L.B.S. 395.

A. 1. C. 2. Lat. 50–51°. Alt. 0– yds. Tem. 52–50°.

Stems numerous, prostrate, filiform, reddish, leafy. Leaves roundish, tapering at the base and with a minute apex, quite smooth and slightly fleshy. Flowers in axillary clusters (apparently whorled). Calyx white, glabrous, often beautifully marked with crimson spots.

Boggy places in the south-west of England. Annual or perennial? July–September.

SUB-ORDER SCLERANTHEÆ.—Leaves linear-subulate or subulate.

SCLERANTHUS, *Lin.*—Annual or perennial? plants, with spreading or ascending stems, and linear-subulate, opposite, often incurved leaves. Calyx campanulate or urceolate, contracted at the orifice by a prominent disc (ring), with a five-cleft limb and lanceolate segments. Petals 5, or fewer by abortion, filiform or absent. Stamens 5. Styles 2, filiform, free (not united at the base). Capsule membranous, oblong, one-seeded, indehiscent, enveloped in the indurated calyx.

S. annuus, Lin. *Annual Knawel.*—E.B. 351. L.B.S. 399.

A. 17. C. 80. Lat. 50–58°. Alt. 0–350 yds. Tem. 52–44°.

Stems slender, round, usually in rather dense tufts, forked, leafy, with short, dense pubescence. Leaves subulate, connate at the base and ciliated for a part of their extent. Divisions of the calyx lanceolate, with *very narrow, scarious, whitish margins,* spreading, erect or slightly divergent.

In fields by roadsides, etc. Annual; June–September.

S. perennis, Lin. *Perennial Knawel.*—E.B. 352. L.B.S. 400.

A. 2. C. 4. Lat. 51–53°. Alt. 0–? yds. Tem. 51–48°.

Stems as in *S. annuus,* but more glabrous. Leaves *linear-subulate, subulate,* but of a deeper green than the former. Divisions of the calyx *blunter, and with a scarious margin,* which is broader than in the calyx of *S. annuus.* When in fruit the divisions are erect or connivent.

Sandy fields in Suffolk and Norfolk. Annual or perennial? August–October.

This has a different aspect: it is a more leafy, darker-coloured plant than *S. annuus,* and grows in closer tufts.*

* Near the Steam-boat Pier at Wandsworth a plant of this family was picked up about three years ago; we have never observed it there since, nor has any other species of the Order been observed in that locality, rich though it be in exotic species. The specimen and the memorandum are both either lost or mislaid.

MALVACEÆ, *Juss.* The Mallow Family.

Biennial or perennial, herbaceous plants, sometimes half-shrubby at the base, with mucilaginous juice. Leaves palmate or lobed, stipulate. Flowers regular, solitary or several, axillary or terminal. Sepals 5, persistent, rarely 3–4, with a calycule (outer or secondary calyx), valvular in prefloration. Petals 5, caducous, twisted in prefloration. Stamens indefinite, with combined filaments (monadelphous); anthers free, opening by a curved slit. Styles united at the base, free above. Fruit composed of numerous distinct one-seeded carpels, circularly arranged around a common axis, rarely baccate. Seeds reniform. Perisperm none "or in small quantity." Embryo plicate, with leafy cotyledons. Radicle approaching the hilum.

SYNOPSIS OF THE GENERA.

Malva.—Calycule (outer calyx) *three-leaved, attached to the inner five-cleft calyx.*

Althæa.—Calycule *monophyllous* (of one leaf), *springing from the peduncle.*

Lavatera.—Calycule *trifid*, springing from the peduncle.

Malva, *Lin.*—Leaves palmately lobed or palmately divided. Flowers roseate or purple, and striated, solitary or fascicled (in tufts). Calycule composed of 3 *free leaflets* (bracts) growing out of the calyx. Calyx five-cleft. Fruit depressed, orbicular, composed of numerous one-seeded carpels in a whorl around a common central axis, separating when ripe.

M. moschata, Lin. *Musk Mallow.*—E.B. 754. L.B.S. 204.
A. 16. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Stems erect, round, hairy, leafy. Root-leaves roundish, cordate or truncate at the base, with crenulate lobes, stem-leaves, *deeply palmate in* 3–5 *divisions,* which are again *palmately or pinnately* divided, the ultimate segments linear, entire or incised. Flowers axillary and terminal, solitary, on filiform, bracteate pedicels, often contiguous. Calyx lax, somewhat membranous, 6–7-lobed, with a few linear bracts which spring from the peduncle, and not from the calyx.* Corolla roseate. Carpels hairy, not reticulate.

In woods and dry places. Per.; July–September.

* Probably this is only an individual rather than a specific character; but the origin of the calycine bracts (*i. e.* either from the peduncle or from the calyx) is not a satisfactory generic distinction.

The plant above described was gathered in a wood in Osterley Park, Middlesex.

On the Carnarvon side of the Conway, by the roadside, not far from Tal-y-bont, a village between Conway and Trefriew, a variety of this species was gathered, which in foliage was intermediate between *M. moschata* and *M. sylvestris*. Several of the specimens had their upper leaves only lobed and toothed, not deeply divided, as in the common forms; some had them cleft, and some had all the forms, viz. lobed, cleft, and palmate leaves on the same plant.

About Clent, near Hagley, Worcestershire, this form was very common; the stem-leaves assumed the usual form of the root-leaves. In September, or even later, this plant flowers before throwing up a long stem, and before stem-leaves of the usual form are developed. This was the most common Mallow about Clent, and it was abundant on the very hill-ridges, which are at least three hundred yards high.

M. sylvestris, Lin. *Common Mallow.*—E.B. 671. L.B.S. 205.

A. 17. C. 70. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Roots woody. Stem ascending or spreading, branched, hairy, hispid, especially at the summit. Leaves cordate at the base, with 5–7 short, broad, blunt lobes, toothed or crenulate; the upper leaves have longer and sharper lobes, all petiolate, and usually with a dark spot at the base. Flowers in *axillary tufts*. Pedicels of the fruit erect. Calyx erect after flowering, but not completely enveloping the fruit. Corolla *purple*, veined, much longer than the calyx. Carpels usually glabrous, reticulate.

Waysides and waste places. Per.; June–October.

M. rotundifolia, Lin. *Round-leaved Mallow.*—E.B. 1092. L.B.S. 206.

A. 15. C. 60. Lat. 50–58°. Alt. 0–100 yds. Tem. 52–47°.

Root and stem as in *M. sylvestris*, only this species is more prostrate and slenderer than that. All the leaves are round in their outline, deeply cordate at the base, with 5–7 very short and rounded, crenulate or toothed lobes. Flowers *in axillary tufts*. *Pedicels of the fruit drooping*. Calyx not quite enveloping the fruit. Corolla pale rose-colour, about *twice as long as the calyx*. Carpels pubescent, not reticulate.

By waysides, walls, and dry places. Biennial or perennial; June–October.

M. nicæensis, All.—Stem procumbent or ascending, round, hairy, tubercular, with spreading branches. Pedicels short, 2–4 together. Calycule (bracts) *ovate-lanceolate.* Calyx increasing slightly after flowering (Gr.). Petals twice as long as the calyx, obovate, and notched. Carpels glabrous or slightly pubescent, not toothed at the margin.

Battersea and Wandsworth, on rubbish. Annual; July–Oct.

M. borealis, Wallm. *M. pusilla,* Sm.—E.B. 241. L.B.S., excluded species, List B. p. 15.

Stems prostrate, leafy. Leaves like the same organs in *M. rotundifolia.* Bracts of the calycule *linear,* as long as the segments of the calyx. Petals *about as long as the calyx.* Fruit pubescent. Carpels reticulate-rugose.

About Hythe, Kent. Annual; July–September.

M. ambigua, Guss.—Stem round, slender, branching, ascending or procumbent, flexuous, covered with short, white, rigid, stellate hairs. Leaves smaller than they are in *M. sylvestris,* 3–5-lobed, the lobes, especially the middle one, are longer and narrower than in the former mentioned species. Flowers few, on slender, hairy pedicels; lobes of the calyx ovate-acuminate, hairy. Petals scarcely double the size of the calyx-lobes. Fruit smooth, with an elongate central column.

Wandsworth Steam-boat Pier. Annual; July–September.

M. parviflora, Lin.—Stems rigid, firm, erect or arched, branching, round, smooth (hispid above), hollow, leafy. Leaves orbicular, cordate, with broad, blunt, crenulate lobes, on stout, elongate, hispid leafstalks. Peduncles slender, unequal, spreading. Bracts of the calycule linear, pointed. Calyx-lobes broad, mucronate, much developed when in fruit, and becoming scarious and reddish. Carpels strongly wrinkled across, with prominent toothed margin.

Wandsworth Steam-boat Pier. Annual; July–August.

M. microcarpa? Desf.—Stem round, rough with tubercles and rigid stellate hairs. Leaves on hairy leafstalks, with plicate pointed lobes. Flowers often in pairs, with slender, hairy pedicels. Bracts of the calyx triangular. Calyx-lobes broad with an abrupt point, ribbed and ciliate. Petals scarcely longer than the calyx-lobes, strongly notched. Tube of the stamens hairy. Fruit small, smooth at the bottom of the calycine cup, which is but little enlarged after flowering.

Wandsworth, with the above. Annual; July–September.

ALTHÆA, *Lin.*—Annual or perennial plants, with stems, leaves, and flowers as the same organs in *Malva*. Calycule 6–9 *bracts* (leaflets), united below. Calyx 5-cleft. Fruit as in *Malva*.

A. officinalis, Lin. *Marsh Mallow.*—E.B. 147. L.B.S. 208.
A. 8. C. 15. Lat. 50–56°. Alt. 0 yds. Tem. 51–48°.

Root perennial, thick, vertical. Stems *erect*, branched, soft and hoary, leafy. Leaves mostly cordate at the base, ovate, angular, lobed and toothed or crenated, *very soft* (*tomentose-hoary*). Flowers pale rose-colour, in axillary fascicles. Bracts of the calycule linear, numerous. Petals much larger than the sepals. Carpels tomentose.

In salt marshes, common; rare in other marshy places. It used to be cultivated in gardens as a vulnerary, and may have thence got a footing near habitations. Per.; July, August.

A. hirsuta, Lin. *Hairy Mallow.*—E.B. 2674. L.B.S. 209.
Alien. See 'Cybele,' vol. i. p. 241.

Stems erect, *ascending or spreading, invested with long spreading hairs*, leafy. Root-leaves cordate, roundish, crenated, on long petioles; upper leaves palmate, with 3–5 oblong toothed lobes; *all hairy*. Flowers axillary and solitary, on pedicels (peduncles) which equal the leaves. Calyx dilated at the base, with linear-lanceolate ciliate sepals. Petals scarcely as long as the sepals. Carpels glabrous, reticulate.

Wandsworth Steam-boat Pier; Cobham Park, Kent. Annual; July–September.

LAVATERA, *Lin.*—Calycule growing from the peduncle, trifid. Stigmas *setaceous*. The other parts as in *Malva*.

L. arborea, Lin. *Tree Mallow.*—E.B. 1841. L.B.S. 210.
A. 6. Lat. 50–56°. Alt. 0 yds. Tem. 52–48°.

Stems *somewhat woody*, 3–9 feet high, much branched, leafy. Leaves large, 7-lobed, plaited, very soft, more or less tomentose, the lower rounded; the upper, as usual in this Order, more deeply lobed, and the lobes are more pointed. Peduncles unequal, shorter than the leaves. Calycule (lower calyx or bracts) larger than the calyx, and increasing when the fruit is ripening; divisions of the calyx *triangular acute*. Petals twice as long as the calyx-lobes. Carpels yellow when ripe, wrinkled; axis crowned with a conical apex.

Rocks by the seashore; rare. On ledges of the Elyange Stack, Pembrokeshire, South Wales, *teste* 'Botanical Looker-

Out among the Wild Flowers of England and Wales,' by Edwin Lees, F.L.S. In the very agreeable work above-mentioned there is a view of this singular rock, with representations of the Tree-Mallow growing on its inaccessible projections. Biennial; July–September.

L. cretica? Lin.—Stems *herbaceous*, 2–3 feet high, erect or ascending, branching, leafy. Leaves glaucous, with whitish prominent nerves; the lower ones rounded, slightly lobed, truncate at the base; the upper ones with acute triangular lobes; all crenated or toothed. Calycule slightly shorter than the calyx, not enlarging much at maturity. Calyx-lobes abruptly pointed (acuminate), scarious. Carpels smooth, wrinkled, toothed at the margin, yellowish.

Wandsworth Steam-boat Pier. Annual or biennial; July–September.

L. punctata, DC.?—Stems herbaceous, erect, 6–24 inches high. Leaves pale green, *the upper ones hastate*, all crenulate or irregularly toothed. Calycule about equal to the calyx. Calyx-lobes acuminate, erect, connivent. Petals three times as long as the lobes of the calyx. Carpels wrinkled.

With the above. Annual; July–September.

L. Olbia, Lin.—Stems slightly woody. Leaves hoary, as in most of the genus; the lower ones cordate, 3–5-lobed, the upper hastate. Petals much longer than the calyx. Carpels *hairy*, yellowish when ripe, with an elongated axis terminating in a nipple-like point.

At Wandsworth, with the preceding.

This species is shrubby, and said to be perennial, on the shores of the Mediterranean. It is herbaceous here, and probably annual; July–October.

GERANIACEÆ, *DC.* The Geranium Family.

Annual or perennial plants, with a more or less astringent juice. Stems usually forked, more or less turgid and brittle at the articulations. Leaves opposite and petioled, or alternate and nearly sessile (the lower leaves are opposite and petioled, the upper opposite or alternate, and often sessile), lobed or palmate, rarely pinnate, usually with scarious stipules. Peduncles 2-flowered, rarely one-flowered or many-flowered. Flowers per-

fect, regular or almost so, rarely irregular. Sepals 5, persistent, imbricated in prefloration. Petals 5, hypogynous (inserted under the ovary), caducous, equal or unequal, imbricated or twisted before expansion (prefloration). Stamens 10, all fertile (anther-bearing), or 5 without anthers; filaments more or less united at the base; anthers introrse. Ovary free; carpels 5, each bearing two ovules, arranged in a whorl at the base of a prolongation of the axis, with which they are connected. Styles 5, united with the prolonged axis. Stigmas 5, filiform. Fruit dry, consisting of five carpels, which are one-seeded by abortion, detached elastically from the axis, and coiled up in the dorsal nerve (style?), which remains attached to the top of the axis. Seed erect, without perisperm. Embryo plicate. Radicle approaching the hilum.

SYNOPSIS OF THE GENERA.

GERANIUM.—Leaves incised, or palmate, or lobed. Stamens 10, all fertile.
ERODIUM.—Leaves pinnate. Stamens 10, the alternate ones only fertile.

GERANIUM, *Lin.*—Annual or perennial herbaceous plants, usually hairy or pubescent, with palmately lobed or palmately parted leaves. Flowers on 2-flowered peduncles, rarely solitary, usually reflexed (refracted) after flowering. Sepals and petals 5 respectively, usually equal. Stamens 10, usually all fertile (bearing anthers), 5 opposite to the petals, shorter than the alternate ones. Carpels (coques) glabrous internally; when ripe, detached from the base of the axis and encircled by the styles, which are coiled round the carpels and attached to the summit of the central column.

Sect. I. Petals not entire at the margin (emarginate), or notched, or cleft, with a more or less bearded claw.

† *Leaves palmate, deeply parted.*

G. pratense, Lin. *Meadow Crane's-bill.* E.B. 404. L.B.S. 231.

A. 16. C. 70. Lat. 50–58°. Alt. 0–600 yds. Tem. 51–42°.

Root thick, oblique, truncate. Stem erect, 1–3 feet high, round, slightly furrowed, hairy, branched and leafy; branches erect, contiguous. Leaves divided *almost to the base* in 5–7 divisions; segments (divisions) cuneate, with linear or lanceolate lobes, and with membranous, acuminate stipules. Flowers large, on two-flowered peduncles, in a corymbose panicle; pedicels short

and thick, reflexed after flowering. Sepals softly hairy, with hairy awns (points). Petals spreading, twice as long as the calyx, obovate, rounded at the summit, with a *ciliated, but not hairy claw.* Filaments *triangular at the base.* Carpels hairy, not wrinkled. Seeds ovate-oblong, *alveolate* (*pitted*).

In woods and meadows, especially on a limestone soil. Perennial; June–August.

G. sylvaticum, Lin. *Wood Crane's-bill.*—E.B. 121. L.B.S. 230.

A. 11. C. 30. Lat. 52–60°. Alt. 0?–850 yds. Tem. 47–36°.

Root woody. Stems erect, much branched, roundish, rather rough. Leaves 5–7-*lobed; lobes coarsely serrated* (incised at the apex), hairy; the lowermost on long stalks, the uppermost sessile. Flowers *erect.* Sepals ribbed, hairy and glandular, with long awns. Petals entire, *claw bearded all over.* Stamens equal, lanceolate or subulate. Carpels hairy. Seeds minutely reticulated.

In pastures, woods, and by roadsides in the north of England and Scotland, especially on a limestone soil. Per.; June–Sept.

The leaves in this species are less deeply divided than they are in *G. pratense,* and the flowers are usually reddish, and when they vary towards bluish-purple, the tinge of blue is not so intense as in the former species.

G. sanguineum, Lin. *Bloody Crane's-bill.*—E.B. 272. L.B.S. 240.

A. 16. C. 40. Lat. 50–58°. Alt. 0–300 yds. Tem. 52–44°.

Root thick, horizontal, elongate. Stem erect, rigid, round, slender, hairy, leafy. Leaves opposite, nearly palmate, with cuneate, trifid lobes; *lobes linear, entire or incised.* Peduncles, in the axils of the leaves and stem, *one-flowered by abortion, very long,* erect or spreading-erect, rarely two-flowered; two small bracts subtend the pedicel, one of which represents the abortive pedicel. Sepals with a broad scarious margin and a hairy awn. Petals obovate or cuneate, notched, twice as long as the calyx. Carpels not wrinkled, with a few hairs at the apex. Seeds finely alveolate.—There is a variety with pink flowers, veined with purple.

Hilly pastures on a limestone soil. Per.; June–August.

Var. *erectum:* stem erect. Var. *prostratum:* stem prostrate. The petals of this species are very fugacious.

G. dissectum, Lin. *Palmate-leaved Crane's-bill.*—E.B. 753. L.B.S. 236.

A. 17. C. 75. Lat. 50–59°. Alt. 0–200 yds. Tem. 52–46°.

Root rigid, tapering. Stems 6–12 inches high, erect or ascending, diffuse, rough with deflexed hairs, much branched, and leafy. Leaves *nearly palmate,* divided nearly to the base, in 5–7 divisions, with linear, usually incised lobes. Peduncles *shorter than the leaves,* or equal to them; pedicels equal, slightly refracted or erect. Awn of sepals long. Petals notched, obcordate, with only slightly fringed claws, about as long as the sepals. Carpels invested with soft hairs. Seeds punctate.

Waysides, fields, hedges. Annual; June–September.

Flowers usually purple. There is a white-flowered variety, but it is very rare.

G. columbinum, Lin. *Long-stalked Crane's-bill.*—E.B. 259. L.B.S. 237.

A. 16. C. 50. Lat. 50–57°. Alt. 0–200 yds.

Root annual. Stem slender, cylindrical, with red swollen joints, branching, leafy, slightly pubescent with reflexed appressed down. Leaves mostly stalked, divided to the base; segments linear-lanceolate, entire. Peduncles 2-flowered, longer than the leaves. *Pedicels long, filiform,* very unequal. Sepals ovate, with scarious margins and long awns. Petals obovate or obcordate, about as long as the sepals. Anthers blue. Carpels smooth. Seeds finely dotted.

On cretaceous and calcareous soils (fields). Annual; July–September.

†† *Leaves cleft.*

G. nodosum, Lin. *Knotted-stalked Crane's-bill.*—E.B. 1091. L.B.S. p. 15.

A. 2.

Root elongated, horizontal. Stems erect, slender, with turgid joints (or rather the joinings or places of junction), glabrous or puberulent (slightly pubescent). Leaves 3–5-lobed, shining, strongly nerved on the under surface; lobes elongate, lanceolate, and acuminate. Sepals oblong, with a filiform awn (point). Petals cuneate (wedge-shaped), twice as long as the calyx, deeply notched at the apex, with aciliated claw. Carpels *wrinkled transversely at the apex.* Seeds ovate-oblong, finely punctate.

Hertfordshire. Naturalized? Perennial; June, July.

G. phæum, Lin. *Dusky Crane's-bill.*—E.B. 322. L.B.S. 229.

Alien. Reported from 15 counties. See 'Cybele,' p. 259.

Root perennial, thick, horizontal. Stem erect, simple or forked, round, hairy and leafy. Leaves 5-lobed; lobes incised or toothed, sharp, clothed with soft hairs. Peduncles 2-flowered. Sepals oblong, with a short point and 5 prominent ribs (at least at the base). Petals rounded and crenulate, with a very short bearded claw, spreading or somewhat reflexed. Stamens reflexed; filaments bearded at the base; anthers oblong. Carpels wrinkled at the apex and bearded. Seeds ovate, oblong, smooth.

In several places in woods and shaws. Near Bewdley, *Mr. Jordan;* Settle, *Mr. John Tatham.*

G. pyrenaicum, Lin. *Perennial Crane's-bill.*—E.B. 405. L.B.S. 232.

A. 11. C. 20. Lat. 50–58°. Alt. 0–100 yds. Tem. 50–47°.

Root tapering, vertical. Stems erect or ascending, branched, round, hairy, leafy. Leaves circular in their outline, with 5–7 incised divisions, and with *a very narrow reddish-brownish margin.* Peduncles very much longer than the floral leaves. Flowers rose-lilac (purplish), very rarely white. Sepals hairy, with a very short point. Petals cleft, *more than twice as long as the sepals.* Carpels softly pubescent. Seeds smooth.

This species is reputed a perennial; May–August. In the valley of the Thames, above London. It grows about Portobello, Edinburgh, and about St. Leonard's Crags, Arthur Seat. In the latter locality it is very diminutive.

G. pusillum, Lin. *Small-flowered Crane's-bill.*—E.B. 385. L.B.S. 234.

A. 16. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Root annual, vertical, tapering, fibrous. Stems spreading, erect or ascending, round, with short pubescence, reddish at the base, 4–6 inches high. Root-leaves round, cleft, with 5–7 rounded 3-fid lobes, on round, long, pubescent stalks; upper leaves more deeply cleft or parted, on short petioles. Peduncles *shorter than the leaves.* Sepals clothed with soft, spreading hairs. Petals *obovate,* only slightly bearded at the claw, rosy or purplish, scarcely longer than the sepals. Carpels *smooth with adpressed hairs.* Seeds ovate.

This plant is more common by roadsides and in waste places than in fields, where it also occasionally grows. Annual; May–October.

G. molle, Lin. *Dove's-foot Crane's-bill.*—E.B. 778. L.B.S. 235

A. 18. C. 82. Lat. 50–61°. Alt. 0–300 yds. Tem. 52–44°.

Root, stems, and leaves as in *G. pusillum,* only the hairs or pubescence are longer and spreading. Peduncles *longer than the upper leaves.* Petals *obcordate,* rather larger and deeper-coloured than in the former. Stamens all anther-bearing (some of the stamens in *G. pusillum* are barren). Carpels *obliquely wrinkled, glabrous.* Seeds ovate.

About roadsides and fields; April–October.

These two species, *G. molle* and *G. pusillum,* may be distinguished from each other by the petals and carpels. In *G. molle* the petal is rather obcordate than obovate, the notch is deeper, and the colour is nearer to red or crimson than is the colour of the flowers of *G. pusillum.* The curiously wrinkled but not hairy carpels of *G. molle* are a certain distinctive mark between these two species, which might be confounded by young or inexperienced botanists.

Some botanists distinguish *G. molle* from *G. pusillum* by the faint musky smell of the former. This has been stated somewhere, but the authority we are not able to quote.

Sect. II. Petals entire.

G. rotundifolium, Lin. *Round-leaved Crane's-bill.*—E.B. 157. L.B.S. 233.

A. 5. C. 15. Lat. 50–53°. Alt. 0–100 yds. Tem. 52–48°.

Root tapering, annual. Stems spreading, erect or ascending, round, with glandular spreading hairs. Leaves incised, with crenulate lobes on long petioles; the upper leaves are *petiolate and opposite.* Peduncles usually shorter than the petioles (always so except those bearing the very uppermost flowers). Flowers roseate. Sepals shortly mucronate. Petals entire, *with spreading glandular hairs,* longer than the sepals. Carpels *delicately reticulate* with soft spreading hairs. Seeds punctate.

Waysides and waste places, rare. Annual; June–September. It still grows about Battersea, Wandsworth, and other places near the Metropolis.

G. lucidum, Lin. *Shining Crane's-bill.*—E.B. 75. L.B.S. 238.

A. 17. C. 70. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–46°.

Root annual. Stem rather succulent, diffuse or ascending-erect, more or less reddish. Leaves round in outline, mostly 5-lobed; lobes cuneate, incised or crenulate, with a terminal

callous tip (point), *shining*. Peduncles *short*, 2-flowered; *pedicels very short* (with a hairy line). Sepals ovate-lanceolate, transversely wrinkled, with short points. Petals rounded or notched at the summit, with a *long linear claw*. Anthers orbicular. Carpels *wrinkled*. Seeds ovate, smooth.

In stony, gravelly, shady places. Annual; May–August.

This plant was observed growing on a wall near Dunkeld.

G. robertianum, Lin. *Herb Robert.*—E.B. 1486. L.B.S. 239.

A. 18. C. 81. Lat. 50–60°. Alt. 0–550 yds. Tem. 52–41°.

Stems ascending-diffuse or erect, usually reddish, rough with spreading hairs, glandular, especially at and near the top. Leaves *palmately divided, with petiolate segments,* which are pinnatifid and toothed. Peduncles *longer than the leaves;* pedicels nearly equal, often erect. Flowers purple, striated. Sepals awned, connivent after flowering. Petals entire, about twice the length of the sepals. Carpels (coques) glabrous or pubescent, wrinkled. Seeds smooth.—Every part of the plant is remarkably odoriferous (strong-smelling), but its smell is neither that of mint nor of musk.

By hedges and old walls. Annual; May–October.

Var. *G. Raii,* Lind.; *G. purpureum,* Forster.—E.B.S. 2640. Stem and leaves not hairy, shining; margins of the leaves and nerve of sepals slightly ciliated. Flowers small. The calyx is not wrinkled like the same organ in *G. lucidum.*—Southern seacoast. Annual; June–September.

ERODIUM, *L'Hérit.*—Annual or perennial, herbaceous or somewhat shrubby plants. Leaves *pinnate,* with incised segments and *umbellate* reddish flowers. Sepals and petals 5 respectively, the latter equal or unequal. Stamens 10; 5 *always fertile,* and provided with a gland at the base. Carpels 5, aggregate, each tipped with a long, linear, usually hairy awn, which is spirally twisted at maturity, and adheres to the tip of the style. Seeds 1–2, ovate or oblong.

E. cicutarium, Sm. *Stork's-bill.*—E.B. 1768. L.B.S. 228.

A. 18. C. 80. Lat. 50–59°. Alt. 0–200 yds. Tem. 52–47°.

Stems several, mostly procumbent or ascending, round, rough with spreading hairs. Lower leaves on long stalks, upper on short stalks, all pinnate and hairy; segments deeply incised or toothed. Stipules *ovate-acuminate.* Peduncles many-flowered, usually as long as, or longer than, the leaves; pedicels short,

filiform, geniculate (kneed) when in fruit. Sepals oblong, 3–5-ribbed. Claw of the petals bearded. Filaments of the perfect stamens *enlarged and entire at the base.* Carpels furnished with appressed hairs.

Sandy fields. Annual; April–October.

Var. *pimpinellifolium.*—Segments of the leaves short, spathulate, rather blunt. Claw of the upper petals marked with a yellow spot. Is this variety common in England?

E. moschatum, L'Hérit. and Sm.—*Geranium moschatum,* Lin. *Musky Stork's-bill.*—E.B. 902. L.B.S. 228*.

A. 9. C. 15. Lat. 50–55°. Alt. 0–100 yds. Tem. 52–48°.

Stems spreading or erect, stout, round, solid, hairy and glandular, often viscid. Leaves pinnate, with ovate, incised or pinnatifid segments, and *ovate stipules.* Peduncles very long, many-flowered. Petals not larger than the sepals. Stamens dilated and *toothed* at the base. Whole plant diffusing a musky odour when touched.

In waste places. Naturalized? Annual; June–August.

E. ciconium?, Willd.—Stems stout, spreading. Leaves large, with 2–3 pairs of ovate, pinnatifid or incised leaflets. Peduncles stout, rather longer than the leaves; pedicels short. Sepals *strongly ribbed.* Carpels depressed at the summit.—Wandsworth Steam-boat Pier. Annual; June–October.

E. maritimum, Sm. *Sea Stork's-bill.*—E.B. 646. L.B.S. 227.

A. 9. C. 20. Lat. 50–55°. Alt. 0–100* yds. Tem. 52–48°.

Stems erect or ascending, 1–2 inches high, round, stout, hairy, leafy. Root-leaves on long stalks, simple, cordate-ovate, with crenate or incised lobes (the limb is barely ¾ of an inch long). Carpels hairy; beak glabrous or slightly hairy.

On light, sandy soil, at the back of the Clent Hills, Worcestershire, nearly opposite to the church.

TILIACEÆ, *Juss.* The Lime-tree Family.

Trees with alternate, petiolate, simple leaves, and axillary flowers, borne on a common peduncle, attached to a membranous, whitish bract. Sepals 5, free, caducous, valvular in prefloration. Petals 5, free, imbricated in prefloration. Stamens indefinite. Anthers 2-lobed, introrse. Ovary free, of 5

* Maritime plants, except when they are alpine as well as maritime, have not altitudinal range.

carpels (usually). Ovules attached to the inner angle of the cells. Style simple. Stigma 5-lobed. Fruit ligneous, not opening, 5-angled, one-celled by the disappearance of the partitions, one or two-seeded by abortion. Seeds ascending. Embryo almost straight, in a fleshy perisperm. Radicle towards the hilum.

TILIA, *Lin.*—Usually lofty trees, with roundish cordate leaves, and yellow or white odorous flowers. Sepals 5, coloured. Petals 5. Stamens numerous. Ovary 5-celled. Style undivided. Stigma 5-lobed. Fruit nearly globular, somewhat ligneous, hairy, one-celled by the rupture of the partitions, and 1–2-seeded by abortion.

T. europæa, *Lin.—T. intermedia,* DC.? *Common Lime or Linden-tree.*—E.B. 610. L.B.S. 212?

Alien?

A tall, handsome tree, with numerous spreading branches. Leaves unequally cordate at the base, and acuminate, serrated, quite smooth and shining above; the under side is paler or glaucous, with tufts of woolly hairs in the axils of the nerves (ribs), on petioles which are barely half as long as the leaves. Bracts elliptical, elongate, membranous, rather longer than the flowers; flowers greenish, fragrant. Petals obovate, pale yellow. Carpels globular, densely hairy.

In plantations, and frequently about houses, in parks and pleasure-grounds. ? Naturalized.

T. parvifolia, Ehrh.—*T. sylvestris,* Desf. *Small-leaved Lime-tree.*—E.B. 1705. L.B.S. 211.

A. S. C. 15. Lat. 50–55°. Alt. 0–100 yds. Tem. 51–47°.

Leaves much smaller than in *T. europæa, not longer than their slender footstalks* (Sm.). Flowers smaller than in the former. Bracts seldom two inches long. Fruit densely woolly.

Of this tree there is in Worcestershire, not far from Bewdley, a large wood, above five hundred acres, remote from any old dwelling or public road, where the greater part of the undergrowths is composed of this tree.

See 'Phytologist' for 1856, p. 281.

T. grandifolia, Ehrh.—*T. platyphylla,* Scop.—E.B. 2720. L.B.S. 213.

Alien? Reported from ten counties. See 'Cybele,' 245.

A tall tree, with large leaves, which are described as less entire at the base, less pointed, but with longer footstalks than the same

organs in *T. europæa;* slightly hairy on the upper surface, and finely and softly downy on the under side. Flowers usually but 3; in the other species or states the flowers are more numerous. Fruit large, densely hairy, with 5–6 prominent angles, and as many hard, woody valves.

Plantations. Kent, Essex, Perthshire. Tree; flowers in June and July; fruit in August.

In the Arboretum and Fruticetum Britannicum, the most elaborate work which we have on trees, these three species or forms or states are combined under the name *Tilia europæa,* the European or common Lime-tree. The learned author is of opinion that all the known Lime-trees may be included under two species, *T. europæa* and *T. americana.* His view of our English or European Limes is as follows:—

T. europæa, Lin.—"Leaves cordate, acuminated, serrated, smooth, except a tuft of hair at the origin of the veins (nerves or ribs) beneath, twice the length of the petioles. Cymes many-flowered. Petals without scales. Fruit coriaceous, downy." The following, which rank as species according to De Candolle and other systematic botanists, Mr. Loudon terms races or varieties; viz.:—

T. microphylla (*T. parvifolia,* Ehrh.).—"Leaves cordate, roundish, acuminated, sharply serrated, smooth above, glaucous and bearded beneath on the axils of the veins, as well as in hairy blotches. Petals without scales. Fruit rather globose, hardly ribbed, very thin and brittle."

T. platyphylla (*T. grandifolia,* Ehrh.).—"Leaves shaped as in *T. microphylla,* but larger, and downy beneath; axils of the veins woolly. Cymes 3-flowered. Petals without scales. Fruit woody, downy, turbinate (pear- or top-shaped), with 5 prominent angles." "This tree," it is added, "is about the same size as *T. europæa,* from which it is readily distinguished by its larger and rougher leaves, also by its rougher bark, and hispid branches." In the work above quoted there are, in all, 8 varieties of this tree named and described. In *T. americana* the leaves are stated to be more obliquely cordate than in *T. europæa* and its forms. The petals also have a scale at the base, which is not the case in the European species or states. In England, *T. americana* does not flower till the flowers of our common forms are decaying. In winter this species is recognized by the dark brown colour of the bark

of the young shoots, and by the robust appearance of the trunk and branches.—*Arb. and Fruticet.*, vol. i. p. 373.

HYPERICACEÆ, *DC.* The St. John's-wort Family.

Perennial, herbaceous, often half-shrubby plants. Leaves entire, opposite, sessile or nearly so. Flowers regular and perfect, yellow, usually panicled or corymbose. Calyx persistent, consisting of 5, rarely of 4 sepals, imbricate in prefloration. Petals 5, rarely 4, withering, twisted in prefloration. Stamens indefinite. Filaments united by their base, and forming 3–5 bundles opposite to the petals; anthers 2-lobed, introrse. Ovary free, containing 3–5 carpels. Ovules attached to the internal (central) angle of the cells, or to parietal placentas. Styles 3–5, free. Fruit capsular, many-seeded, 3–5-celled, rarely 1-celled, opening by the partitions (septicidal dehiscence), rarely baccate (like a berry), and not opening. Seeds small, cylindrical or oblong. Perisperm wanting. Embryo straight. Radicle towards the hilum.

Hypericum, *Lin.*—Sepals either free or cohering at their base. Stamens indefinite, in 3 or 5 parcels.

Sect. I. Stamens in 3 parcels (triadelphous). Capsule 3-celled, 3-valved.

H. perforatum, Lin. *Common St. John's-wort.*—E.B. 295. L.B.S. 215.

A. 16. C. 80. Lat. 50–61°. Alt. 0–200 yds. Tem. 52–46°.

Stem erect, smooth, reddish, branched and leafy. Leaves small, with pellucid dots, linear-oblong, mostly obtuse, sessile. Sepals lanceolate or linear, acute, spreading both in flower and in fruit. Petals usually oblique, twice the length of the sepals, often marked with black dots near the margin. Ovary about as long as the sepals.

Woods, banks, etc. Perennial; July–September.

Var. *β. angustifolium.*—Sepals lanceolate, denticulate (Babington), rather longer than the ovary.

H. quadrangulum, Lin.—*H. tetrapterum,* Fries. *Square-stalked St. John's-wort,* or *St. Peter's-wort.*—E.B. 370. L.B.S. 217.

A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–46°.

Stems erect or ascending, glabrous, leafy, with 4 *prominently winged angles* and erect branches. Leaves oblong, half-clasping, with minute pellucid dots, and transparent primary and secondary nerves; the young and upper leaves have black dots at the mar-

gin. Sepals *lanceolate, acuminate, subulate,* considerably longer than the petals.

In watery places. Perennial; July, August.

H. dubium, Leers.—*H. quadrangulare,* Lin. 1104, Wahlen., Fries. *Imperforate St. John's-wort.*—E.B. 296. L.B.S. 216.

A. 15. C. 50. Lat. 50–57°. Alt. 0–300 yds. Tem. 51–45°.

Stems stouter, and with more rounded sides and less prominent wings than *H. quadrangulum.* Leaves oblong-ovate, *without transparent dots,* but with transparent secondary nerves, as in *H. quadrangulum;* upper leaves more or less downy beneath. Sepals *ovate, obtuse,* or *sharp,* scarcely half the length of the corolla, ridged at the base. Capsule ovate, triangular at the apex.—The most obvious distinction between these two plants is in the sepals. In our specimens they are not much reflexed, nor are they marked with black dots.

In moist, grassy places, in woods and other shady places. Per.; July, August.

H. humifusum, Lin. *Trailing St. John's-wort.*—E.B. 1226. L.B.S. 218.

A. 16. C. 75. Lat. 50–58°. Alt. 0–150 yds.* Tem. 52–46°.

Stems slender, nearly filiform, prostrate, rarely erect, usually branched, glabrous. Leaves oblong, with a few transparent dots in the interior, and several black dots close to the margin. Flowers *solitary* (mostly so), *terminal* or *cymose.* Sepals *oblong, pointed* or *blunt,* and dotted at the margin. Petals obscurely dotted. Capsule bluntly 3-angular.

Moist pastures. Perennial; July–September.

H. linearifolium, Vahl. *Linear-leaved St. John's-wort.*—E.B. 2851. L.B.S. 219.

A. 1. C. 2. Lat. 50–51°. Alt. 0–? yds. Tem. 52–?°.

Stems erect or ascending, simple, nearly cylindrical, glabrous. Leaves *linear-obtuse,* reflexed? at the margin, *half-clasping,* with prominent lateral nerves, without pellucid dots. Flowers in a lax corymb, *on pedicels which are longer than the calyx.* Sepals lanceolate, *acute,* with glandular fringes at their tips. Capsule as in *H. pulchrum.*

In Jersey, Cornwall, and Devon. Perennial; July–Sept.?

This species resembles *H. humifusum* in its general aspect and habit, only its flowers are rather larger.

* Does not this plant attain a greater elevation in Scotland?

H. pulchrum, Sm. *Elegant St. John's-wort.*—E.B. 1227. L.B.S. 220.

A. 18. C. 82. Lat. 50–61°. Alt. 0-750 yds. Tem. 52–40°.

Stems ascending or erect, simple or branched, glabrous, leafy. Leaves ovate, clasping, usually coriaceous, with transparent, nearly marginal dots, middle nerve only prominent. Flowers in lateral cymes, arranged in a narrow panicle, *on pedicels shorter than the calyxes.* Sepals *obovate,* or *nearly orbicular,* fringed with *sessile glands.*—The colour of the plant is more or less reddish.

On heaths, and open dry places. Perennial; July–Sept.

Supposed to be the commonest of the species of this genus, as it appears to have the widest range.

H. hirsutum, L. *Hairy St. John's-wort.*—E.B. 1156. L.B.S. 221.

A. 15. C. 60. Lat. 50–58°. Alt. 0–150 yds. Tem. 51–46 (45 ?)°.

Stems erect, quite round, hairy, usually branched, leafy. Leaves ovate or oblong, nearly sessile, with several prominent nerves, and with minute, transparent dots, which are scarcely visible to the unassisted eye. Flowers in rather compact tufts, in an elongate, pyramidal panicle. Sepals linear-lanceolate, with prominent, blunt nerves, and fringed by a series of black, shortly stipitate glands. Capsule bluntly 3-angular, twice as long as the calyx, which closely embraces its lower part.

Hedges and shady places, on a calcareous or cretaceous soil. Perennial; July, August.

H. montanum, L. *Mountain St. John's-wort.*—E.B. 371. L.B.S. 222.

A. 12. C. 30. Lat. 50–55°. Alt. 0–200 yds. Tem. 50–47°.

Stems erect, simple, round, tapering, glabrous, without prominent lines, leafy. Leaves oblong-ovate or oblong-lanceolate, with prominent nerves, and small pellucid dots, and often with black marginal dots. Flowers in terminal, dense corymbs. Sepals linear-lanceolate, fringed with black, stipitate glands.

Woods and shady places, on a chalky soil, not uncommon. Perennial; July–September.

Sect. II. Stamens in 5 parcels. Capsule 1-celled, opening at the apex, or not opening.

H. calycinum, Lin. *Large-flowered St. John's-wort.*—E.B. 2017.

Alien ?

Root creeping extensively. Stems shrubby, with square, leafy

branches. Leaves ovate-oblong, evergreen, coriaceous, on short petioles. Flowers very large, with an immense number of bright yellow stamens. Segments of the calyx obovate, spreading. Petals often lobed at one side.

Bushy places, woods, etc. Probably not an original native of Britain (how many of our species are?), but certainly well established in many parts of England. In Ireland and Scotland it is more common than here. Perennial; July–September.

H. hircinum, Sibth. Fl. Gr. 773. *Goat-smelling St. John's-wort.* —Stems erect, branched with angular branches (both stems and branches are winged). Leaves ovate or ovate-lanceolate, more or less glaucous, with a goatish smell, especially when bruised; hence the name. Peduncles 1–3-flowered, shorter than the leaves, with two rudimentary bracts. Pedicels longer than the calyx. Sepals ovate-*lanceolate, acute,* entire, not half as long as the petals, not dilated, as in *H. Androsæmum*. Stamens considerably longer than the petals. Capsule smooth, opening at the apex.

Very commonly cultivated about London, and sometimes growing wild on the sites of former gardens. A plant which we believe to be of the same species was noticed on the banks of the Ribble, near Settle, in 1852 (a few yards below the railway bridge), where it had to all appearance existed for many years. John Tatham, of Settle, sent me a specimen, which I had no difficulty in identifying with our London plant. It is a native of the south of Europe. Perennial shrub; July ?, August.

H. Androsæmum, Lin. *Tutsan, or Park-leaves.*—Curtis, Fl. Lond. 164. L.B.S. 214.

A. 15. C. 50. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–46°.

Stems ligneous for a considerable portion, erect or ascending, round, leafy, with two prominent lines (this is only visible on the upper, or recent part of the stem). Leaves ovate, blunt, large, sessile, glaucous below. Sepals ovate, *enlarged after flowering.* Stamens *scarcely half as long as the petals.* Fruit a berry, black and dry when ripe.

In moist, shady places, rather rare. Perennial; July–September. This species was observed in Perthshire, in a wood which skirts the eastern side of Loch Venachar. It is found in the West Highlands (a MS. list *penes me*).

Hypericum anglicum, Bert.—E.B. 1225.

Stem shrubby, tall, much branched, with two edges. Leaves

subcordate-ovate, subacute. Cymes few-flowered; sepals broad, unequal, half as long as the petals. Styles exceeding the stamens. Capsule ovate.—(See 'Phytologist,' N. S. vol. i. p. 117.) A locality for this plant, especially if accompanied with a specimen, would much oblige the Editor.

Sect. III. Stamens not numerous, in three parcels. Capsules 1-celled, 3-valved.

H. elodes, Lin. *Marsh St. John's-wort.*—E.B. 109. L.B.S. 223.

A. 14. C. 40. Lat. 50–60°. Alt. 0–350 yds. Tem. 52–45°.

Stems prostrate (often floating), erect at the summit, *rooting at the base, white-tomentose.* Leaves *ovate* or *roundish, slightly cordate at the base.* Sepals five, united at their base, ovate, with glandular fringes. Styles three. Capsule 1-celled, with three valves.

In turfy bogs. Perennial; July, August.

ACERACEÆ, *DC.* The Maple-tree Family.

Trees with aqueous, saccharine sap. Leaves opposite, lobed or palmate. Flowers regular, in corymbs or in pendulous clustered panicles. Sepals five, rarely 4–9, united at the base, caducous, often coloured. Petals as many as the sepals, inserted on the edge of a thick, annular disc, rarely wanting. Stamens usually eight, inserted on the disc. Anthers 2-lobed, introrse. Ovary free, composed of two carpels. Ovules attached to the inner angle. Style simple; stigmas two. Fruit dry, dividing into two one-seeded, winged, indehiscent carpels. Seed ascending. Perisperm none. Embryo plicate, with leafy, involute cotyledons. Radicle approaching the hilum.

Acer, *Lin.*—Usually large trees, with polygamous flowers (perfect, and male and female). Calyx 5-parted. Petals five. Anthers on subulate filaments.

A. Pseudo-platanus, Lin. *Sycamore.*—E.B. 303. L.B.S. 226.

Alien. Reported from fourteen counties. Is there a county within the four seas where this tree does not grow? A large tree, with spreading branches and smooth bark. Leaves notched or cordate at the base in five acute lobes, shining and leathery above, whitish and pubescent on the under side. Flowers yellowish-green, in elongated, pendulous clusters. Fruit convex on both sides, with broad, nervous, membranous wings, which taper at

both ends (the wings shaped like a common table-knife, but rather broader in the centre).

In woods in several parts of Scotland; in plantations in England. Scarcely naturalized? Tree; flowers in May; fruit in Aug.

A. campestre, Lin. *Common or Field Maple.*—E.B. 304.—*A. hebecarpum,* DC.—L.B.S. 225.

A. 10. C. 40. Lat. 50–55°. Alt. 0–200 yds. Tem. 52–47°.

A tree which sometimes attains a great size, but is generally only a hedge shrub. Leaves cordate at the base, with 3–5 unequal *blunt lobes;* the middle and lateral lobes are subdivided into three obtuse segments. Flowers green, in corymbose clusters, erect, sessile. Fruit turgid, convex on both sides, with divergent horizontal wings, which are of a more uniform width than in *A. Pseudo-platanus.*

Common in hedges in England. Shrub; flowers in May and June; fruit, July and August.—In Scotland we saw a very lofty tree of this Maple. See 'Phytologist' for October, 1856.

At Blairlogie, in Stirlingshire, there is a tree of this species fifty-five feet high and four feet in diameter, and the circumference of the head about fifty yards. Its age is estimated at upwards of three hundred years. This far exceeds the Maple which we saw near Callander, in Perthshire. See 'Phytologist,' as above. The soil and climate of Scotland appear to be congenial to trees of this kind. The examples are very numerous, and the dimensions are often very great. See Loudon's 'Arboretum,' pp. 416–430.

LINACEÆ, *DC.* The Flax Family.

Annual or perennial herbaceous plants, often half-shrubby at the base. Leaves entire, scattered. Flowers regular, terminal or lateral, in forked cymes or in clusters by abortion. Sepals 5, rarely 4, free, rarely connected at the base, persistent, imbricate in prefloration. Petals 5, rarely 4, caducous, twisted in prefloration. Stamens 4–5, slightly united by the base of their filaments, often with the rudiments of an inner row opposite to the petals. Anthers 2-lobed, introrse. Ovary free, consisting of 5, rarely of 3–4 carpels, and with as many cells as carpels, containing two ovules in each; each cell is separated by an imperfect partition, and forms two imperfect, one-seeded cells. Ovules attached to the inner angles, suspended. Styles 5, rarely

3–4, free or united at the base. Stigmas capitate or linear. Fruit capsular, roundish, surrounded by the calyx and the persistent stamens, 5-celled, rarely 3–4-celled, with two seeds in each, each cell separating into two one-seeded cells, which are either partially or completely divided. Seeds compressed, inverted (suspended). Embryo straight. Radicle towards the hilum.

SYNOPSIS OF THE GENERA.

LINUM.—Sepals, petals, and stamens 5 respectively,
RADIOLA.—Sepals, petals, and stamens 4.

LINUM, *Lin.*—Annual or perennial herbaceous plants, with linear scattered leaves (rarely opposite), and blue, white, or yellow flowers. Sepals 5, free, entire. Petals 5. Stamens 5. Styles 5, rarely 3. Capsule roundish, consisting of 5, rarely three two-seeded cells, which are subsequently divided by an incomplete partition into two one-seeded cells.

Sect. I. Leaves scattered.

L. angustifolium, Huds. *Narrow-leaved Pale Flax.*—E.B. 381. L.B.S. 201.

A. 7. C. 15. Lat. 50–55°. Alt. 0–100? yds. Tem. 52–48°.

Stems several, erect, much branched, leafy. Leaves lanceolate (linear-lanceolate). Flowers on rather long, pendulous pedicels. Sepals ovate, abruptly pointed, the interior bordered with a scarious margin and *fringe*, the outer without a fringe. Petals pale blue. Anthers nearly orbicular. Capsule equal to the sepals (calyx).

Calcareous and cretaceous places. Perennial; July–Sept.

L. usitatissimum, Lin. *Common Flax.*—E.B. 1357. L.B.S. 199. Alien.

Root annual, slender. Stem erect, slender, simple, branched near the top, leafy. Leaves linear, flat, with an inconspicuous nerve. Sepals ovate, acuminate, 3-nerved. Petals rounded and crenulate at the margin, thrice as long as the sepals. Anthers sagittate. Capsule globular-acuminate.

Scarcely naturalized, although of frequent occurrence on rubbish, accompanied with Hemp, Canary Grass, and other plants of foreign origin. Cultivated. Annual; June–Sept.

L. perenne, Lin. *Perennial Blue Flax.*—E.B. 40. L.B.S. 200.

A. 5. C. 8. Lat. 51–55°. Alt. 0–100 yds. Tem. 50?–47°.

Stems numerous, ascending or erect, often simple, leafy. Leaves

lanceolate, pointed, the *median nerve scarcely prominent, the lateral nerves scarcely visible.* Pedicels about as long as the flowers. Outer sepals ovate; inner ones obovate, scarious, but entire at their margins. Petals thrice as long as the sepals, slightly crenulate at their apex. Capsule globular, pointed, about double the length of the calyx, which embraces its lower half.

Chalky hills. Perennial; June–Sept.

Sect. II. Leaves opposite.

L. catharticum, Lin. *Purging Flax.*—E.B. 382. L.B.S. 202.

A. 18. C. 82. Lat. 50–61°. Alt. 0–800 yds. Tem. 52–37°.

Stems erect, 3–9 inches high, with forked branches (branching dichotomously). Leaves *opposite,* oblong, the flower-leaves obovate, rough at the margin. Flowers *white,* in irregular cymes on very long pedicels. Sepals elliptical, pointed, scarcely as long as the capsule. Petals longer than the sepals.

Grassy places, waysides, and dry banks. Annual; June–Aug.

Radiola, *Gmel.*—Annual, glabrous, minute plants, with opposite leaves and very small flowers. Calyx in four divisions, either 2 or 3-cleft. Petals, stamens, and styles 4 respectively. Capsule 4-celled, each cell separated by an incomplete partition into two secondary cells, which contain a single seed in each.

R. Millegrana, Sm. *Thyme-leaved Flax-Seed.*—E.B. 893. L.B.S. 203.

A. 18. C. 60. Lat. 50–60°. Alt. 0–100 yds. Tem. 52–46°.

Stems filiform, branching from the base, diffuse, 2–6 inches high. Leaves opposite, ovate, acute, with a single nerve. Flowers solitary, in the forks of the stem, or in terminal contiguous clusters. Petals about as long the sepals. Stigmas capitate.

In moist sandy or heathy places. Annual; July, Aug.

BALSAMINACEÆ, *Rich.* The Balsam Family.

Annual, succulent plants, with stems which are more or less enlarged at the junctions (articulations). Leaves simple, toothed or entire. Flowers on axillary peduncles, irregular. Calyx tetrasepalous (having 4 sepals). Sepals unequal; the two outer and lateral ones are small and herbaceous, the 2 inner larger and petaloid; the upper one forming a helmet (casque), the lower one prolonged at its base and forming a short spur. Petals 2 (or 4, but cohering and forming only 2), small, unequal. Stamens 5.

Anthers 2-lobed, introrse, coherent. Ovary of 5 united carpels, or 5-celled, containing many ovules. Ovules inserted on the inner angles of the cells. Fruit a many-seeded, 5-celled capsule. (The partitions do not extend to the apex, hence the fruit is 5-celled at the base and one-celled above.) The fruit separates by the 5 elastic valves, which coil up on dehiscence. Seeds suspended, without perisperm. Embryo straight. Radicle towards the hilum.

Impatiens, *Lin.*—Annual, glabrous plants, with oblong, toothed leaves. Flowers yellow, on slender peduncles. Sepals 4, very unequal (the normal number of sepals is 5, but 2 are united), the lower one prolonged into a spur. Petals 4, by coherence only 2. Stamens 5, with short filaments, which embrace the ovary. Fruit capsular, 5-valved, opening elastically; the valves are rolled inwards spirally.

I. Noli-me-tangere, Lin. *Touch-me-not.*—E.B. 937. L.B.S. 242.

A. 3. C. 6. Lat. 52–55°. Alt. —? Tem. 48–46°.

Stem 8–12 inches high (the stem is often much taller than a foot), erect, branched. Leaves oblong, pointed, petiolate, toothed; teeth sharp, the lower teeth subulate. Peduncles slender, spreading, 3–5-flowered. Flowers pendulous, with red spots; some of the flowers are apetalous (without the petals); spur short, blunt. Fruit linear, glabrous, elongated, angular. Seeds elongate, striated.

Shady places in Wales and in the north-west of England. Annual; July–Sept.

I. fulva, Nutt. *Tawny American Balsam.*—E.B.S. 2794. L.B.S. 241.

Alien. The historical origin and distribution of this species, as given in the 'Cybele,' is worth attentive perusal. 'Cybele,' p. 268.

Stems quite smooth and pellucid, with tumid joints, branched and leafy, erect, 2–4 feet high. Leaves ovate or oblong, serrated; serratures often furnished with reflexed glandular teeth. Peduncles about 4-flowered. Spur bent under the sac or hood of the lower sepal, not curved or coiled, but straight and parallel to the sac on which it grows.

Banks of the Wey and Thames, Surrey and Middlesex. Annual; July–Sept.

"An *Impatiens* nearly allied to this, but differing in some

points, has been communicated by (the late) Mr. Anderson, of the Chelsea Garden, as brought from a wild station in the neighbourhood of Bristol by (the late) Mr. Sweet" (Supplement to Eng. Bot.).

Impatiens parviflora, Nutt. *Small-flowered Balsam.* Alien.—Stem erect, round, smooth, shining, striated, slightly tumid, branching and leafy. Leaves ovate or oblong, tapering at the base, stalked, serrated; teeth with spreading or spreading-erect cartilaginous points. Peduncles axillary, elongate, many-flowered. Spur of the hooded sepal *elongated, small, tapering, straight.* Sepal opposite to the hooded one, with a thick herbaceous rib, both of them of a yellowish-white colour, the hooded one spotted with orange. Petals minute, yellow, with orange dots. Fruit angular.

Naturalized about Nine Elms, Chelsea, Kew, and Mortlake. I took a plant from Battersea Fields into my garden, and it has propagated itself now five seasons; it is become a weed as plentiful as *Erigeron canadense*.

Impatiens sp.—Stem erect, tapering, very thick at the base, quite smooth, striated, scarcely tumid at the joints; branches opposite, tapering like the stem. Leaves rather oblong than ovate, tapering at both ends with very wide serratures (the teeth are very far apart, and the lower teeth are terminated by long, incurved, cartilaginous points). Peduncles axillary, solitary, and bearing several flowers. Hood deep orange, *abruptly conical, with an inflexed spur* (the spur is bent like a crook).

On the banks of the Colne, Denham. Communicated by Mr. C. A. Johnson, 49, Pall Mall.

Impatiens glandulifera, Hook.? *Gland-bearing Balsam.*—Stems very thick at the base and tapering, quite smooth, angular, branched and leafy. Leaves ovate-elongate, tapering at the base, all petiolate, with sharp and rather close serratures; teeth terminated by elongate, cartilaginous teeth. Peduncles axillary, many-flowered. Hood red, spotted with dark purple dots, with a short blunt spur. Sepal opposite the hood (Petal of authors), rounded, large, red; the 2 lateral sepals herbaceo-membranous, with a crooked point. Petals red or pink, with minute dark purple dots.

Will probably soon be partially naturalized in some places.

OXALIDACEÆ, *DC.* The Wood-Sorrel Family.

Annual or herbaceous plants, with trifoliate leaves and regular flowers, on axillary or radical peduncles. Herbage more or less acid; hence the name. Sepals 5, more or less united at the base, persistent, imbricate in prefloration. Petals 5, free, or only slightly united by their claws, caducous, twisted in prefloration. Stamens 10, united at the base in 2 rows, the 5 opposite to the petals shorter than the others. Anthers 2-lobed, introrse. Ovary free, consisting of 5 carpels. Ovules attached to the inner angles of the cells. Styles 5, free or united at the base. Stigmas 5, cleft or laciniate. Fruit capsular, membranous, 5-celled, many-seeded, rarely one-seeded, 5- or 10-valved. Seeds pendulous, usually enclosed in an aril (see *Euonymus*). Embryo straight or slightly curved, covered by the perisperm. Radicle directed towards the hilum (at a distance from it).

Oxalis, *Lin.*—Caulescent (with a stem) or stemless plants, with obcordate, plicate leaflets, and white or yellow flowers. Sepals and stamens united at the base. Capsule membranous-herbaceous, oblong or obovate, with 5 lobes. Seeds compressed, striated, in a succulent envelope, which becomes membranous by desiccation (drying), and opens longitudinally when ripe.

O. Acetosella, Lin. *Wood-Sorrel.*—E.B. 762. L.B.S. 243.

A. 18. C. 81. Lat. 50–60°. Alt. 0–1300 yds. Tem. 51–34°.

Root creeping, branched, with several small scaly (scale-like?) tubers. Leaves all radical, stipulate; leaflets obcordate, hairy. Peduncles radical, *one-flowered,* pubescent, with two small bracts about their middle, 2–5 inches high, erect in flower, drooping when in fruit. Corolla *white, with purple or bluish veins,* three times as long as the calyx. Capsule ovate; seeds shining.

In woods and shady places. Perennial; April, May. On Ben Lawers, Perthshire, it was in flower in the middle of July, 1856.

O. stricta, Lin. *Erect Yellow Wood-Sorrel.*—Reich. 4895. L.B.S. 244*.

Alien; reported from Devon and Cornwall.

Stem usually *erect,* simple or rarely branched, *not rooting,* with underground stolons. (Perennial?) Leaflets notched, *without stipules.* Sepals linear, bearded at the summit. Petals twice as long as the sepals. Stigmas capitate. Capsule oblong, tapering, 5-angled, with some hairs.

Apparently naturalized on the Surrey side of the Thames, about Walton and Weybridge. Perennial? July–September.

Naturalized in fields throughout France.

O. corniculata, Lin. *Yellow Wood-Sorrel.*—E.B. 1726. L.B.S. 244.

A. 1. C. 2. Lat. 50–51°. Alt. 0–? yds. Tem. 51°.

Stems diffused, *rooting at the base* (there is occasionally an erect central stem, but the lateral spreading and rooting stems distinguish this plant from *O. stricta*). Leaflets deeply notched, *with a stipule adherent to the petiole.* Pedicels reflected when bearing the fruit. *Peduncles about as long as the leaves.* Fruit invested with short hairs.

In cultivated ground and waste places. Annual; July–Sept.

This species has been found in Albury, as a garden-weed, for many years. The rooting stems of the present, and the underground stolons of the preceding species, are characteristic of a longer duration than a year, the period assigned by British botanists to these plants.

CELASTRACEÆ, *Br.* The Spindle-tree Family.

Shrubs or small trees, with entire or toothed leaves, and regular flowers in axillary cymes. Sepals 4–5, cohering at the base, persistent. Petals 4–5, caducous, inserted on a thick annular disc. Stamens 4–5, inserted with the petals on the margin of the disc. Anthers 2-lobed. Ovary free, or united at the base with the disc, 3–5-celled, with 2 ovules in each. Ovules attached to the inner angle of the cell. Style simple, short. Stigma entire or 3-lobed. Fruit capsular, cartilaginous, with 3–5 two-seeded cells (often one-seeded by abortion). Seeds ascending, with a fleshy coloured aril, which nearly invests the seed. Embryo straight, in a fleshy perisperm. Radicle directed towards the hilum.

Euonymus, *Lin.*—Shrub, with finely-toothed leaves and small white flowers. Calyx in 4–5 divisions. Petals 4–5. Stamens 4–5. Capsule 3–5-lobed, with 3–5 one-seeded cells (by abortion). Seeds enveloped in a fleshy coloured aril.

E. europæus, Lin. *Spindle-tree.*—E.B. 362. L.B.S. 245.

A. 14. C. 49. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

A small tree, with many usually opposite branches, and the

bark of the young shoots is green and smooth. Leaves glabrous, oblong-acuminate, finely toothed, on short petioles. Flowers subtended by subulate bracts, and in few-flowered cymes. Divisions of the calyx spreading or reflexed. Petals oblong. Capsules deep rose-red when ripe, with 3–4, rarely 5, very obtuse lobes. Seeds white, covered by an orange-red fleshy aril.

Tree or hedge-shrub. Fl. May; fr. September.

RHAMNACEÆ, *Br.* The Buckthorn Family.

Small trees or shrubs, with alternate or fascicled (tufted) leaves, which are more or less leathery and axillary, and tufted or nearly solitary regular flowers, which are either perfect or of only one sort by abortion. Sepals 4–5, united below, tubular and persistent, valvular in prefloration. Petals 4–5, small, inserted on a glandular disc, which invests the lower or tubular part of the calyx, sometimes none by abortion. Stamens 4–5, inserted on the disc with the petals, and opposite to them. Anthers introrse. Ovary free, rarely cohering to the base of the calyx, with 2–4 carpels, and as many cells, with one ovule in each. Styles 2–4, united at their base or throughout their whole length. Fruit a globular berry, containing 2–4 cartilaginous, one-seeded nuts, rarely opening. Seed erect, usually with a deep dorsal groove. Embryo straight. Radicle directed towards the hilum.

Rhamnus, *Lin.*—Low trees, with abortive branches, which often become spines. Leaves oblong or ovate, glabrous. Calyx urceolate or campanulate, usually in four divisions (4–5-cleft). Petals 4–5, very small, or abortive. Stamens 4. Style undivided, or 2–4-cleft. Stigmas 2–4. Fruit globular, fleshy, containing 2–4 one-seeded cartilaginous-coriaceous nuts.

R. catharticus, Lin. *Purging Buckthorn.*—E.B. 1629. L.B.S. 246.

A. 12. C. 40. Lat. 50–55°. Alt. 0–200 yds. Tem. 52–47°.

Small tree or shrub, very much branched, usually with a spine in the forks of the branches (an abortive branch). Leaves ovate or elliptical, *sharply and regularly toothed,* abruptly acuminate, disposed in rosettes (tufts) on the flowering branches. Flowers polygamous or dicœcious, greenish-yellow, in tufts on the top of the short lateral branches. Styles 2–3-*cleft.* Fruit black.

In woods and hedges. Tree; flowers in May and June; bears fruit in September.

R. Frangula, Lin. *Alder-leaved Buckthorn.*—E.B. 250. L.B.S. 247.

A. 13. C. 30. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Small shrub, with many opposite or alternate branches (the latter state often by abortion), which are not converted into spines. Leaves obovate (usually oblong or ovate-oblong), blunt or scarcely acuminate, *quite entire or only slightly sinuate,* either scattered or contiguous on the upper part of the branches. Flowers perfect, in axillary clusters, rarely solitary, five-cleft, greenish-white. *Style undivided.* Fruit red, becoming black when at maturity. Woods and shady places. Shrub; flowers in May or June, and bears fruit in August or September.

LEGUMINIFERÆ, *DC.* The Legume-bearing Family.

This great Order consists of herbaceous (annual, biennial, or perennial), shrubby, or arboreous plants. They have alternate compound leaves, equally or unequally pinnate or trifoliate (sometimes with only one leaflet by abortion), with stipules. Flowers in clusters, sometimes solitary, perfect, usually irregular (not symmetrical), papilionaceous (having some resemblance to the unexpanded wings of a butterfly). Sepals united and forming a sort of tube at their base, 5-parted. Petals 5, inserted into the base of the calyx, usually free (not growing together) or rarely united and forming a gamopetalous corolla; upper petal (standard) plicate longitudinally, and embracing the lateral petals or wings (*alæ*); the 2 lower petals usually adhere at the summit (sometimes throughout), and form what is called the keel (*carina*). Stamens 10, inserted with the petals at the base of the calyx, with their filaments sometimes all united and forming a tube which invests the ovary, or with one filament (the upper one) free. Ovary free, consisting of a single one-celled carpel, with several ovules, rarely with one ovule, inserted in the upper interior angle of the cell (inserted on the upper suture, which forms the placenta). Style filiform, with a terminal or lateral stigma. Fruit usually a legume, dry, many- or few-seeded, rarely one-seeded; opening longitudinally; sometimes 2-celled by the inflexion and extension of the margin of the upper or lower suture;

sometimes many-celled, being divided by incomplete transverse partitions; sometimes not opening (indehiscent); sometimes one-seeded. Funicle (the process which attaches the seeds to the placenta) usually dilated at the hilum (the point where it is attached to the seed). Embryo curved, or rarely straight; cotyledons thick; perisperm (albumen) none. Radicle approaching the hilum.

TRIBE I. *LOTEÆ.*—Leaves trifoliate or unequally pinnate, rarely simple or reduced to the rach (leaf-stalk). Legume (fruit) one-celled, rarely 2-celled by the inflexion of the margin of the valves (suture), sometimes spirally twisted. Stamens all united, or in two parcels; cotyledons *aerial* (developed above the soil) *and leaf-like*, rarely remaining thick and fleshy.

Sub-Tribe 1. GENISTEÆ.—Stamens united (monadelphous).

SYNOPSIS OF THE GENERA.

ULEX.—Shrubs with spinous branches. Calyx *coloured*, 2-*lipped*, the upper lip 2-*toothed*, the lower 3-*toothed*.

GENISTA.—Shrubs rarely spinous. Calyx *not coloured*, 2-*lipped*, the upper lip *cleft*, the lower 3-*toothed*.

Note.—The leaves of the plants in these two Genera are simple by abortion.

SAROTHAMNUS.—Shrubs with ternate leaves. Pod *flat, many-seeded.*

ONONIS.—Herbaceous or half-shrubby plants, with long creeping woody roots. Calyx in 5 *linear divisions;* legume *turgid, few-seeded.*

ANTHYLLIS.—Perennial herbaceous plants. Leaves unequally pinnate. Calyx *inflated*, more or less coloured. Legume compressed, one- or two-seeded, enclosed in the calyx.

Sub-Tribe 2. TRIFOLIEÆ.—Stamens in two parcels (diadelphous).

Note.—Nine of the stamens are connected by a membrane, and one is free.

SYNOPSIS OF THE GENERA.

LOTUS.—Perennial or annual herbaceous plants, with trifoliate leaves. Legume *linear, straight, cylindrical, many-seeded.*

MEDICAGO.—Annual or perennial plants. Legume *reniform* (broadly heart-shaped), or *falciform* (like a sickle), or *spirally twisted.*

MELILOTUS.—Biennials, with a thick vertical root. Leaves pinnate-trifoliate. Flowers in spike-like clusters. Legume *longer than the calyx*, straight, oblong, 1–4-seeded.

TRIFOLIUM.—Annual or perennial plants. Leaves trifoliate. Flowers *in heads* (capitules), *or in short, dense, compact spikes.* Legume small, usually *enclosed in the calyx.*

ASTRAGALUS.—Perennial plants, with unequally pinnate leaves. Flowers in axillary clusters. Legume many-seeded, elongated, curved, incompletely 2-celled; partition formed by the *inflexed margin of the lower suture.*

Oxytropis is distinguished by its fruit, which, like *Astragalus,* is imperfectly 2-celled, and the partition is formed by the *inflexed margin of the upper suture.*

Tribe II. *VICIEÆ.*—Leaves equally pinnate, with the rach (common petiole) prolonged into a tendril (rarely ending in a short point or mucro). Stamens in one or in two parcels (monadelphous or diadelphous). Legume one-celled (rarely with cellulose transverse partitions). Cotyledons thick, farinaceous, *remaining under ground after germination.*

SYNOPSIS OF THE GENERA.

Vicia.—Stems *angular or nearly cylindrical.* Style *filiform.*

Lathyrus.—Stems *winged or angular.* Style flat, *linear or dilated at the apex.*

Tribe III. *HEDYSAREÆ.*—Leaves unequally pinnate. Stamens in two parcels (diadelphous). Legume divided *transversely into one-seeded joints;* cotyledons *aerial* (germinating above ground) and becoming leaf-like.

SYNOPSIS OF THE GENERA.

Ornithopus.—Legume (fruit) *linear, curved, with oblong compressed joints.*

Arthrolobium.—Legume *cylindrical.*

Hippocrepis.—Legume linear, *sinuate, composed of crescent-shaped compressed joints.*

Onobrychis.—Legume of *one joint,* strongly reticulate, *one-seeded.*

Sub-Tribe 1. Genisteæ.—Stamens monadelphous (all connected).

Synopsis of Genera, see p. 138.

Ulex, *Lin.*—Shrubs with abortive branches (the branches are spinous at their ends) and compound (branching), very sharp thorns. Leaves linear, spinous (terminating in spines). Flowers yellow, axillary, contiguous, subtended by two coloured bracts. Calyx 2-lipped, *divided to the base,* with a 2-toothed upper, and a 3-toothed lower lip. Petals nearly equal, scarcely longer than the calyx. Stamens monadelphous. Style subulate, curved at the summit. Legume (fruit) turgid, few-seeded, scarcely longer than the calyx. Hilum of the seed depressed, and covered by the dilated funicle (the medium which attaches the seed to the placenta).

U. europæus, Lin. *Common Furze or Whin.*—E.B. 742. L.B.S. 249.

A. 17. C. 80. Lat. 50–59°. Alt. 0–700 yds. Tem. 52–42°.

Stem much branched, with pale whitish bark, 4–6 feet high. Leaves (only on young or seedling plants) lanceolate, hairy, and

deciduous, developed into spines, which branch at the base. Flowers bracteate, borne on the primary and secondary spines (abortive branches). Calyx ovate, hairy.

On heaths. Shrub. Perennial; March–June.

U. strictus, Mack. *Erect-branched Furze.*—L.B.S. 249 *b.*

Stem much humbler than in the foregoing, with erect branches and *small slender spines.* Flowers (rarely produced) on the summit of the stem and branches, slightly different from those of the preceding.

In Lord Londonderry's Park, Down, Ireland. Shrub. Perennial; April, May.

U. nanus, Forst. *Dwarf Furze.*—E.B. 743. L.B.S. 250.

A. 12. C. 40. Lat. 50–55°. Alt. 0–200 yds. Tem. 52–48°.

Stems procumbent or ascending, 1–2 feet high, hairy. Spines slender, taper, smooth, branched at the base. Flowers much smaller than in *U. europæus,* with *very minute adpressed bracts.* Calyx downy; wings shorter than the keel.—It flowers in autumn. The common Furze flowers in spring. Dwarf forms of the latter may be mistaken for *U. nanus.*

On heaths. Shrub. Perennial; August–November.

GENISTA, *Lin.* in part.—Under-shrubs, rarely spinous. Leaves simple. Flowers terminal or axillary, in clusters. Calyx herbaceous or slightly coloured, the upper lip 2-toothed, the lower 3-toothed. Standard (upper petal) equal to the wings and keel (lateral and lower petals) or shorter than these. Stigma oblique, on the inner side of the style. Legume compressed, many-seeded, rarely few-seeded.

G. anglica, Lin. *Needle Greenweed, or Pettywhin.*—E.B. 132. L.B.S. 253.

A. 17. C. 70. Lat. 50–58°. Alt. 0–700 yds. Tem. 52–40°.

Shrub tough, wiry, about a foot high, leafless below, *spinous* and leafy above (the spines appear to be abortive branches, and when recent bear two or three minute thick leaves). Leaves (leaflets) oblong-pointed or blunt, glabrous. Flowers in terminal leafy clusters. Legume *nearly cylindrical, pointed.* Seeds 5–10, ovate, black, shining.

In dry sandy places. Per.; April–July.

G. tinctoria, Lin. *Woad-waxen, Dyer's Greenweed.*—E.B. 44. L.B.S. 251.

A. 14. C. 50. Lat. 50–55°. Alt. 0–200 yds. Tem. 52–47°.

Stems woody, erect or ascending, from half a foot to two or three feet high, furrowed (slightly angular), very much branched; branches erect. Leaves linear or linear-lanceolate or linear-oblong, with a short point, nearly sessile, more or less downy, especially at the margin. Flowers solitary and axillary, pedicelled, subtended by two minute bracts. Calyx glabrous, two-lipped, with triangular lobes or teeth. Legume *linear, compressed,* slightly curved. Seeds 5–10, *roundish, compressed, olive-coloured.*

Pastures. Per.; July–September.

G. pilosa, Lin. *Hairy Woad-waxen, Greenweed, or Dyer's Weed.*—E.B. 208. L.B.S. 252.

A. 4. C. 4. Lat. 50–53°. Alt. 0–100 yds. Tem. 52–49°.

Stems prostrate, woody, much branched, furrowed, flexuous, *unarmed* (not prickly). Leaves obovate-lanceolate, obtuse, more or less keeled. Flowers in lax clusters towards the extremities of the stem and branches. Calyx and peduncles silky. Legumes *hairy.*

Dry heaths in Suffolk and Cornwall. A very local plant. Shrub. Per.; May.

Sarothamnus, *Wimm.*—Shrubby, not spinous plants, with trifoliate and petiolate leaves, *without stipules.* Flowers axillary, solitary, pendulous. Calyx scarious, with its upper lip 2-toothed and the lower 3-toothed. Standard of the corolla roundish, cordate at the base, longer than the wings (*alæ*). Style filiform, elongated, *spirally coiled up* during flowering, with a terminal stigma. Legume compressed, many-seeded.

S. scoparius, Wimm. *Common Broom.*—E.B. 1339. L.B.S. 248.

A. 17. C. 80. Lat. 50–59°. Alt. 0–650 yds. Tem. 51–41°.

Stem angular, glabrous, erect. Leaves trifoliate, petiolate; leaflets oblong-obovate, pubescent or silky on both sides; the upper or floral leaves sessile, very small. Flowers large, in terminal clusters, bright yellow. Legumes (fruit) dark brown (black when quite ripe), hairy at the margins, with numerous seeds.

Dry hills, banky places, and heaths. Shrub. Perennial; May, June.

Ononis, *Lin.*—Half-shrubby, perennial plants, often spinous. Leaves trifoliate or simple. Flowers axillary, roseate or yellow, in terminal leafy clusters. Calyx herbaceous, campanulate, di-

vided into 5 *linear segments*. Standard (upper petal of corolla) dilated, striated, longer than the wings; keel beaked. Stamens monadelphous (in one parcel). Style ascending; stigma terminal. Legume *turgid*, short, sessile or shortly stipitate, ovate or oblong, few-seeded.

O. arvensis, Lin.? Roth? *Rest-harrow or Cammock.*—E.B.S. 2659. L.B.S. 254.

A. 17. C. 75. Lat. 50–59°. Alt. 0–200 yds. Tem. 51–46°.

Stems round, tapering, *more or less hairy*, rooting at the base? ascending, much branched and leafy (the branches sometimes terminate in a spine). Leaves elliptical, oblong, or cuneate, sharply and uniformly toothed at the upper end, tapering and less toothed below, with long spreading glandular hairs; stipules united for the greater part of their length, the free part triangular and pointed. Flowers axillary and solitary, *on short pedicels*. Divisions of the calyx linear-lanceolate. Legume hairy, *not so long as the divisions of the calyx*. Seeds finely tubercular.

Roadsides, commons, and pastures. Perennial; June–September.

O. procurrens, Wallr., *O. spinosa*, Lin. Fl. Suec. Fl. Dan. v. 783.—Var. *α. arvensis*, Grenier. "Stems 18–24 inches high; leaves and flowers large, the latter in lax spikes; floral leaves as long as the calyx.—*O. arvensis*, Lam."

β. maritima, Gr.—Stems slender, 4–5 inches high; flowers small, in short, dense spikes; floral leaves (bracts) shorter than the calyx.—*O. repens*, Lin.

O. antiquorum, Benth. (not Lin.)—*O. campestris*, Koch.—*Thorny Rest-harrow*, Baxter, iv. 289.—E.B. 682. L.B.S. 255.

A. 16. C. 60. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

Stems and branches woody, erect or nearly so, round, olive-coloured, with woolly *or hairy alternate lines*, and very slightly furrowed; spines stout, 2–3 together, spreading. Leaves *linear-oblong, laxly toothed, glandular*. Flowers large, solitary and axillary, on pedicels, which are much longer than those of *A. arvensis*, but not so long as the calyx. Divisions of the calyx linear-lanceolate, glandular, not hairy. Corolla twice as long as the calyx. Legume ovate, compressed, *as long as the calyx*. Seeds ovate, brown, tubercular, 2–4.

Barren places, roadsides, pastures. Perennial; June–Sept.—Grenier states that *O. antiquorum* of Linnæus is distinguished

from the above or *O. campestris*, Koch, by more slender and flexuous stems, which have not the hairy alternate lines of *O. antiquorum*, Benth., by the much smaller leaves and flowers, by its legume equalling the calyx, and by its solitary, finely tubercled seed.

O. reclinata, Lin. *Prostrate Rest-harrow.*—E.B.S. 2838. L.B.S. 256.

A. 1. C. 1. Lat. 56°? Alt. ? Tem. ?

Stems slender, round, hairy, branched, spreading, diffuse; branches not terminating in spines (secondary branches not changed to spines?). Leaves cuneate, strongly nerved and toothed only in their upper half, on slender petioles. Flowers in terminal, leafy clusters, on long slender pedicels (the latter as long as the leaves). Divisions of the calyx linear-lanceolate, twice as long as the tube. Corolla not longer than the calyx. Legume cylindrical, hairy, dark brown, when ripe, longer than the calyx. Seeds numerous, roundish, compressed, tubercled.

Sandy places. Galloway. Channel Isles. Annual; June–?

ANTHYLLIS, *Lin.*—Perennial herbaceous plants, with unequally pinnate leaves, and yellow or reddish flowers in terminal or lateral, capitate clusters, which are subtended by palmate bracts. Calyx tubular-inflated, slightly coloured, unequally toothed, ultimately becoming vesicular (like a bladder). Standard slightly longer than the wings; wings adhering to the keel by their limb; keel obtuse, or without a beak. Stigma capitate. Legume compressed, roundish, one- or two-seeded, enclosed in the calyx.

A. Vulneraria, Lin. *Kidney-Vetch or Lady's-finger.*—E.B. 104. L.B.S. 257.

A. 18. C. 75. Lat. 50–61°. Alt. 0–800 yds. Tem. 52–38°.

Root woody. Stems several, unbranched, ascending, round, rigid, hairy, with one or two leaves. Terminal leaflet of the root-leaves large, the lateral leaflets often abortive; leaflets of the upper leaves narrow (linear), almost equal and sessile. Flowers yellow, rarely reddish, in one or two round terminal heads, subtended by laciniated bracts. Calyx-teeth lanceolate-triangular. Corolla a little longer than the calyx. Legume roundish, compressed, smooth, with one seed.

Dry chalky or gravelly places. Per.; June, July.

Var. *β. Dillenii.*—Whole plant smaller, with red flowers.

Sub-Tribe 2.—TRIFOLIEÆ. Stamens in two parcels (diadelphous). Synopsis of Genera, p. 138.

LOTUS, *Lin.*—Perennial or annual plants, with yellow flowers in terminal clusters, rarely solitary. Calyx campanulate, 5-cleft or 5-parted. Standard of the corolla about as long as the wings; keel prolonged into an ascending beak. Legume *cylindrical, linear, straight, many-seeded,* with imperfect transverse partitions; valves twisted after separating.

L. corniculatus, Lin. *Common Bird's-foot Trefoil.*—E.B. 2090. L.B.S. 283.

A. 18. C. 81. Lat. 50–60°. Alt. 0–950 yds. Tem. 52–38°.

Root rigid. Stems spreading, ascending, glabrous or pubescent or hairy, branched and leafy. Leaflets obovate or obovate-oblong, entire; stipules ovate, herbaceous, pointed or mucronate. Flowers in clusters, 4–8, rarely solitary. Calyx-teeth shorter than the tube, *erect when in bud.* Keel-petals enlarged above the claw, and united. Legume smooth, terminated by the persistent nearly straight style.

In meadows and dry commons. Perennial; June–August.

Sub-var. *tenuis.*—*L. decumbens,* Forster in Eng. Fl. vol. iii. p. 314.—Stems slender, filiform; leaflets and stipules narrow. On banks and by waysides.

A. 15. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Sub-var. *villosus.*—Plant hairy; leaflets ciliated.

Sub-var. *crassifolius.*—Stems ascending, leafy. Leaflets oblong, sessile, thick, with a few hairs. Flowers large, solitary, or occasionally there are two flowers.

L. major, Scop. *Great Bird's-foot Trefoil.*—E.B. 30. L.B.S. 284.

A. 16. C. 70. Lat. 50–58°. Alt. 0–100 yds. Tem. 52–46°.

Stems round, erect or ascending, hairy or almost glabrous, fistulous (hollow), leafy. Leaves thinner and hairier than in the preceding; leaflets oblong or obovate; stipules ovate-acute. Divisions of the calyx *about as long as the tube,* hairy and ciliated, *spreading in the bud* (this character is not constant). The teeth of the calyx of *L. corniculatus* spread in the bud as much as the teeth of *L. major* do, *teste* recent specimens (but in the latter the teeth are more subulate, and longer). Legume glabrous, crowned by the style.

In moist places. Per.; June–September.

Var. β. *glabriusculus.*—Plant entirely glabrous. Calyx-teeth glabrous or scarcely ciliated.

L. angustissimus, Lin. *Slender Bird's-foot Trefoil.*—E.B. 925. L.B.S. 285.

Stems slender, hairy, leafy, prostrate. Lower leaflets obovate, upper oblong, all hairy; stipules ovate-lanceolate, longer than the petiole. Peduncles 1–2-flowered, slender, as long as the leaves (peduncles of the fruit longer than the leaves?). Calyx-teeth *lanceolate-acuminate.* Wings of the corolla *dilated* and rounded at the apex. Legume straight, very slender, cylindrical, six times as long as the calyx, crowned by the long slender style. Seeds small, round.

South and West of England, near the sea. Annual; May–August.

Var. β. *seringianus,* Bab.—Peduncles of the flower and fruit as long as the leaves. Stem ascending.

L. hispidus, Desf. *Hairy Bird's-foot Trefoil.*—E.B.S. 2823. L.B.S. 285 *b.*

A. 1. C. 2. Lat. 50–51°. Alt. 0–? yds. Tem. 52°.

Stems thicker than they are in *L. angustissimus,* also the stipules are broader and blunter. Peduncles 2–4-flowered. Wings of the corolla *attenuated* and rounded at the apex. Legume *rugose, only about twice as long as the calyx,* about twice as thick as in the above species.

Near the sea in Devon and Cornwall. Annual; May–August.

MEDICAGO, *Lin.*—Annual or perennial herbaceous plants, with trifoliate stipulate leaves. Flowers clustered or spiked, axillary or terminal, usually yellow. Calyx campanulate, in five divisions. Corolla caducous. Stamens diadelphous (in two parcels). Style filiform, glabrous. Legume *reniform* (*oblong*), *falcate or spirally convoluted* (somewhat like a screw), usually indehiscent (not opening). Seeds kidney-shaped, smooth.

Sect. I. LUPULARIA.—Legume not spinous.

M. lupulina, L. *Black Medick,* or *None-Such.*—E.B. 971. L.B.S. 260.

A. 17. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Root slender. Stems erect, ascending, or spreading, much branched, slightly pubescent. Leaflets obovate, cuneate at the base, notched or entire at the apex, and toothed (often obcordate

and mucronate); stipules lanceolate, pointed, entire. Flowers yellow, small, in oblong heads (spikes), *on short pedicels;* peduncles axillary and longer than the leaves. Legumes *reniform,* pubescent or glabrous, with prominent ridges, one-seeded, curved, *black* when quite ripe.

Dry pastures, meadows, and waste ground. Annual; June–September.

Var. *β. hirsuta.*—Legumes hairy. Dry sandy places, and on walls.

M. falcata, L. *Yellow Sickle Medick.*—E.B. 1016. L.B.S. 259.

A. 3. C. 7. Lat. 50–53°. Alt. 0–? Tem. 51–48°.

Roots thick, persistent, spreading. Stems erect or ascending, with erect, slightly pubescent, and leafy branches. Leaflets oblong or cuneate, toothed above and mucronate; stipules lanceolate-subulate, half-herbaceous, entire or slightly toothed. Flowers yellowish or greenish-white, on peduncles which are longer than the leaves; the pedicels are about as long as the bracts, and *shorter than the calyx.* Legumes elongate, *falcate** (like a reaping-hook), many-seeded.

Dry banks. Per.; June, July.

M. sylvestris, Fries. *Wild Medick.*

This species is unnoticed both in the London Catalogue, and in 'Cybele Britannica.'

Stem quadrangular, pithy, ascending. Leaflets obovate-oblong, dentate on the margin of their upper half, notched, mucronate. Peduncle many-flowered; pedicels shorter than the calyx, longer than the bract. Flowers yellow or blackish-green. Legume *annular (with one flat turn).*

Sandy and gravelly places in Norfolk and Suffolk. Perennial; June, July. (*Babington.*)

M. sativa, Lin. *Lucerne,* or *Purple Medick.*—E.B. 1749. L.B.S. 258. Alien.

Root perennial, very long. Stems 1–2 feet high, ascending or erect, glabrous or puberulent, hollow, leafy. Leaflets oblong, notched or truncate, toothed towards the apex, mucronate, with

* In our specimen the legume is *oblong,* not *falcate.* Smith says, "Legumes black, downy, sickle-shaped, not twisted into a screw as the *sativa*" (E. F. vol. iii. p. 318). The legume in *M. sylvestris* is sickle-shaped. Is *M. sylvestris* of Fries, *M. falcata* of Smith?

lanceolate, subulate stipules. Flowers blue, on ascending pedicels in clusters. Legume hairy, elongate, many-seeded, loosely spiral.

Cultivated, and hence occasionally subspontaneous. Per.; July–September.

This plant is only partially naturalized in the environs of Paris. See Coss. and Germain, 'Flore des Environs des Paris.'

Sect. II. Legume spinous, spirally convoluted.

M. maculata, Sibth. *Spotted Medick.*—E.B. 1616. L.B.S. 261.

A. 9. C. 25. Lat. 50–55°. Alt. 0–100 yds. Tem. 52–48°.

Stem spreading, ascending or erect, angular and furrowed. Leaflets obovate or obcordate, toothed above, tapering, and entire below, *with a dark brown or purplish spot;* stipules toothed. Flowers in clusters 3–4, or solitary, on *very short peduncles.* Legumes glabrous, having three to four spiral turns, roundish and depressed, with two rows of subulate, diverging, bent or hooked spines.

Grassy places, on a light soil. Annual; June–August.

The only obvious distinction between this plant and *M. denticulata* is the spotted leaflets, the shorter peduncles, and the rather shorter spines, which grow on the ridges of the fruit.

M. minima, Lam. *Little Bur Medick.*—E.B.S. 2635. L.B.S. 263.

A. 2. C. 5. Lat. 51–53°. Alt.? Tem. 50–49°.

Stems trailing, much branched, angular and slightly grooved (depressed). Leaflets cuneate, entire or slightly toothed; stipules *lanceolate, tapering, acute, entire* or the lower only toothed. Flowers small, 1–6, on axillary peduncles, which are usually shorter than the leaves. Legumes glabrous or only slightly pubescent, 1–4, 3–4 in luxuriant specimens, with short, stout, single rows of spines on the ridges (only indistinctly 2-rowed), slightly curved, divergent (the spines vary much in size and shape, even on the same plant). The fruit becomes black?

On Blackheath, Greenwich. Annual; May–September.

M. denticulata, Willd. *Toothed Medick.*—E.B.S. 2634. L.B.S. 262 and 262 *b.*

A. 4. C. 9. Lat. 50–53°. Alt. 0–? Tem. 52–49°.

Stems prostrate, angular, glabrous, slightly furrowed (depressed rather than furrowed between the angles). Leaflets obcordate

or broadly obovate, truncate or depressed, and toothed at the apex, on short, stout petioles, which are about as long as the leaves; stipules small, *laciniated* with unequal linear-setaceous segments (the teeth are long and pointed). Flowers small, solitary or several (1–10), on axillary peduncles, which are about as long as the leaves. Legume glabrous, with prominent external ridges, and a single row of very long tapering, slender, curved spines (the spines are longer than the semidiameter of the legume, the spiral has at least three turns).

Blackheath, with the former. Annual; July–September.

Var. *M. apiculata.*—Spines straight and shorter than in *M. denticulata.* Near the Itchin, Southampton, and at Wandsworth Steam-boat Pier, with the following exotic species.

Medicago sp.—Stem stout, erect, furrowed. Leaflets oblong, narrow. Peduncles stout, erect, longer than the leaves. Flowers rather large, pale yellow, in lax heads (capitate), on pedicels scarcely as long as the scarious smooth calyx. The whole herbage is quite smooth.—Wandsworth. Annual; August.

M. orbicularis, All., Moris Fl. Sard. 37.—Stems weak, sulcate, slightly hairy. Leaflets obovate-cuneate at the base, hairy. (Leaves often ovate, and they become red when decaying.) Stipules *laciniate, with long, linear-lanceolate, pointed segments.* Peduncles hairy, slender, shorter than the leaves, 1–2- or more-flowered. Flowers very small, yellow; calyx hairy. Legume large, with five to six turns of the spiral, ridged without spines, smooth.—Wandsworth. Annual; August.

M. scutellata, All., Moris Fl. Sard. 37.—Stems simple or branched, angular, prostrate, smooth or puberulent, hairy above, leafy. Leaflets cuneate or deltoid, the upper (odd one) rhomboid or rounded, all toothed on the upper margin; stipules with horizontal teeth. Peduncles slender, 1–2-flowered, not quite so long as the leaves; pedicels very short, subtended by two scarious, awned, minute bracts. Flowers small, yellow; teeth of the calyx subulate, longer than the tube. Fruit five to six turns of the spiral, ridged, large, smooth or slightly puberulent.—Wandsworth Steam-beat Pier. Annual; June–August.

M. tenoreana ?, DC., Tenore Fl. Nap. 178.—Stem hairy, round, slender, leafy. Leaves stalked. Leaflets cuneate, upper one roundish or oblong, all toothed and hairy. Flowers solitary or in pairs, small, yellow, on long, slender, hairy flower-stalks

(longer than the leaves); calyx scarious, with very unequal setaceous teeth. Legume hairy, consisting of four spiral turns, crowned with the style.—Wandsworth Steam-boat Pier. Annual; July–September.

Several other forms of Medicks have been collected during the last five or six years at the Wandsworth Steam-boat Pier; but they have not been identified with any species of which we have descriptions.

MELILOTUS, *Tourn.*—Annual or biennial plants, with strong, woody, vertical, tapering roots. Stems erect or reclining, round, tapering, branched, leafy. Leaves trifoliate. Flowers yellow, rarely white; calyx campanulate, with 5 erect, slender teeth. Corolla caducous; standard equalling or surpassing the wings; keel obtuse, adhering to the wings. Stamens diadelphous (in 2 parcels). Legume straight, longer than the calyx, oblong, 1–4-*seeded.*

M. officinalis, Willd. *Common Melilot.—Honey* or *Sweet Lotus.*—E.B. 1340. L.B.S. 264.

A. 12. C. 40. Lat. 50–57°. Alt. 0–100 yds. Tem. 52–47°.

Stems 2–3 feet high, erect, glabrous, leafy. Leaves on short petioles. Leaflets oblong, elliptic, often linear, truncate, toothed. Stipules subulate, setaceous, enlarged at the base. Flowers *yellow,* numerous, in slender, lax, lateral and terminal clusters, on very short, filiform pedicels, which are reflexed when in fruit. *Standards scarcely longer than the wings.* Legume wrinkled transversely, oblong, attenuated at the summit, furnished with *appressed hairs,* and terminated by the long slender style.

In waste places; sometimes in fields. Biennial; June–September.

Var. ?—Flowers very small, in dense, cylindrical-conical, narrow spikes; the whole plant slenderer and weaker than the common form.—Wandsworth.

M. vulgaris, Willd.—*M. leucantha,* Koch. *White Melilot.*—E.B.S. 2689. L.B.S. 265. Alien.

Stem as in *M. officinalis.* Leaves on rather longer stalks, with broader, obovate or ovate, toothed leaflets. Flowers *white,* in shorter clusters than those of *M. officinalis.* *Standard longer than the wings.* Legume oblong or obovate, attenuated at the apex, wrinkled transversely, containing 3–4 ovules.

In waste and gravelly places. Biennial; June–September.

Wandsworth Common, in the railway cutting opposite the Prison, it has for several years maintained its settlement on heaps of clayey mould.

M. arvensis, Wallr. *Field Melilot.*—E.B.S. 2960. L.B.S. 264*. Alien.

Stems erect, round, branching, leafy. Leaflets obovate? (elliptical-lanceolate), with wide, unequal teeth. Clusters elongated, very much longer than the leaves (the upper or terminal clusters are branched, and subtended by a single leaflet or bract). Flowers white. Legume *glabrous*, obtuse, oblong-ovate, transversely wrinkled, terminated by the style, usually 2-seeded.

In corn-fields, etc. Annual; July, August.

Note.—The distinctive characters of these three sorts, *M. officinalis*, *M. vulgaris*, and *M. arvensis*, are very obscure.

M. parviflora, Desf.—L.B.S. p. 16. Coss. et Ger. 11, G. Alien; will probably be naturalized.

Stems erect or diffuse, usually much branched, cylindrical, striated, leafy. Leaflets oblong or obovate, toothed. Flowers yellow, *small*. Pod granulose, containing one large shagreened seed.

Annual; June–September. Steam-boat Pier, Wandsworth.

This species, which is readily distinguished from those above described by its humble growth, small yellow flowers, reticulated, rugose, globular, small, sessile legumes, and by its 1 or 2 ovate, finely tubercled seeds, is spreading over the few cultivated fields that still remain between Wandsworth (where it originated) and Battersea. If it gain a settlement in the *allotments* below Lavender Hill and Battersea Rise, it will be safe for some time.

M. messanensis, Desf., Moris Fl. Sard. 58.—Stems ascending, branched, leafy. Leaflets obovate, cuneate, toothed on the upper half, slightly notched at the apex; stipules almost scarious, small, acuminate, mostly entire or toothed at the base. Clusters of small, yellow flowers, shorter than the leaves, on a short, common peduncle. Legume ovate-elliptical, acute, terminated by the persistent style, with *numerous prominent contiguous concentric ridges*. Rubbish on the shore of the Itchin, Southampton, and at Wandsworth Steam-boat Pier: abundant in both places, especially in the latter. Annual; July–Sept.

M. sp. ?—Stem ascending, rigid, angular, puberulent, branching, about 6 or 8 inches high, leafy. Leaflets elliptical-lanceolate,

tapering at both ends, and nearly the whole of the margin toothed. Clusters much shorter than the leaves. Flowers small, white.—Wandsworth Steam-boat Pier. Annual; July.

In *M. vulgaris*, Willd., *M. leucantha*, Koch in DC., *M. alba*, Lam., the clusters are longer than the leaves, and the flowers are larger than in this fruitless example described above.

M. cærulea, Pers., Lam. Encyc. 613.—Stems erect, smooth, angular and furrowed, with erect branches. Leaves linear-lanceolate or obovate-cuneate, toothed only on their upper half. Clusters short, dense, nearly capitate, on peduncles which are much longer than the leaves. Flowers whitish, with blue veins. Legumes turgid, ovate-round, with a long beak. Seeds 2, ovate, rounded. Wandsworth, with the preceding, but not common. Annual; July, August.—This species is an economical plant: it is employed to flavour cheese and to scent snuff. All the species have a more or less agreeable smell when dry; this odour they retain in the herbarium for many years.

M. sulcata, Desf., Moris Fl. Sard. 59.—Stem erect, 6–10 inches high, sulcate, leafy. Leaves obovate or oblong, cuneate, toothed in their upper half. Clusters dense, cylindrical, on peduncles which are longer than the leaves. Flowers deep yellow; standard much longer than the wings.—Only the var. *β. major*, Cambess., has been collected at Wandsworth. It is distinguished from the var. *α* by its deep green leaves and its dense cluster.

M. sulcata? Desf., Moris Fl. Sard. 59.—Stem erect or ascending, stout. Leaves ovate-elliptical, toothed, not truncate at the apex. Stipules linear-subulate, not enlarged at the base. Flowers in dense, short spikes, ovate, scarcely longer than the leaves. It differs from *M. parviflora* in its larger flowers, dense, ovate spike, stouter stem, larger leaves, etc.—Wandsworth Steam-boat Pier. September 5, 1856.

Trifolium, *Lin.*—Annual or perennial herbaceous plants, with trifoliate stipulate leaves. Flowers in capitate clusters (heads), or in spike-like, elongate clusters. Calyx campanulate or tubular, in 5 divisions (5-toothed or 5-cleft). Corolla often gamopetalous (petals cohering), withering, persistent. Stamens diadelphous (in two parcels), more or less cohering to the petals. Legume small, entirely covered by the calyx (rarely a little longer than the calyx), ovate or slightly oblong, one-seeded, rarely 2–4-seeded, scarcely opening. Seeds roundish, very smooth.

Sect. I.—Flowers yellow, and becoming *scarious after flowering (floration)*; throat of calyx naked; legume stipitate.

T. filiforme, Lin.—*T. minus,* Sm. *Lesser Yellow Trefoil.*—E.B. 1256. L.B.S. 282 and 282*.

A. 18. C. 80. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–46°.

Roots fibrous, tubercular. Stems spreading-diffuse or ascending, glabrous or slightly pubescent, very slender. Leaflets obovate or obcordate, toothed on the upper part, the central leaflet petiolate, the lateral pair sessile; stipules ovate or ovate-oblong, pointed or tapering to a point. Heads (capitules) lax, 5–20-flowered, on long, filiform peduncles. Standard plicate or keeled, scarcely longer than the wings, not striated or with very fine longitudinal *striæ*. Style much shorter than the fruit.

In wet, gravelly places. Annual; May–September.

Var. *β. pauciflorum?*—*T. filiforme,* Sm.—E.B. 1257. Stems very slender; heads 2–8-flowered.

T. procumbens, Lin. *Hop Trefoil.*—E.B. 945. L.B.S. 281.

A. 18. C. 80. Lat. 50–60°. Alt. 0–200 yds. Tem. 52–46°.

Stems spreading, reclining or ascending, more or less downy, with two deep channels. Leaflets oblong or obovate, usually notched, toothed above, the central leaflet petioled. Stipules acuminate, with setaceous teeth. Heads round, many-flowered, stalked. Flowers sulfur- (sulphur-) coloured, very numerous, *helmet strongly striated,* spreading, *much longer than the wings.* Style very short.

Waysides; dry, sandy places. Annual; June.

Sect. II.—Flowers purple, roseate, or white, rarely yellow, in heads or spikes; legume sessile.

§ 1. *Flowers sessile or nearly so; calyx hairy or glabrous, with a prominent ring, teeth ciliated.*

T. pratense, Lin. *Purple Clover.*—E.B. 1770. L.B.S. 271.

A. 18. C. 82. Lat. 50–61°. Alt. 0–600 yds. Tem. 52–40°.

Stem angular, hollow, ridged and grooved, pubescent or smooth, leafy. Leaves elliptical, tapering at both ends, more or less hairy, often marked with pale-green bands; stipules herbaceo-membranous, awned. Heads *sessile, ovate, dense.* Calyx-teeth not quite so long as the corolla. (These characters are variable.)

Pastures; common; often cultivated. Perennial; June–September.

Var. *β. pariflorum.*—Heads not sessile; calyx-teeth as long or longer than the corolla.

T. medium is distinguished from *T. pratense* by its round, flexuous (often wiry), and solid stem, and by its more elongate uniformly pale-green leaflets, by its *herbaceous lanceolate stipules*, by its stalked heads, and by the long setaceous hairy teeth of the calyx.

T. medium, L. *Zigzag Trefoil.*—E.B. 190. L.B.S. 272.

A. 18. C. 75. Lat. 50–61°. Alt. 0–350 yds. Tem. 51–43°.

Stem ascending, flexuous or zigzag, solid or nearly solid. Leaflets oblong, all more or less narrowed at both ends; stipules membranous, with prominent green nerves and lanceolate-linear or setaceous teeth. Flowers *on short peduncles*, in the centre of the leaves or in the axils when twin flowers are produced. Calyx-throat closed when in fruit, with a hairy ring; teeth slightly spreading, lanceolate-linear (filiform), 4 of them equal, one double the length of the others. Fruit compressed, obovate, crowned with the slender persistent style?

Grassy places both in woods and in fields. Perennial; June–September.

In the Highlands this species is often very handsome. In the dried-up channels of streams it is sometimes found with a round, wiry, rigid stem.

T. ochroleucum, Lin. *Sulphur-coloured Trefoil.*—E.B. 1224. L.B.S. 269.

A. 3. C. 9. Lat. 50–53°. Alt. 0–100 yds. Tem. 49–48°.

Stems ascending, pubescent, round, leafy. Leaflets oblong, entire, pubescent above, silky below; stipules herbaceous, the free portion *linear or subulate*, hairy. Flowers cream-colour; heads oblong, solitary, rarely in pairs. Calyx-divisions lanceolate, hairy, spreading when in fruit. Standard much longer than the wings, compressed.

In dry, gravelly places, chiefly in the East of England. A few examples have been observed growing in the station, so often noticed, near Wandsworth. Perennial; June–August.

T. incarnatum, L. *Italian Clover.*—E.B.S. 2950. L.B.S. p. 15 in List of Excluded Species. Alien.

Stems hollow, erect, sulcate, very downy, 6–30 inches high. Leaflets obovate-roundish or obovate-cuneate, toothed on their upper part, downy on both sides; stipules ovate, obtuse, mem-

branous, herbaceous near the summit. Flowers in oblong-cylindrical, solitary and terminal spikes, bright purple (carnation), without bracts at the base of the spike. Calyx very hairy, about half as long as the corolla; the divisions are much spread when in fruit.

Only here and there of partially spontaneous growth. It has been cultivated for upwards of twenty years, and springs up occasionally in fields and waste places. Annual; June–August.

Var. β. *Molinieri*, Balb.—Flowers pale-rose; plant smaller, with obcordate leaflets.—Lizard Point, Cornwall.—Rev. W. S. Hore, in 'Phytologist,' ii. 237.*

T. stellatum, L. *Starry-headed Trefoil.*—E.B. 1545. L.B.S. 274.

A. 1. C. 1. Lat. 50–51°. Alt. 0. Tem. 51°.

Stems erect or ascending. Leaflets small, obcordate, cuneate at the base, dentate at the summit; stipules ovate, toothed, obtuse. Heads globular, lax, solitary, terminal, on long, hairy peduncles. Calyx-throat closed, with woolly hairs; divisions of the calyx lanceolate, elongate, with prominent reticulations, hairy, equal, and radiating, much longer than the tube. Seed large, ovate, smooth.

On the sea-beach near Shoreham, Sussex. Annual; July, August.

T. arvense, Lin. *Hare's-foot Trefoil.*—E.B. 944. L.B.S. 275.

A. 17. C. 60. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Stems usually several, slender, erect, much branched and hairy. Leaves on short petioles, nearly sessile. Leaflets oblong, linear, blunt or truncate, with silky hairs on both sides; stipules acuminate-awned. Flowers white or roseate, *on oblong, cylindrical, blunt spikes,* without bracts. Divisions of the calyx su-

* "Whether the plant (Var. β. *Molinieri*) is a mere variety of *T. incarnatum* I much doubt, and therefore avail myself of the present opportunity to point out the differences between its characters and those found in the diagnoses of the typical form, as given by Koch, Babington, and others. The Lizard plant is in most cases *prostrate*, but sometimes with a tendency to ascend; the stipules are *narrow*, ovate, and *acute;* the *throat naked*, etc. etc." The author adds: "Whether these discrepancies are of sufficient importance to justify a separation of the two plants, I leave to more able botanists to determine. I should state that not a single specimen with a red corolla was to be seen among the countless numbers which we observed on this and the former occasions."

bulate, *setaceous, almost equal, longer than the corolla,* more or less spreading when in fruit; the teeth are beautifully fringed with long, whitish hairs.

Sandy fields. Annual; July–September.

T. striatum. *Soft Knotted Trefoil.*—E.B. 1843. L.B.S. 277.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Stems spreading or erect or ascending, very downy, 4–6 inches high. Leaflets obovate or oblong, toothed at the apex; stipules ovate, acute, awned, almost membranous. Flowers in ovate, sessile or shortly pedunculate heads, elongated after flowering, pale-white or roseate, with bracts at their base. Divisions of the calyx *linear-subulate,* very hairy, spreading or erect when in fruit. Tube urceolate or somewhat globular when in fruit.

Dry, sandy places. Annual; June, July.

This species is distinguished from the following principally by its less rigid calyx-teeth.

T. scabrum, L. *Rough Trefoil.*—E.B. 903. L.B.S. 276.

A. 13. C. 40. Lat. 50–57°. Alt. 0–100 yds. Tem. 52–48°.

Stems slender, rigid, prostrate or ascending, flexuous, branching, downy, a few inches high, about the same height as the stem of *T. striatum.* Heads ovate, *oblong after flowering,* solitary, axillary, and terminal. Flowers pale-white or pink. Calyx-tube oblong, slightly enlarged under the limb, coriaceous, hairy, the throat is shut by two callous processes. Divisions of the calyx *rigid, somewhat spinous, divergent.*

Dry, sandy places. Annual; June, July.

T. Bocconi, Savi. *Boccone's Trefoil.*—E.B.S. 2868. L.B.S. 277*.

A. 2. C. 1. Lat. 50°. Alt.? Tem. 52°.

Stems erect or ascending or prostrate. Leaflets obovate or oblong, cuneate at the base, toothed at the summit; stipules veined, with subulate, setaceous points. Heads solitary or in pairs, dense, becoming oblong-cylindrical (somewhat conical). Calyx-tube membranous, hairy on the outside and in the throat, which is not callous as it is in *T. scabrum.* Divisions of the calyx lanceolate, spinous at their tips, *connivent,* slightly unequal, the lower one as long as the tube.

Dry places, rare. Cadgewith, Cornwall. Annual; July.

T. maritimum, Huds. *Teasel-headed Trefoil.*—E.B. 220. L.B.S. 273.

A. 6. C. 12. Lat. 50–53°. Alt. 0. Tem. 52–49°.

Stems spreading, erect or ascending (often prostrate), branching; the upper or lateral branches surpass the primary axis. Leaflets oblong or obovate (linear-elliptical), entire or only feebly toothed at the apex; stipules herbaceous, linear, acute. Heads ovate, solitary, usually pedunculate, but sometimes sessile, mostly terminal. Calyx-tube obconical, the throat enclosed by two lateral callosities, like two lips; divisions of the calyx herbaceous, *lanceolate-acuminate*, finally *dilated and spreading*.

Muddy salt-marshes. Annual; June–August.

In the common form the divisions of the calyx are unequal. There is a variety in which the divisions are equal, viz. *T. Xatardii*, DC.? This form has been collected at Wandsworth Steamboat Pier.

T. subterraneum, L. *Subterraneous* (*underground*) *Trefoil.* —E.B. 1048. L.B.S. 268.

A. 8. C. 25. Lat. 50–54°. Alt. 0–100 yds. Tem. 52–48°.

Stems stout, hairy or woolly, prostrate, much branched. Leaves obovate, cuneate, slightly toothed, pubescent on both sides; stipules herbaceous, ovate, pointed. Flowers yellowish-white (cream-coloured), usually 3 together, on stout peduncles, which are mostly shorter than the petioles. Calyx of the fertile flowers enlarged by the legume, and surrounded by the barren *calyxes*, the teeth of which are refracted and radiated, and form a kind of cage, enclosing the legume and fixing it to the soil, in which it is naturally buried after the flowering of the plant. Standard of the corolla striated with reddish streaks: both it and the wings are much larger than the calyx. Legume one-seeded; seed black, large, and shining.

In open, grassy, sandy places. Annual; May, June.

Sect. II.—Flowers sessile or pedicelled; teeth of the calyx glabrous or nearly so.

T. glomeratum, Lin. *Smooth, round-headed Trefoil.*—E.B. 1063. L.B.S. 278.

A. 5. C. 9. Lat. 50–53°. Alt. 0–50 yds. Tem. 51–49°.

Root annual. Stems spreading or erect, glabrous. Leaves obovate-cuneate or roundish, with wide, sharp, ascending teeth and prominent nerves, glabrous on both sides; stipules entire, ovate-acute, awned, scarious. Flowers sessile, roseate, the standard being much longer than the wings, in round, dense, usually solitary heads. Calyx *glabrous*, with ovate, lanceolate teeth,

shorter than the corolla, *spreading when enclosing the fruit.* Seeds ovate-reniform.

In dry, gravelly places. Annual; June, July.

T. strictum, Lin. *Erect Trefoil.*—E.B.S. 2949. L.B.S. 278*. A Channel Islands plant.

Root annual. Stems erect or spreading, branched, stouter than in *T. glomeratum,* leafy. Leaflets *oblong-linear* or obovate or cuneate, strongly toothed, glabrous on both sides; stipules large, *dilated, ovate,* scarious, sharply toothed. Heads dense, round, stalked, axillary, and terminal. Calyx-teeth subulate, nearly as long as the corolla. Fruit obovate, compressed, glabrous, *much longer than the tube of the calyx.* Seeds ovate.

Jersey. Annual; August.

T. suffocatum, Lin. *Suffocated Trefoil.*—E.B. 1049. L.B.S. 279.

A. 6. C. 10. Lat. 50–54°. Alt. 0. Tem. 52–49°.

Stems short, branching, prostrate, usually buried in the sand where it grows. Leaves much longer than the stem, with obovate leaflets, cuneate at the base, and often notched and toothed at the apex; stipules ovate, abruptly acuminate. Heads small, ovate, contiguous, sessile, axillary. Calyx-tube ovate, with almost equal lanceolate-subulate teeth. Seeds 2, lenticular, notched.

On sandy sea-shores, rare. Annual; May–July.

T. repens, Lin. *White Trefoil,* or *Dutch Clover.*—E.B. 1769. L.B.S. 267.

A. 18. C. 82. Lat. 50–61°. Alt. 0–900 yds. Tem. 52–38°.

Stems prostrate and rooting. Leaflets obovate or rhomboidal, blunt or notched, bordered with pointed teeth; stipules lanceolate, abruptly subulate. Heads globular, on peduncles, which are as long as the leaves. Flowers on pedicels, which are ultimately reflexed. Calyx-tube campanulate, with lanceolate, subulate (divisions), the upper contiguous, longer than the lower. Legume linear, turgid, bearing 3–4 roundish, notched seeds.

Pastures and moist places; very common. Perennial; May–October.

T. ornithopodioides, Lin.—*Trigonella ornithopodioides,* DC. and London B. S. Cat. *Bird's-foot Trefoil.*—E.B. 1047. L.B.S. 266.

A. 10. C. 20. Lat. 50–57°. Alt. 0–100 yds. Tem. 52–48°.

Stems spreading and prostrate, usually very short (2–6 inches long). Leaflets obovate, cuneate at the base, truncate or notched at the apex, serrated, with sharply subulate teeth; stipules lanceolate-subulate, entire. Flowers few (1–5), usually *pedunculate*. Divisions of the calyx (teeth) nearly equal, longer than the tube. Standard longer than the wings. Legume pubescent, linear, compressed, obtuse, elongate, containing many ovate, smooth seeds (6–8).

Dry, sandy, and gravelly places. Wandsworth Common. Annual; June, July.

Sect. III.—Heads many-flowered; corolla withering; throat of the calyx naked, becoming inflated when in fruit (forming a head like a strawberry); legume sessile.

T. fragiferum, Lin. *Strawberry-headed Trefoil.*—E.B. 1050. L.B.S. 280.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–48°.

Stems reclining and rooting, furrowed on one side, glabrous or pubescent. Leaflets roundish-obovate, toothed, glabrous; stipules membranous, entire, lanceolate, awned. Heads round, subtended by scarious bracts. Peduncles axillary, much longer than the leaves. Calyx pubescent, with silky hairs, and with linear-subulate divisions, inflated, membranous and reticulate in fruit.

Waysides. Perennial; July–September.

T. resupinatum, L. *Reversed Trefoil.*—E.B.S. 2789. L.B.S. List of Excluded Sp.

A. 3 ? Lat. 51°. Alt. 0–50 yds.

Root annual. Stem slender, prostrate or ascending. Leaflets obovate, rounded, toothed, with *lanceolate, elongate* stipules, ovate at the base, lanceolate-subulate above. Peduncles about as long as the leaves. Flowers in rather lax, hemispherical heads, purplish, twice as long as the calyx. Fruit in strawberry-like clusters, formed by the inflated calyx.

At Wandsworth Steam-boat Pier. Annual; June–Sept.

This species may readily be known by its elegant purplish flowers, and when in fruit by its inflated calyxes, forming a globular head like that of *T. fragiferum.*

Trifolium spumosum, L.—Stem branching from the base, leafy. Leaflets obovate-toothed. Heads nearly sessile. Flowers roseate-purple. Calyx membranous, smooth, with long, filiform

or setaceous teeth. Calyx of the fruit inflated, striated. Legume elongate, 3–4-seeded, with a long beak.—Wandsworth Steam-boat Pier. Annual; July, August. Only noticed one season, and then but few examples occurred.

This locality, Thames-side, near the steam-boat pier so frequently mentioned, produced in addition to the above the following rare species of this genus, viz. *T. resupinatum*, rather plentifully, and large specimens; also *T. maritimum*, var. *Xatardii* and *T. ochroleucum*, very scanty, and only small forms. The *Melilots*, *Medicks*, *Trigonellas*, etc., were very abundant and fine.

Astragalus, *Lin. in part.*—Perennial plants, with somewhat woody roots. Leaves *unequally* pinnate. Flowers in axillary clusters. Calyx tubular or campanulate, with 5 teeth. Standard of the corolla longer than the wings. Keel obtuse. Stamens diadelphous. Legume elongate, curved, many-seeded, *2-celled by the inflexion of the dorsal nerve* (the lower suture).

A. Glycyphyllus, L. *Sweet Milk-vetch. Wild Liquorice.*—E.B. 203. L.B.S. 286.

A. 14. C. 50. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Stems spreading or ascending (often quite prostrate), *angular*, flexuous, leafy. Leaves all petiolate, with numerous pairs of leaflets and an odd one (4–12 pairs); leaflets ovate-oblong, entire; stipules herbaceous, *ovate-oblong, pointed*, free. Peduncles axillary, stout, shorter than the leaves. Flowers greenish-yellow, in dense clusters. Legume somewhat 3-angled, tapering at the point, smooth or puberulent, curved and stipitate (on a short stalk).

In woods and bushy places. Perennial; June–August.

A. Hypoglottis, L. *Purple Mountain Milk-vetch.*—E.B. 274. L.B.S. 287.

A. 9. C. 25. Lat. 51–58°. Alt. 0–200 yds. Tem. 48–46°.

Root slender, woody, creeping. Stems *round*, slender, flexuous, clothed with long, white hairs (only on the recent stems), prostrate, 2–6 inches long. Leaflets in numerous pairs with an odd one (6–12 on each side), small, oblong, obtuse, hairy on both sides; hairs white, scattered; *stipules united.* Peduncles longer than the leaves, with lanceolate, membranous bracts. Flowers purple, in a globular cluster. Calyx tubular, with appressed hairs, and linear-lanceolate teeth. Legumes erect, *ovate or cordate at the base*, pointed. Seeds black, reniform.

On heaths, sea-coasts, etc. Arthur's Seat, Edinburgh. Perennial; June, July.

A. alpinus, L. *Alpine Milk-vetch.*—E.B.S. 2717. L.B.S. 288.

A. 1. C. 2. Lat. 56–58°. Alt. 800–900 yds. Tem. 38–37°.

Stem slender, clothed with soft hairs, 6–12 inches long, prostrate, elongate. Leaves with 10–12 pairs of hairy, ovate or elliptical, blunt leaflets; stipules ovate, pointed, *free* (or sometimes slightly combined). Peduncles as long as the leaves. Flowers few, white with purple tips, in capitate spikes (dense clusters). Legumes oblong, tapering at both ends, stalked, pendulous?, enveloped in the calyx?, covered with black hairs when young.

On mountains in Clova and Braemar. Perennial; July.

Oxytropis, *DC.*—Leaves radical (in the Br. species); leaflets numerous, with an odd terminal one. Calyx in 5 divisions. Keel of the corolla *apiculate* (having a narrow point). Legume incompletely 2-celled (the cells are formed by the inflexed margin of the upper suture).

O. campestris, DC. *Yellowish Mountain Oxytropis.*—E.B. 2522. L.B.S. 290.

A. 1. C. 1. Lat. 56–57°. Alt. 700 yds. Tem. 41–40°.

Stem *short, procumbent* (root producing a tuft of leaves and one or two flowering-stalks (scapes)). Leaves with 10–15 pairs of ovate or lanceolate leaflets. Flowers 6–10, in a short, *roundish or ovate cluster.* Calyx tubular, with linear teeth, covered with appressed yellow hairs. Legume ovate, apiculate. Seeds reniform.

Caithness, discovered by Mr. R. Dick. Clova Mountains. Perennial; July. The range of this plant must be extended.

O. uralensis, DC.—*O. Halleri,* Bunge. *Hairy Mountain Oxytropis.*—E.B. 466. L.B.S. 289.

A. 4. C. 6. Lat. 54–59°. Alt. 0–? Tem. 48–45°.

Root woody. Leaves radical, stalked, with scarious adnate stipules. Leaflets ovate, acute, 8–12 pairs, whitish and silky on both sides. Flowers on erect, radical peduncles, which are longer than the leaves; the whole herbage is remarkably *silky.* Flowers bracteate, solitary, of a rich bluish-purple. Calyx tubular, densely hairy, with short, blunt teeth. Legume ovate-oblong, pointed, with a membranous partition, crowned with the permanent style.

Mountains in Scotland, on a sandy soil. Perennial; July.

TRIBE II. *VICIEÆ.*—Leaves *equally* pinnate, terminating in a *tendril* (rarely in a sharp point); stamens diadelphous or monadelphous; legume one-celled (rarely with cellular cross partitions). Cotyledons *remaining underground after germination.*

VICIA, *Tourn.*—Annual, biennial, or perennial herbaceous plants, with equally pinnate leaves and numerous leaflets, terminating in branched tendrils; stipules herbaceous, often half arrow-shaped. Flowers axillary. Calyx tubular, campanulate, with equal or unequal teeth. Style *filiform.* Legume many-seeded and elongated or short and few-seeded. Seeds rounded, angular, or compressed, with an oblong or linear hilum.

Sect. I.—Flowers solitary or in pairs (clustered in *V. sepium*). Corolla longer than the calyx. Style bearded just below the summit.

V. sativa, L. *Common Vetch.*—E.B. 334. L.B.S. 298.

A. 18. C. 80. Lat. 50–59°. Alt. 0–200 yds. Tem. 52–46°.

Stem angular, scarcely winged and slightly hairy, leafy. Leaves with 3–7 pairs of leaflets, with dilated, toothed, herbaceous stipules; leaflets elliptical-linear, only apparently notched, hairy, plicate, mucronate. Calyx ribbed, slightly hairy, with nearly equal teeth. Flowers single, on very short pedicels. Corolla a deep purple (not red). Legume slightly hairy.

On Barnes Common; not rare. Annual; May–September.

V. sativa, Var.

Stems angular, hairy or smooth, branched, leafy. Leaflets in 3–6 pairs, linear-oblong, blunt or truncate or notched, with or without a mucro (the leaflets of the lower leaves are sometimes oblong-obovate); stipules usually with setaceous, spreading teeth. Peduncles 1-flowered, either very short (flowers nearly sessile) or reaching beyond the apex of the first pair of leaflets. Calyx-teeth nearly equal, setaceous, with lax, spreading hairs. Legume linear-elliptical, elongate, taper-pointed, hairy.

Battersea.

Var. β.—Stem hairy. Leaflets all uniform, linear-oblong, truncate or notched with a longish mucro. Flowers solitary, sessile, purplish-blue. Calyx-teeth subulate, ciliate. Pods densely hairy or silky when young.

Var. γ.—Densely hairy. Leaflets obovate, deeply notched, with a long mucro. Flower and pods as in var. β.

Both varieties on mud laid on Battersea fields.

Another variety from the same place, with the following cha-

racters, viz.—Stem smooth. Leaflets nearly smooth, blunt, without a mucro. Peduncles twice as long as the flowers. Calyx-teeth unequal, short, downy, not hairy as in the above variety, oblong, flattish, not at all tapering, about 6-seeded, wrinkled and smooth.

V. lathyroides, L. *Spring Vetch.*—E.B. 30. L.B.S. 299.

A. 17. C. 50. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Stems procumbent, branched, 4–5 inches long. Leaflets obcordate or oblong, notched, usually in three pairs, usually only with the rudiment of a tendril. Stipules entire, without the depressed spot of *V. sativa,* etc. Flowers solitary, sessile, small, purple. Legumes erect, smooth. Seeds cubicular, tubercled.

On dry pastures, banks, and roadsides. Ann.; April, May.

V. lutea, *Lin. Rough-podded Yellow Vetch.*—E.B. 481. L.B.S. 300.

A. 5. C. 9. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Stem procumbent, twisted, ridged and furrowed, hairy, leafy. Leaves in 6–8 pairs, with elliptic, lanceolate, apiculate leaflets; stipules 3-cleft, with triangular lobes, one coloured or spotted. Calyx-teeth very unequal, two of them very long, erect, the others short, and more or less spreading. Corolla yellowish-white; helmet (standard) glabrous, dilated. Legumes elliptic-oblong, hairy.—Whole herbage hairy; hairs of the legume bulbous at the root.

Wandsworth Steam-boat Pier. Per.; June–September.

V. lævigata, L. *Smooth-podded Vetch.*—E.B. 483. L.B.S. List of Excluded Species.

Unknown in recent years.

Root perennial, tuberous. Stems nearly erect, 6–12 inches high. Leaflets oblong, notched, mucronate, in about four pairs, quite smooth as well as the stem; stipules short, with a lateral lobe. Flowers larger than in the preceding, pale-blue or whitish. Legume always smooth.—This appears to be the only distinction between the above and some of the following species or forms.

On the pebbly beach, Weymouth. Perennial; July–Sept.

V. hybrida, L. *Hairy-flowered Yellow Vetch.*—E.B. 482.

Stems ascending, hairy. Leaflets oblong or obovate, notched or entire and mucronate, about six pairs; stipules ovate. Flowers solitary, large, yellow, more or less veined with purple. Standard hairy. Legumes reflexed, hairy.

Glastonbury, Somerset. Perennial; June, July.

Smith says that the essential specific difference between *V. hybrida* and *V. lutea* consists in the standard "being clothed externally with abundance of shining yellow hairs."

V. sepium, L. *Bush Vetch.*—E.B. 1515. L.B.S. 301.

A. 18. C. 81. Lat. 50–60°. Alt. 0–650 yds. Tem. 51–40°.

Stem straggling, branched, leafy, winged or angular. Leaflets ovate, mucronate, in 4–8 pairs; stipules toothed, teeth pointed. Flowers in axillary clusters, on short peduncles. Calyx tubular, hairy, with short, unequal teeth. Standard dilated, longer than the wings. Legumes oblong (scimitar-shaped), black when the fruit is ripe. Seeds globular, black, speckled with white; hilum linear, white, surrounding half the circumference.

Hedges and woods. Perennial; June–September.

Var. *β. montana,* Koch?—Leaflets ovate-lanceolate, truncate.

V. bithynica, Lin. *Rough-podded Purple Vetch.*—E.B. 1842. L.B.S. 302.

A. 7. C. 15. Lat. 51–54°. Alt. 0–100 yds. Tem. 52–48°.

Root perennial. Stems slender, angular, glabrous, spreading, leafy. Leaflets lanceolate or linear, pointed, one pair on the lower, and two pairs on the upper leaf-stalks; stipules lanceolate, with fringed teeth. Flowers solitary, axillary, on stalks which are shorter than the leaves. Calyx tubular, with long, pointed teeth. Standard purple. Legumes tumid, hairy. Seeds 6, globular, speckled.

There is a variety of this plant with narrowly linear leaves and narrower stipules.

In bushy, gravelly places near the sea. It was gathered at Battersea in 1853 and 1854, on mud laid on the fields, with several other foreigners. Perennial; July–September.

Sect. II.—Flowers clustered, rarely solitary by abortion. Common peduncles much longer than the pedicels. Corolla much longer than the calyx. Style irregularly pubescent or almost glabrous.

V. Cracca, L. *Tufted Vetch.*—E.B. 1168. L.B.S. 297.

A. 18. C. 82. Lat. 50–61°. Alt. 0–800 yds. Tem. 51–38°.

Root perennial. Stem climbing, angular, furrowed, hairy or puberulent; tendrils long, branched, and coiled. Leaflets oblong, linear or lanceolate, tapering, or obtuse and mucronate, 8–10 pairs; stipules herbaceous, half arrow-shaped, entire, lanceolate. Flowers numerous, bluish-violet, on peduncles which are not

longer than the leaves. Calyx-teeth very unequal, the upper two very short, nearly obsolete, the other three subulate, the central one longer than the lateral ones, the tube partly coloured. Corolla much longer than the calyx. Standard not longer than the wings, obcordate, with rounded lobes. Legumes reflexed or spreading, oblong, glabrous. Seeds roundish, smooth when ripe, with a prominent linear hilum, which half encircles the seed.

Hedges. Perennial; June–September.

V. tenuifolia, Roth.—Stem pubescent. Leaflets numerous, linear-lanceolate, tapering, pointed, entire. Stipules linear. Flowers clustered, on stalks longer than the leaves. Standard blue, wings white. Calyx deep-purple, with very unequal teeth. Legumes few-seeded, oblong, reflexed or spreading.—Battersea fields. Perennial; July.

In this species the cluster of flowers is laxer and more elongated than in *V. Cracca.* The seeds also are larger than in the former species, and only one-fourth part of their circumference is embraced by the funicle.

V. Gerardi, Vill.—This form, of which a few examples were collected on the mud or soil laid on Battersea Park, differs from *V. Cracca* by its more rigid stems, denser clusters of intensely blue flowers, narrower leaflets, fewer seeds, and more obviously by the *shagginess* of every part of the plant.

Ervum pubescens?—Stems numerous from the same root, quite prostrate, and spreading in all directions. Leaflets linear, narrow, notched, and mucronate. Flowers one or several, on short, hairy peduncles. Legume dilated, oblong, hairy, terminated by the style. Seeds about 4.—Battersea fields (Park), on mud or soil.

V. hirsuta, Koch. *Hairy-podded Tare.*—E.B. 970. L.B.S. 303.

A. 18. C. 80. Lat. 50–60°. Alt. 0–300 yds. Tem. 51–44°.

Stems angular, grooved, glabrous, leafy. Leaflets 5–8 pairs, linear-elliptical or oblong, obtuse or truncate, mucronate; stipules linear, entire or incised, with long, spreading, setaceous teeth. Flowers small, pale-blue, in groups (clusters) of from 3 to 8, on peduncles which are about as long as the leaves. Calyx-teeth linear-subulate, rather longer than the tube, and about as long as the corolla. Legumes oblong, hairy, 2-seeded. Seeds *roundish, slightly compressed,* smooth.

In fields. Annual; May–September.

A variety of the above has flat oblong pods, which are quite smooth, strongly reticulate, with 3–7 small, flattish, wrinkled, ovate seeds, with a very short hilum (the hilum does not embrace above one-fourth or one-fifth of the circumference of the seed).

Battersea fields. ? *V. angustifolia*, Fries. Annual? August?

V. tetrasperma, Mœnch. *Smooth-podded Tare.*—E.B. 1223. L.B.S. 304.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Root annual. Stems weak, straggling, climbing, branched and leafy, angular, smooth. Leaflets linear, acute, mucronate, 2–4 pairs, with very long tendrils. Flowers 1–2, on very slender pedicels, which are shorter than the leaves. Calyx-teeth slightly unequal, acute. Standard longer than the wings, pale-pink, with deep purplish lines. Pods oblong, 4-seeded, glabrous.

Grassy places about fields and meadows. Annual; July–September.

V. gracilis, Lois. *Slender Vetch.*—E.B.S. 2904.

The following is borrowed from Dr. Bromfield's excellent 'Flora Vectensis':—

Plant larger than *V. tetrasperma*, and of a somewhat glaucous hue. Leaflets much longer, narrower, and more acuminate than in the above, seldom exceeding 3 pairs, and they are singularly erect. Peduncles longer than the leaves, 1–6–7-flowered. Legume 6-seeded. Seeds small, reddish-brown, obscurely mottled with black. Hilum very short, scarcely longer than broad.

Cornfields near West Cowes.

(Brightstone, A. G. More, Esq.—EDRS.)

In the 'Phytologist,' vol. iii. pp. 280, 281, Dr. Bromfield states: "In cultivated fields, woods, and hedges, not unfrequent, and sometimes very abundant, in the Isle of Wight, but uncertain and capricious in its stations. I am still more than half inclined to regard it as a mere variety of the last (*V. tetrasperma*), finding most of its characters prone to variation; but in deference to the opinion of others I here keep it distinct."

V. sylvatica, L. *Wood Vetch.*—E.B. 79. L.B.S. 296.

A. 17. C. 60. Lat. 50–58°. Alt. 0–500 yds. Tem. 50–42°.

Root creeping. Stems several, spreading, trailing and climbing, angular, glabrous, zigzag, leafy. Leaves on stout, spreading leaf-stalks; leaflets ovate-elliptical, with a short point, 5–10

pairs, with branched curling tendrils; stipules small, fringed with slender teeth. Flowers drooping, blue and white, in clusters on stout peduncles, which are longer than the leaves. Pedicels as long as the calyxes. Calyx truncate, with short, erect teeth. Standard dilated, finely marked with purple lines. Legume about an inch long, not rough. Seeds roundish, few. A very elegant plant.

Woods and hedges; rare. Perennial; July–September.

V. Orobus, DC. *Wood Bitter Vetch.*—E.B. 518. L.B.S. 295.

A. 8. C. 20. Lat. 51–58°. Alt. 0–200 yds. Tem. 48–46°.

Stems numerous, erect or ascending, 1–2 feet high. Leaves terminating in a sharp point (mucro), not in a tendril; leaflets oblong-obtuse, mucronate, 6–14 pairs, the lowest pair contiguous to the stem; stipules slightly toothed at the base, half hastate, entire or slightly toothed. Flowers numerous, with purplish streaks, on long peduncles (longer than the leaves). Lower teeth of the calyx lanceolate-subulate. Standard *tapering into a broad claw*. Legumes smooth, yellow when at maturity. Seeds ovate-compressed, *smooth;* hilum occupying about half the circumference of the seed.

Woods in upland rocky places. Perennial; May–July.

Lathyrus, *Lin.*—Annual or perennial plants, with angular or winged stems and equally pinnate leaves; tendrils branched (in *L. Aphaca* the stipule is leaf-like, and in *L. Nissolia* the stalk is dilated, but the leaflets are abortive in both). Calyx campanulate, 5-cleft or 5-toothed, the two upper teeth being shorter than the lower three. Style *flat, linear or dilated at the apex*. Legume oblong or linear, many-seeded. Seeds globular or slightly compressed, with an oblong or linear hilum.

Sect. I.—Leaflets 1–4 pairs; rach terminating in a tendril.

§ 1. *Roots perennial; peduncles many-flowered* (*L. tuberosus* 2–4-*flowered*).

L. pratensis, Lin. *Meadow Vetchling.*—E.B. 670. L.B.S. 308.

A. 18. C. 82. Lat. 50–61°. Alt. 0–350 yds. Tem. 52–43°.

Stem climbing or straggling, branched, leafy, *angular*. Leaflets in pairs, lanceolate, tapering at the base, pointed, strongly ribbed on the under surface; stipules (*sagittate, ovate-oblong, acuminate*) lanceolate, with a single, setaceous, spreading tooth at the base. Peduncles longer than the leaves, *many-flowered*. Flowers *yellow*, in a close cluster. Calyx cylindrical, with short, nearly equal teeth. Standard dilated, longer than the wings.

Legumes oblong, scimitar-shaped, many-seeded, reticulate. Seeds large, with a small hilum, black when ripe.

Meadows and hedges. Perennial; July–September.

L. sylvestris, L. *Narrow-leaved Everlasting Pea.*—E.B. 805. L.B.S. 310.

A. 12. C. 40. Lat. 50–56°. Alt. 0–200 yds. Tem. 52–48°.

Root branching. Stems *broadly winged.* Leaflets *oblong-lanceolate,* mucronate, in single pairs *on broadly-winged leaf-stalks;* stipules linear or setaceous, elongate. Flowers *roseate,* on long peduncles. Legumes oblong-linear, finely reticulate, glabrous. Seeds round, slightly shagreened, the hilum half surrounding them.

Hedges and bushy places; not common. Per.; June–Aug.

L. latifolius, L. *Broad-leaved Everlasting Pea.*—E.B. 1108. L.B.S. List of Excluded Species. Alien.

Stem climbing, with *very broad wings* and spreading branches. Leaves on a winged petiole, with a single pair of *elliptical leaflets,* and terminating in a stout, branched tendril. Flowers numerous, on stout peduncles, which are much longer than the leaves. Legume compressed, beautifully veined (nerved). Seeds numerous, round or ovate, tubercled; hilum *about one-third of the circumference.*

Hedges. Perennial; July, August. In a hedge near Yapton, Sussex.

This species is said to be a doubtful native, but from its tendencies to keep its place (its retentive hold of the soil), it might be presumed to have as strong a claim to nationality as some reputed natives. As it produces a great quantity of leafy stems and branches, it might be worth while to try its value as a fodder-plant. It will grow in very poor soil. A plant was observed in 1856 growing vigorously on the verge of a gravel-pit on Wandsworth Common.—N.B. This pit or cutting is on the line of the railway opposite the prison; and it produces, or did produce, in addition to those already mentioned, *Dianthus barbatus, Veronica spicata,* and some genuine British species never noticed on Wandsworth Common prior to the formation of the railway.

L. macrorhizus, Wimm.—*Orobus tuberosus,* Lin. and Sm., and London Botanical Society. *Common Bitter Vetch. Heath Pea.*—E.B. 1153. L.B.S. 312.

A. 81. C. 80. Lat. 50–61°. Alt. 0–700 yds. Tem. 51–40°.

Roots slender, creeping, furnished with rounded tubercles (knobs). Stems narrowly winged, ascending. Leaves with 2–4 pairs of elliptical leaflets, which end in *setaceous points;* stipules half arrow-shaped, entire or toothed. Flowers 2–4, on a peduncle which usually surpasses the leaves. Calyx-teeth very unequal, the upper short, convergent. Legume nearly cylindrical, tapering at the base, black when mature. Seeds round, smooth, hilum occupying about one-third of the circumference of the seed.

On heaths and in woods. Perennial; May–August.

Var. *β. Orobus tenuifolius,* Roth.—Leaflets narrow, linear-lanceolate. Not rare in North Wales.

L. niger, Wimm.—*Orobus niger,* Lin. and Sm. *Black Bitter Vetch.*—E.B.S. 2788. L.B.S. 313.

A. 1. C. 2. Lat. 56–57°. Alt. 0–200 yds. Tem. 45°–?

Stems angular, *not winged,* erect, much branched. Leaflets *with* 3–6 *pairs,* oblong-elliptical (ovate-oblong), obtuse and apiculate (with a small mucro), the common petiole (rach) ending in a subulate point (not with a tendril). Flowers 4–8, on common peduncles, which surpass the leaves. Calyx-teeth unequal, the upper short, triangular convergent. Legume linear, slightly compressed, tapering at the base, finely veined. Seeds ovate, with a linear hilum, which is equal to one-third of the circumference of the seed. The whole herbage turns black in drying. —This character is not peculiar to *L. niger; L. macrorhizus* sometimes assumes this colour in the herbarium.

Mountainous passes in Scotland; rare. Per.; June, July.

L. maritimus, Fr.—*Pisum maritimum,* L. and Sm. *Seaside Pea.*—E.B. 1046. L.B.S. 311.

A. 5. C. 5. Lat. 50–61°. Alt. 0. Tem. 51–47°.

Stem angular, not winged, reclining at the base, erect upwards, flexuous. Leaves on a *non-winged* petiole, terminating in a simple or branched tendril; leaflets *elliptical* or *oblong,* in 4–6 pairs; *stipules leaf-like, ovate, cordate at the base.* Flowers numerous, on erect and stout peduncles, which are not much more than half as long as the leaves. Calyx-teeth unequal, the upper short, triangular, and converging. Legume compressed, cuneate at the base, terminated by the long, flattened style. Seeds numerous, black, smooth; hilum one-third of the circumference of the seed.

On pebbly sea-beaches; rare. Perennial; July, August.

Var. β. *tenuifolius*, Bab.—Leaflets elliptic-lanceolate, acute.—Burrafirth, Unst, Shetland.—Edmonston, Fl. Shetland, p. 31.

Sect. II.—Roots annual or perennial; peduncles 1–3- or many-flowered.

L. palustris, L. *Marsh Everlasting Pea.*—E.B. 169. L.B.S. 309.

A. 6. C. 12. Lat. 51–54°. Alt. 0–100 yds. Tem. 50–48°.

Stems slender, *winged*. Leaflets *linear-lanceolate, pointed, in* 2–3 *pairs*, common petiole terminating in a slender, branching tendril; stipules half arrow-shaped, often very slender (setaceous). Flowers *bluish*, one, three, or several on a slender common peduncle, which is rather longer than the leaves. Calyx-teeth unequal; the upper short, triangular, converging. Legume linear, smooth, compressed, cuneate at the base, strongly reticulate. Seeds round, compressed; hilum equal to $\frac{1}{4}$ of the circumference of the seed.

Boggy meadows in the west of England. Perennial; June–August.

Var. β. *linearifolius*, Sering.—Leaves narrow, linear-lanceolate, acute.—Has this variety been observed in England?

L. hirsutus, L. *Rough-podded Vetchling.*—E.B. 1255. L.B.S. 307.

A. 2. C. 2. Lat. 51–52°. Alt. 50 yds. Tem. 50–49°.

Stem slender, with *narrow wings*, slightly branched. Leaves on a short not-winged petiole, ending in a tendril, consisting of a *single pair* of elliptical or oblong-linear leaflets; stipules narrow, half arrow-shaped. Peduncles 1–2-flowered, longer than the leaves. Calyx-teeth nearly *equal*, ovate, acuminate. Legume oblong, compressed, keeled, covered with long woolly hairs, which grow out of a tubercular base. Seeds round, *tubercular, with a short hilum*.

East of England; rare. Annual; June–August. Essex, not far from Southend.

L. Nissolia, L. *Crimson Vetchling.*—E.B. 112. L.B.S. 306.

A. 6–10? C. 20. Lat. 50–53°. Alt. 100 yds. Tem. 51–48°.

Stems rigid, slender, erect, angular, *not winged*. Leaves and stipules? abortive (the petiole is elongate, flattened, and leaf-like); leaf-like petioles linear-lanceolate, tapering, ribbed, quite entire; stipules minute (Sm.). Flowers usually solitary, on a long filiform peduncle, shorter than the leaf (petiole). Legume oblong-linear,

tapering at the apex, longitudinally veined (nerved). Seeds ovate, tubercled, with a very short hilum.

In bushy and grassy places; rare. Annual; June, July.

L. Aphaca, L. *Yellow Vetchling,* or *Grass Vetchling.*—E.B. 1167. L.B.S. 305.

A. 5–9 ? C. 20. Lat. 50–53°. Alt. 100 yds. Tem. 51–48°.

Stems angular, weak, usually prostrate, branched. Leaves abortive (only a long, slender, coiled tendril is developed); stipules large (*like two opposite leaves*), *cordate-sagittate.* Flowers on long, slender peduncles, 1–2 (rarely 2), *yellow.* Calyx-teeth almost equal, linear-acute, spreading. Legume compressed, oblong, reticulate. Seeds ovate, smooth, with a very short hilum.

Sandy and gravelly fields; rare. Annual; May–August.

TRIBE III. *HEDYSAREÆ.*—Leaves unequally pinnate. Legume divided transversely into one-seeded joints.

SYNOPSIS OF GENERA, *see p.* 139.

ORNITHOPUS, *Lin.*—Annual plants, with unequally pinnate leaves and small flowers, which are either solitary or in few-flowered umbels. Calyx tubular, campanulate, with five almost equal teeth. Legume linear, curved, with *oblong, slightly-compressed joints.*

O. perpusillus, Lin. *Bird's Foot.*—E.B. 369. L.B.S. 291.

A. 16. C. 70. Lat. 50–58°. Alt. 0–100 yds. Tem. 51–46°.

Root annual. Stems spreading or ascending, diffuse, very pubescent. Leaflets numerous, oblong, small; stipules triangular, scarious, barely visible. Peduncles 1–4-flowered. Legume hairy, strongly reticulate, terminated by a short and slender beak.

Sandy places. Annual; June–September.

Var. *β. leiocarpus.*—Legume glabrous.

ARTHROLOBIUM, *Desv.*—Leaves pinnate, in many pairs. Flowers pedunculate. Calyx tubular, with five nearly equal teeth. Keel of the corolla blunt. Legume elongated, cylindrical, consisting of many one-seeded joints, which are scarcely contracted at their junctions, not opening.

A. ebracteatum, DC. *Sand Joint-Vetch.*—E.B.S. 2844. L.B.S. 292.

A. 1. C. 1. Lat. 49–50°. Alt. 0. Tem. 53–52°.

Stem round, prostrate, branching, leafy. Leaves on short leaf-stalks; leaflets in numerous pairs, with an odd terminal one, ob-

long-elliptical; stipules minute, scarious? Flowers few, small, yellow, on peduncles, which are about as long as the leaves. Legumes linear, torulose, with cylindrical joints, curved somewhat like a sickle.—There is a minute scale at the base of each pedicel (the foot-stalk of an individual flower), but no leafy bract (Babington). Hence the specific name, *ebracteatum*, 'without a bract.'

Channel and Scilly Islands. Annual; June, July.

Hippocrepis, *Lin.*—Perennial, ligneous-rooted plants, with unequally pinnate leaves and yellow umbellate flowers, on long axillary and terminal peduncles. Calyx campanulate, with nearly equal teeth. Corolla keeled. Stamens diadelphous. Legume linear, sinuate, with *compressed, crescent-shaped joints.*

H. comosa, Lin. *Horse-shoe Vetch.*—E.B. 31. L.B.S. 293.

A. 10. C. 25. Lat. 50–55°. Alt. 0–600 yds. Tem. 51–42°.

Stem spreading, prostrate at the base, ascending, glabrous, 4–6 inches high. Leaflets numerous, oblong, obtuse or notched, slightly mucronulate; stipules partly herbaceous, small. Umbel consisting of 4–8 yellow flowers, on long, leafless peduncles. Legume straight or curved, with crescent-like rough joints, terminated by a compressed beak.

On dry, chalky places. Perennial; May–August.

Onobrychis, *Tourn. Hedysarum,* Lin.—Herbaceous or shrubby perennial plants, with unequally pinnate leaves. Flowers numerous, on long, axillary, naked peduncles. Calyx campanulate, with five nearly equal, subulate divisions (teeth). Keel of the corolla obliquely truncate. Stamens diadelphous. Legume consisting of *a single compressed joint, one-seeded,* reticulate. Seeds reniform.

O. sativa, Lam.—*Hedysarum Onobrychis,* Lin. and Sm. *Saintfoin.*—E.B. 96. L.B.S. 294.

A. 8. C. 20. Lat. 50–55°. Alt. 0–200 yds. Tem. 50–48°.

Root somewhat woody. Stems reclining, round, furrowed, leafy, 2–3 feet high. Leaves in numerous pairs, with an odd leaflet; leaflets uniform, oblong-elliptical, pointed; stipules ovate, entire, pointed. Peduncles longer than the leaves, clusters (spikes) dense, with numerous interspersed bracts. Flowers crimson or pink, beautifully striped. Legumes bordered with sharp teeth and reticulated with prominent partly spinous ribs (nerves) (Sm.).

Often cultivated as a fodder plant, hence it has become naturalized on open chalky or calcareous places. Perennial; June–August.

Coronilla, *Lin.*—Perennial plants, with woody, spreading roots, half-shrubby or herbaceous stems, and unequally pinnate leaves. Flowers reflexed, umbellate, rosy-white or yellow. Calyx campanulate, bilabiate, 5-toothed, the upper two teeth combined. Keel of corolla, terminating in a beak. Legume linear, straight, or bent, angular or cylindrical, with oblong, turgid joints.

C. varia, Lin.—Stems herbaceous, spreading, ascending, glabrous, branched and leafy. Leaves in 4–10 pairs, with an odd one, with oblong-obtuse, petiolate, mucronate, notched leaflets; stipules free, herbaceous or slightly scarious. Flowers a pale rose-colour, in dense many-flowered umbels, on long, axillary peduncles. Legumes triangular (cylindrical, with a deep groove on one side, and a ridge on the other), with a long filiform beak.—In dry banky places on the Continent. It occasionally grows spontaneously in the south of England. We have met with it at Yarmouth and Chelsea.

AMYGDALACEÆ, *Juss.* (a section of Rosaceæ).—Drupaceæ, *DC.* The Almond Family.

Trees and shrubs bearing gum, which distils from their bark, and yielding more or less hydrocyanic acid; with sometimes spinous branches. Leaves scattered, often in tufts (fascicles), simple, toothed; stipules free, deciduous (*caducous?*). Flowers regular, solitary or in pairs, disposed in umbellate tufts or in simple corymbs or clusters, often expanded before the leaves are developed. Calyx caducous, consisting of five sepals, *not attached to the ovary,* imbricated before expansion. Petals five, inserted in the throat of the calyx, very caducous, imbricated in prefloration. Stamens 15–30, inserted with the petals in the throat of the calyx. Anthers introrse. Ovary free, consisting of a single carpel, with one cell and two ovules. Stigma capitate. Fruit fleshy (a drupe, a succulent fruit surrounding a cell, which is lined with a bony or ligneous substance, endocarp), one-seeded by abortion, rarely two-seeded. Seed suspended, without albumen (perisperm). Embryo straight. Radicle towards the hilum.

Prunus, *Tour.*—Trees or shrubs, usually more or less thorny

(the thorns on these are abortive branches). Leaves simple, serrated, stalked, involute or plicate before expansion. Flowers white, solitary or in pairs, or aggregate. Drupe (fruit) round or oblong, succulent, usually coloured, with a glaucous efflorescence. Nut oblong (nearly globular in the Cherry), more or less compressed, smooth or slightly furrowed, consisting of two slightly-furrowed valves, with a prominent margin.

P. spinosa, L. *Sloe-tree.*—E.B. 842. L.B.S. 314.

A. 18. C. 80. Lat. 50–59°. Alt. 0–300 yds. Tem. 51–46°.

Stems very rigid, 6–10 feet high (usually in several slender rod-like stems from one root), more or less spinous (the spines are long, sharp, and terminal when old, *Bromfield*). Leaves elliptical or obovate, tapering towards the base, hairy or downy on the under side (the young shoots and leaf-stalks are also more or less hairy). Flowers white, *solitary* or in pairs, or in small tufts, usually expanded before the leaves. Fruit on short pedicels, rounded, ovate (obovate), with a groove or seam on one side. Nucleus (nut) roundish, rugose, with an adhering pulp.

In hedges, thickets, etc. Tree or shrub; flowers in April, and bears fruit in September.

Var. β. *P. insititia,* L. *Wild Bullace-tree.*—E.B. 841. L.B.S. 314.

? Range as set under *P. spinosa.*

Leaves downy on the under side. 2-flowered; flowers simultaneous with the leaves?. Fruit large, globular or subglobular, black, glaucous, green, or yellow.

In hedges.

Var. γ. *P. domestica,* L. *Common Wild Plum-tree.*—E.B. 1783. L.B.S. 314 c.—Leaves oblong or obovate; fruit drooping, large, black, glaucous, violet, or reddish.—In hedges, near habitations.

Note.—There are numerous varieties of all these forms.

P. Padus, L. *Bird Cherry.*—E.B. 1383. L.B.S. 315.

A. 15. C. 50. Lat. 51–59°. Alt. 0–350 yds. Tem. 49–43°.

A small tree or shrub, with erect or spreading, slender, flexible branches. Leaves large, obovate-oblong, tapering at the base, toothed and wrinkled. Flowers numerous, small, *in long, pendulous clusters.* Sepals rounded, blunt, fringed. Petals twice as long as the sepals. Fruit globular, black or red, about as large as peas, bitter and rough (austere).

In hedges and woods. Tree; flowers in May; fruits in August.

P. avium, L. *Wild Cherry.*—E.B. 706. L.B.S. 316.*

A. 16. C. 60. Lat. 50–58°. Alt. 0–150 yds. Tem. 51–46°.

A tree 30–40 feet in height, or more, with the epidermis (outer bark) often peeling off in circular zones; in old trees the bark is very rough; branches spreading, *never pendulous,* the whole forming a round head. Leaves obovate or obovate-oblong, glandular, usually downy below, in tufts, with longer leaf-stalks than those in *P. Cerasus.* Flowers on very long pedicels (2 inches), 3–5 in each umbel. Petals flaccid, scarcely spreading (Bromfield). Ovary turbinate, ribbed, with a somewhat longer neck than in *P. Cerasus.* Fruit roundish or round, and sub-cordate at the base. Nucleus (nut) *round and smooth.*

Woods. Tree; flowers in May, and is in fruit in July.

Var. *α. sylvestris.*—Fruit round, black, about the size of a pea, bitter and acid.

Var. *β. Juliana. Gean.*—Fruit larger than in variety *α,* red or black, juicy, sweet with some acidity.

Note.—The petals in *P. avium* are larger than they are in *P. Cerasus,* and the scales of the leaf and flower-buds never become leaves as they partly do in the Cherry-tree. The distance of the glands from the base of the leaf is greater than in the above.

P. Cerasus,* L. *Cherry.*—E.B.S. 2863. L.B.S. 316.

A. 8. C.? Lat. 50–55°. Alt. 0–200 yds. Tem. 51–47°.

Shrub or tree, with more or less spreading branches, which are often slender and pendulous. Leaves obovate-round or obvate-oblong, shortly and abruptly acuminate, doubly toothed, glabrous and wrinkled, stalked. Flowers 3–4 together in umbellate clusters, on *long erect pedicels.* Segments of the calyx reflexed.

Woods and hedges. Tree; flowers April–May; bears fruit in June and July.

C. austera, Leighton's 'Flora of Shropshire,' is a synonym of the above.

ROSACEÆ, *Juss.* (in part). The Rose Family.

Annual or perennial herbaceous plants or shrubs, the latter often prickly, usually producing an astringent watery sap. Leaves

* There is much valuable matter on these ill-defined species in Dr. Bromfield's excellent 'Flora Vectensis.'

alternate, pinnate or palmate, rarely simple or undivided, stipulate. Flowers perfect, in more or less regular cymes, or in corymbs. Calyx not attached to the ovary, persistent, rarely withering. Sepals 5, rarely 4, united below, often stipulate (the stipules in this case unite and form a calycule, or secondary or exterior calyx). Petals 5, rarely 4, caducous on a disc, imbricated like the sepals in prefloration. Stamens indefinite. Anthers introrse. Ovary free, consisting of an indefinite number of carpels, rarely few (one or two). Carpels with one ovule in each, rarely with two or several ovules. Ovules suspended or erect. Styles as many as the carpels, lateral, rarely terminal, free, rarely agglutinated in a column. Stigmas undivided. Fruit consisting of distinct carpels, usually indefinite, rarely few; carpels dry or drupaceous, one-seeded, not opening (many-seeded and opening in *Spiræa*), usually disposed in a head or on a hemispherical or conical receptacle, rarely enclosed in the fleshy or ligneous tube of the calyx. Seeds suspended or erect, without albumen (perisperm). Embryo straight. Radicle directed towards the hilum.

TRIBE I. *SPIRÆÆ.*—Carpels few, each 2–6-seeded, in a single whorl, opening by the inner margin (the border nearest the axis or centre of the flower).

Genus.—SPIRÆA.

TRIBE II. *POTENTILLEÆ.*—Carpels numerous, each one-seeded, not opening, either dry or succulent (drupaceous), on a dry or fleshy hemispherical or conical receptacle.

SYNOPSIS OF THE GENERA.

POTENTILLA.—Carpels numerous, small; nuts on a flattish dry receptacle.
FRAGARIA.—Carpels on a largely developed *fleshy-succulent* receptacle.
RUBUS.—Carpels drupaceous, succulent, on a conical persistent receptacle.
DRYAS.—Calyx and petals 8–9 respectively; carpels on a dry receptacle.
GEUM.—Petals 5; carpels tipped with the jointed styles, on a dry receptacle.

TRIBE III. *ROSEÆ.*

Genus.—SPIRÆA.

TRIBE IV. *SANGUISORBEÆ.*—Stamens definite; carpels 1–2, rarely more, contained in the cup of the indurated calyx.

SYNOPSIS OF THE GENERA.

AGRIMONIA.—Calyx 5-cleft, tubular, with hooked bristles; carpels 2, enclosed in the cup of the calyx.
SANGUISORBA.—Calyx 4-cleft; no petals; stamens 4; carpels 2, included in the dry tube of the calyx.

Poterium.—Calyx 4-cleft, with a 4-angular tube, which contains the 2–3 carpels ; stamens 20–30.

Alchemilla.—*Calyx* 8-*parted*, containing one, rarely two carpels, no petals ; stamens 1–4.

Tribe I. *SPIRÆÆ.*—Carpels few, each 2–6-seeded, in a single whorl, opening by the inner margin (the border nearest the axis or centre of the flower).

Spiræa.—Perennial, herbaceous or ligneous plants, with pinnate, pinnatifid, lobed or entire leaves (segments often very unequal) ; stipules often very minute or absent. Flowers white or roseate, in many-flowered corymbs, or in spicate panicles. Calyx in 5 divisions, without a calycule (secondary calyx). Styles terminal, withering.

Spiræa Ulmaria, L. *Meadow-sweet.*—E.B. 960. L.B.S. 317.

A. 18. C. 82. Lat. 50–61°. Alt. 0–900 yds. Tem. 51–38°.

Stem erect, rigid, angular, smooth, branched above, leafy. Leaflets ovate or slightly cordate at the base, with sharply toothed lobes, hoary or tomentose below, in 4–5 pairs, with alternate smaller or abortive ones, and with a dilated trifid terminal enlarged lobe; stipules lunulate, sharply toothed Flowers in compound cymes. Petals roundish, with linear claws, white. Carpels twisted, glabrous.

In watery places. Perennial ; June–September.

S. Filipendula, L. *Dropwort.*—E.B. 284. E.B.S. 318.

A. 14. C. 50. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47°.

Roots furnished with fibres which terminate in fleshy tubers. Stems herbaceous, 1–2–3 feet high, erect, usually simple, with a few branches near the top. Leaves of the root numerous, of the stem few, with numerous leaflets (interruptedly pinnate) which are sessile, and slightly clasping; stipules toothed. Flowers white, in many-flowered, terminal corymbs. Carpels numerous, small, *conical, hairy or bristly.*

On chalky or limestone open places. Perennial ; June, July.

S. salicifolia, Lin. *Willow-leaved Spiræa.*—E.B. 1468. L.S.B. 319.

A. 12. C. ? Lat. 53?–57°. Alt. 0?–yds. Tem. ?

This species is shrubby, 4–5 feet high, with numerous, erect, round, smooth, wand-like, leafy branches. Leaves oblong, lanceolate, on short petioles, serrated with mucronate teeth. Flowers small, in dense, branched, erect, terminal clusters of a pale rose-

pink, interspersed with small, hairy, deciduous bracts. Styles 5.

Frequent in shrubberies, apparently wild in hedges, in many parts of Wales and Scotland. See 'Phytologist,' N. S., vol. i. pp. 8, 32, 297, 365–6, 449. Shrub. Flowers in June, July.

POTENTILLA, *L.*—Perennial, herbaceous plants, sometimes shrubby at the base, rarely annual. Leaves pinnate or palmate or ternate; stipules entire or incised. Flowers yellow or white, in terminal, few-flowered, irregular cymes. Calyx in 5, rarely in 4, divisions, with a calycule (outer calyx) similarly divided. Petals obovate, round, or notched at the apex. Styles caducous. Carpels dry, on a convex, dry, hairy, persistent receptacle.

Sect. I. FRAGARIASTRUM, DC.—Leaves digitate, trifoliate; flowers white.

P. Fragaria, Poir.—*Fragaria sterilis,* Lin. *Barren Strawberry.*—E.B. 1785. L.B.S. 333, *P. Fragariastrum.*

A. 17. C. 75. Lat. 50–58°. Alt. 0–700 yds. Tem. 51–40°.

Root almost woody, oblique or horizontal, the rhizomes ending in a rosette of leaves, sometimes stolon-like. Stems 1–3–4 inches high, slender, spreading, about as long as the leaves. Leaves all ternate and petiolate; leaflets obovate or round and cuneate at the base, pubescent, silky beneath, toothed: the terminal tooth is shorter than the lateral ones. Flowers terminal, on long pedicels. Sepals lanceolate, tapering. Petals sometimes notched, scarcely so long as the calyx. Stamens on a brownish, hairy disc.

On grassy banks and in woods. Perennial; March–May.

P. tridentata, Sol. *Three-toothed Cinquefoil.*—E.B. 2389. L.B.S. p. 16, List of Excluded Species.

Root creeping, woody. Stems herbaceous, 3–4 inches high, round, hairy, slightly leafy, bearing 3–4 elegant white flowers. Leaves ternate; leaflets entire, except at the summit, which is equally toothed; lower stipules undivided, upper stipules cut. Calyx purplish, hairy, with uniform and equal segments. Petals obovate. Carpels hairy. Seeds ovate, turgid.

On a mountain called Werron, and some other hills in Angusshire, to the westward. Mr. G. Don. From the 'English Flora' of Sir J. E. Smith, vol. ii. p. 425. Perennial; May, June.

Sect. II.—Leaves digitate; leaflets 3–5–7. * Flowers yellow.

P. Tormentilla, Sibth.? Nestl.? *Common Tormentil.*—E.B. 863. L.B.S. 332.

A. 18. C. 82. Lat. 50–61°. Alt. 0–1100 yds. Tem. 52–36°.

Roots thick, often woody. Stems numerous, slender, spreading or ascending, 6–12 inches high. Leaves *ternate*, rarely quinate; leaflets *cuneate, deeply toothed*, the terminal teeth being longer than the lateral teeth; radical leaves on long petioles, often decayed before flowering; stem-leaves sessile; stipules leaf-like, large, deeply toothed. Flowers rather small. Calyx *in* 4, *rarely in* 5, *divisions*. Petals 4, *rarely* 5, rather longer than the sepals. Carpels smooth when ripe.

On heathy places in dry or moist commons or pastures. Perennial; May–August.

I have a variety of this plant collected about Callander and other places in the Perthshire Highlands, which has very long linear-cuneate leaflets, with 3–5 very long spreading teeth or lobes. The stems are very long and prostrate, the flowers are on long pedicels. Qu. Is this *P. nemoralis*, Nestl.?

Var. *β. procumbens.—Tormentilla reptans*, E.B. 864.—Stem prostrate, elongate, round, hairy. Leaves all petiolate; leaflets *obovate, regularly, closely, and sharply toothed;* stipules not leaf-like nor divided, as in *P. Tormentilla*, with which it agrees only in the divisions of the calyx and in the number of its petals. It differs in nothing from *P. reptans*, except in the number of the parts composing its floral envelopes.

P. reptans, Lin. *Creeping Cinquefoil.*—E.B. 862. L.B.S. 331.

A. 16. C. 70. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Root thick, crowned with a rosette of leaves. Stems *long, slender or filiform, prostrate and rooting at the joints.* Leaves usually in five divisions; segments (leaflets) *obovate or oblong, tapering and cuneate at the base*, serrated with numerous large teeth. Flowers solitary, lateral or opposite to the leaves, *on long pedicels*. Outer sepals (bracts) larger than the inner, sometimes incised. Petals longer than the sepals. Carpels, when ripe, slightly rough.

Roadsides. Perennial; June–August.

P. alpestris, Hall. *Alpine Cinquefoil.*—E.B. 2193. L.B.S. 330.

A. 5. C. 10. Lat. 52–57°. Alt. 200–900 yds. Tem. 46–37°.

Roots rather woody, divided at the crown. Stems numerous, 6–12 inches high, ascending, branched, hairy, and leafy. Root-leaves quinate (in fives), rarely septenate (in sevens), with cu-

neate leaflets, which are more or less deeply cut in their upper half; stem-leaves ternate, nearly sessile; stipules *ovate, pointed,* entire or cut. Pedicels long, slender, hairy. Petals obcordate, much longer than the sepals. Carpels smooth, on a hairy receptacle. There is a more erect, smaller, and less hairy form of this plant. The flowers are larger and the carpels more numerous.*

Mountains. Perennial; June, July.

P. verna, L. *Spring Cinquefoil.*—E.B. 37. L.B.S. 329.

A. 12. C. 25. Lat. 50–57°. Alt. 0–250 yds. Tem. 50–46°.

Stems prostrate, sometimes rooting, forming a close tuft (cushion?). Radical leaves 5–7, obovate, cuneate at the base, toothed only on their upper half; teeth spreading, *with prominent nerves on the under side,* of a light lively green; stem-leaves ternate or simple; stipules of the *root-leaves narrow, linear-subulate?* Pedicels filiform, hairy. Petals only a little longer than the sepals. Carpels *smooth,* on a hairy receptacle.

In hilly and mountainous open places. Perennial; May.

The petals are more veined in *P. alpestris* than in this species.†

P. opaca, Lin. *Hairy Cinquefoil.*—E.B. 2449. L.B.S. Excluded Species, List C, p. 16.

Root as in the preceding. Stems rigid, prostrate-ascending, branched, hairy, and leafy. Root-leaves septenate; stem-leaves quinate or ternate, sessile, with cuneate leaflets, which are cut or serrated almost to the base, larger, hairier, and of a lighter green than the leaves generally are in the two preceding species; stipules *lanceolate or linear, mostly entire.* Outer segments of the calyx *lanceolate, nearly as long as the inner* (the outer sepals are as long as the inner in some examples) ones, but not quite so broad. Petals scarcely longer than the calyx.

Scottish mountains. Perennial; June.

P. argentea, L. *Hoary Cinquefoil.*—E.B. 89. L.B.S. 328.

* In this species the leaves are acuminate, on short footstalks, singly or doubly serrated, teeth tipped with glands. Flowers 3–4, on long, erect peduncles, in tufts, surrounded at the base of their stalks by brownish fringed or toothed involucral scales. Sepals ovate-oblong, obtuse, reflexed. Petals rounded.

† "How far the *Potentilla alpestris* is distinct from *P. verna,* I will not attempt to decide; but the appearance is different, and its mode of growth much more loose and straggling."—*Mr. Joseph Woods, in Companion to Bot. Mag.* vol. i. p. 293.

A. 14. C. 40. Lat. 50–58°. Alt. 0–200 yds. Tem. 50–47°.

Root rather woody. Stems several, erect, 6–12 inches high, leafy, slightly branched. Leaves stalked, consisting of 5 *narrow, deeply serrated or incised leaflets, which are cottony and white on the under side,* and dark green on the upper side; stipules lanceolate, tapering. Flowers in terminal, downy corymbs. Calyx white, like the under side of the leaflets. Corolla small. Receptacle hairy, seeds numerous.

In gravelly pastures; not frequent. Perennial; June, July.

** Leaves digitate; flowers white.

P. Sibbaldia.* *Sibbaldia procumbens,* L.—E.B. 897. L.B.S. 324.

A. 4. C. 12. Lat. 56–61°. Alt. 500–1400 yds. Tem. 41–33°.

Stems very woody, short, prostrate. Leaves ternate, petiolate; leaflets obovate or obcuneate, with a 3-toothed apex. Flowers bracteate, on short, stout, hairy stalks. Sepals triangular or lanceolate, hairy. Petals very small and fugacious, obovate, linear, greenish-yellow. Stamens few.

Ben Lawers, and other alpine heights, on rocky spots. Perennial; July.

P. recta. Erect Cinquefoil, Fl. Dan. 11, 1820.—Stem *quite erect, round, slender, hairy, branched only at the base* and summit. Leaves all stalked except the uppermost, digitate and quinate. Leaflets oblanceolate (cuneate-elongate), deeply incised, with erect blunt lobes or teeth, ribs prominent and hairy below; stipules entire, linear-lanceolate. Sepals linear-lanceolate, elongate, one or two of the outer series laciniate, the rest entire. Petals yellow, shorter than the sepals.

On rubbish at Wandsworth, and near Parson Green, Middlesex. Perennial; July–September.

P. alba, Lin. *White Cinquefoil.*—E.B. 1384. L.B.S. Excluded Species, List C, p. 16.

Root long and woody, branched at the crown. Stems scarcely as long as the root-leaves, very slender and hairy, branched, and

* Several eminent botanists have published their opinions about the generic identity of *Sibbaldia* and *Potentilla.* It is solely in deference to these that the plant has been described as belonging to the latter genus. There are many unnecessary divisions of the genera existing; but it would be desirable that botanists of more influence than the writer of these descriptions should propose their discontinuance.

with a few leaves. Root-leaves on long, furrowed, hairy stalks; leaflets quinate, oblong, nearly entire (a few teeth near the apex), the middle one much larger than the two lateral pairs, all slightly hairy above *and beautifully silvery and silky beneath.* Pedicels slender, hairy, bracteate. Flowers *white.* Calyx silky, outer segments nearly as long as the inner, but much narrower.

We have only Hudson's authority for the growth of this plant in Britain: *"Habitat in Wallia, Per. Aug., D. Haviland."* It has never been reported since; and may now, after a lapse of a hundred years, be deemed extinct as a British plant, if it ever had any claims to this rank. Kittel, in 'German Flora,' p. 650, informs us that it grows here and there in woods and hedges, especially in the south of Germany.

Sect. III.—Leaves pinnate. * Flowers white.

P. rupestris, L. *Strawberry-flowered Cinquefoil.*—E.B. 2058. L.B.S. 326.

A. 1. C. 1. Lat. 52–53°. Alt. 150–250 yds. Tem. 47–46°.

Root woody, tapering, with numerous fibres. Stems *erect, stout, round, leafy,* reddish, 1–2 feet high, branching, many-flowered. Leaves pinnate and lyrate, with 7–5–3 leaflets, *on long leaf-stalks;* leaflets broadly elliptical, incised or toothed: whole plant hairy. Flowers large, white, like the flowers of the cultivated Strawberry (Sm.). Calyx spreading, brown. Seeds smooth.

On the sides of Craig Breidden, in Montgomeryshire. Perennial; June, July.

** Flowers yellow.

P. anserina, L. *Silverweed.*—E.B. 861. L.B.S. 327.

A. 18. C. 82. Lat. 50–61°. Alt. 0–350 yds. Tem. 52–43°.

Roots tapering, succulent. Stems *prostrate, slender, long, rooting,* and bearing *rosettes of leaves at the nodes* (knots or joints), which are usually distant. Leaves of 15–25 leaflets, intermixed with very small, entire or incised smaller leaflets (interruptedly pinnate); leaflets green on the upper side, cottony, white on the under side, oblong, with pointed teeth; stipules *sheathing* and divided towards the summit. Flowers large, solitary, on simple, mostly erect peduncles. Petals much longer than the calyx.

Waysides, banks, and moist places; common. Perennial; June, July.

P. fruticosa, L. *Shrubby Cinquefoil.*—E.B. 88. L.B.S. 325.

A. 3. C. 3. Lat. 54–55°. Alt.? Tem.?

A *bushy shrub, about* 3 *or* 4 *feet high, leafy.* Leaves stalked; leaflets 5–7, oblong, acute, hairy, revolute at the margin, pale on the under side, the 3 terminal confluent; upper leaves ternate. Flowers terminal and aggregate, large and handsome.

Greta Bridge and other places in Teesdale. Perennial; June.

P. supina.—Stem *round, hairy, reddish, much branched, procumbent,* leafy. Leaves pinnate, having two pairs of leaflets, with a *large, terminal, usually trifid lobe;* leaflets oblong, sessile, incised, with erect lobes or teeth, quite smooth on both sides; stipules entire or toothed (the lower are entire, the upper 3-toothed). Flowers solitary, axillary, on slender, reflex pedicels, which are shorter than the leaves. Outer sepals longer than the inner, ovate, spreading; inner segments of the calyx triangular, pointed, erect or embracing the fruit. Petals *not half so long as the calyx.* Segments obovate or cuneate, notched, bright yellow. Fruit very compact, hemispherical.

Battersea fields, on mud and soil. Annual?; July, August.

Sect. IV.—Receptacle fleshy.

P. commarum, Nestl.—*Comarum palustre,* L. *Purple Marsh Cinquefoil.*—E.B. 172. L.B.S. 334.

A. 18. C. 70. Lat. 50–61°. Alt. 0–900 yds. Tem. 50–38°.

Stems round, ascending, hairy, branched, reddish. Leaves elliptic-oblong, serrated with large pointed teeth, light-green above, hoary below, pinnate; stipules leaf-like, entire and rounded at the base, serrated and sharply pointed upwards. Outer calyx (calycine bracts) spreading, linear-lanceolate. Sepals (divisions of the inner calyx) ovate, acute, purple within and usually of a dingy purple without, converging and covering the fruit. Seeds (carpels) numerous, easily detached from the enlarged, conical, fleshy or spongy receptacle.

Peaty, boggy places; not common. Perennial; June, July.

Note.—"Differing from *Potentilla,* to which perhaps it ought to be joined, by its enlarged spongy receptacle."—Babington, Man. 2nd ed. p. 95.

Fragaria, *L.*—Perennial plants, with thick, woody roots, which are invested with the dilated bases of the decayed leaves, throwing out numerous stolons (runners) which strike roots, and

thus produce new plants. Leaves trifoliate, toothed, mostly radical, with stipules united to the petiole. Flowers white, in terminal cymes. Calyx five-parted, with a five-parted outer, spreading calyx (calycule). Receptacle ovate, much developed, fleshy, succulent.

F. vesca, L. *Strawberry.*—E.B. 1524. L.B.S. 335.

A. 18? C. 81. Lat. 50–61°. Alt. 0–650 yds. Tem. 51–40°.

Stolons numerous. Stems 4–8 inches high, naked, or with a solitary leaf under the flowers, usually about as long as the leaves. Leaves pubescent, white and silky underneath, with oblong or obovate leaflets, toothed and plicate before expansion, the terminal one usually shorter than the lateral ones. Petioles and pedicels hairy. Calyx spreading. Fruit red, ovate-globular.

Woods and hedges. Per.; May.

Var. *β, elatior. F. elatior,* Ehr.—Stems taller; leaves broader, the lateral leaflets often stalked; flowers larger than in the typical species, often abortive.—Woods in the south of England; rare.

Remarks on RUBI.

The species or forms of this variable genus are so intimately connected or blended together that it is impossible, with the present knowledge that we possess, to distinguish the different species, or even the groups of species. The herbaceous are linked to the ligneous species by intermediate forms which partake of both habits. The simplest form of Bramble is displayed in that of the herbaceous sorts, viz. *Rubus Chamæmorus, R. arcticus,* and *R. saxatilis.* In the first of these three the stem is subterraneous, creeping, and herbaceous; the leaves are few, simple, lobed, and plaited, somewhat like those of *Alchemilla vulgaris. R. arcticus* resembles *R. Chamæmorus* in its herbaceous habit, but differs in having ternate leaves; and in this latter character it agrees with *R. saxatilis,* and unites this latter with the former (*R. Chamæmorus*). *R. saxatilis* combines the herbaceous with the ligneous species, its stem being more ligneous and of greater elevation than the same organ in the other herbaceous species, while it is less woody and less elevated than the stems of the fruticose Brambles are. It resembles the herbaceous species in its ternate leaves and annual stem, and also the weaker or smaller plants of the shrubby portion of the genus.

The Brambles called the *Dewberry group,* R. CÆSII of Lindley,

are connected with the lowest or simplest or herbaceous group by forms of *R. cæsius,* the procumbent shoots of which creep under the herbage and produce slender, erect, flowering branches, which are more or less tender, according as the form is more or less inclined to the herbaceous or to the shrubby sorts. The leaves of this intermediate group are only incompletely quinate, being usually ternate, and having the lower pair lobed on the outer side,—thus assimilating, in the lower or imperfect form, to the lowest or ternate-leaved herbaceous group, and again resembling the higher forms in the quinate-leaved plants. In some of the forms of *R. cæsius* the stem is annual or sub-herbaceous (suffruticose), producing flowers like the biennial stem,—thus supplying an additional proof that the group *R. cæsii* is intermediate between the herbaceous and shrubby species, both in the development of the leaves and stem, and in the habit of the latter. The armature and clothing of the stem is so various in the *cæsious* group that it connects the defenceless stems of *R. Chamæmorus* and *R. arcticus* on the one hand, with the prickliest, most glandular, and hairiest forms of the glandular sections, viz. RADULÆ and KŒHLERIANI. These two last-cited groups are very indefinitely separated by the development of the leaves. The quinately and ternately divided leaves are not sufficiently constant to afford distinctive marks of species: both kinds are usually present on the same plant. All the forms, viz. the simple, the ternate, and quinate leaves, are generally present on the same plant. For example, the leaves of the barren stem and the lower leaves of the fertile stem are quinate, the upper leaves of the fertile stem are ternate, and the leaves of the inflorescence (panicle or cluster) are simple. The shape, the hairiness, the pubescence, the teeth, and the substance or original character of the leaflets, vary as much as the stem does in its shape, armature, and clothing. The organs even of the *tomentose* group, the most distinct, generally fail in affording sufficiently distinctive marks. Even *R. discolor,* the most typical of the British species, varies like the rest of the species in the shape, the silkiness and hairiness of its stem, and in the greater or less *tomentum* of the under side of the leaves. Some are nearly white, some pale green, and some ashy-like below. The shape and consistence of the leaves are as liable to variation as their clothing. All the stems of all the species are more or less hairy, and the more *hairy-stemmed* species gradually

approximate to the *glandulose* species. The erect or arching habits of the stem are as much subject to variation as its investiture. The Raspberry Bramble is united to the hazel-leaved group (R. CORYLIFOLII) by the suberect species. It is obvious that the arching of the stem depends on its length, and on the solidity or hardness and toughness of its central portion. The Dog-rose shows this tendency to bend and form an arch when it exceeds the plants amongst which it grows; and the weight of the top, or of the more leafy, succulent portions bends down the centre. This bending or arching of the stem is common to all Brambles, and to all climbing plants of a moderate strength of stem. In shady places, and in a rich soil, the Raspberry-plant assumes a luxuriant habit, and then the stem is bent by the natural tendency of all bodies to gravitate toward the centre of the earth, unless prevented by some counteracting medium. *R. idæus* generally, in a natural state, grows in open heathy places, and in tufts, consequently they mutually support each other. Finally, the reproductive organs are as fallacious as the vegetative organs, and afford insufficient characters for the determination of species. The calyx does not universally embrace the fruit; even where this is usually the case, there are exceptions which render this an insecure specific character. The fruit itself is not uniform on the same individual. There is sometimes only one large drupe, as is frequently the case in *R. saxatilis*, and not seldom in *R. cæsius;* sometimes there are many. The shape, the size, the colour, the bloom, are all liable to the same mutability. The ancient division of the British shrubby Brambles into *R. idæus, R. fruticosus, R. corylifolius,* would be quite as unsatisfactory as the present division, nomenclature, and description of the *Rubi* unquestionably and confessedly are. The three *fruticose Rubi* of Ray's Catalogue are liable to the same objection as the eleven species of the English Flora, viz. that it is impossible to draw up specific characters from an individual plant, which characters will be equally applicable to all plants of the reputed species to which the said individual belongs; or, in other terms, sufficiently comprehensive characters are not obtainable from any one plant of the shrubby kind. The description must necessarily either be too general, and consequently include other forms or species besides the one intended, or be too special; that is, the portrait or exact description of an individual,

which probably will not be applicable to any more than the individual from which it was drawn up. The *via-media* principle will not remove the difficulty. A compromise between those who think that there are only four species of British *fruticose Rubi* and those that think there are forty, is impossible. This is one of the genera in which distinctive and comprehensive specific characters have not yet been discovered. A good definition should be both inclusive and exclusive; it should be the means of combination and separation. If the specific characters of the *Rubi* had both or only one of these characteristics, the opinions of authors would be less fluctuating. At present no one can affirm, on authority, that we have twenty or forty or fifty species of *Rubi*. The number of synonyms is consequently a great burden upon the student of the species, whether they be genuine or only book-species. The description of the *Rubi* in this work is not meant to be supplementary to the descriptions of the genus in other works. The so-called species are grouped and described in conformity with the views and descriptions of those who have evidently devoted much labour to this difficult series of plants; and the author regrets that the task cannot, for the reasons aforesaid, be performed in a satisfactory manner. It has been above stated, that a carefully drawn-up description of an individual plant will be a sufficient description of every individual comprehended in the assumed species. The discrepancy of opinions among our leading botanists sufficiently testify that such is not the case in the genus *Rubus*. It surely is not an unreasonable assumption that every species has a limit; or, in other words, that every individual of the manifold varieties of a species (this term being employed in a collective or abstract sense) has a stronger resemblance to certain individuals, forming what is called a species, than it has to other individuals, forming what may, for the sake of distinction, be called another species. This limit, it may be inferred, is discoverable by observation, and this may be facilitated by the removal of the plants into places convenient for their constant inspection, by the cultivation of them both by roots, suckers, and seeds. It is believed that such a limit or definition will never be established by the study of dried plants, nor by the desultory study of living ones. A systematic series of observations, extending over a series of years, will probably have to be begun and vigorously carried on, before we are

agreed about the characters which constitute a species in the *Rubi*.

Rubus, *L. Bramble.*—Stems variable, but mostly shrubby, rarely herbaceous. Leaves compound, variable. Flowers terminal, panicled or corymbose. Calyx five-parted; segments concave, pointed. Petals five, obovate. Stamens indefinite. Ovaries aggregate, with a nearly terminal style to each, placed on a spongy, conical receptacle. Fruit an agglomeration of one-seeded, juicy drupes. Seeds hard, wrinkled, pitted.

These plants are characterized by the long, usually arching, angular or round, prickly stems, which are of two years' duration (but some exceed this period); also by their acid, pulpy fruit, which is mostly black, but sometimes crimson or yellowish-white. They grow in temperate regions, and rarely between the tropics.

Note.—The range or area of the various so-called species of this genus, is quoted from the third volume of 'Cybele Brit.,' p. 337: it is supplied by Mr. Babington.

a. Suberecti, *Lindl.*—Stem erect; leaves pinnate or digitate.

1. **R. idæus,** L. *Raspberry.*—E.B. 2442. L.C.* 339. A. 1. Devon and Somerset.

Stem erect or nearly so, round, tapering, with warts or rudimentary prickles. Branches rather erect, hairy, with slender prickles (*aciculi*). Leaflets of the barren stem ovate-acuminate, with broad, mucronate teeth; terminal leaflet cordate at the base; leaflets of the fertile stem small, all densely tomentose and white below; stipules setaceous. Sepals densely tomentose, with long, setaceous teeth. Petals erect, not exceeding the sepals. Fruit very pulpy.

Var. *β. trifoliatus,* Dr. Bell Salter in An. Nat. Hist. vol. xvi. p. 365.—Stem polished; prickles few; leaves ternate.

Var. *γ. Leesii,* Bab. in An. Nat. Hist. vol. xvii. p. 169. *Lees' Bramble.*—L.C. 339 (6).—Leaves ternate; lateral leaflets overlapping.—Heaths, thickets. Shrub. May.

2. **R. suberectus,** And. *Red-fruited Bramble.*—E.B. 2572. L.C. 340 (3). A. 9. Devon to Moray.

* The initials L.C. will in future be placed before the second series of numbers. The Botanical Society of London is at present in abeyance, but the Catalogue (the London Catalogue of British Plants) is still in its full career of usefulness; the fifth edition may be obtained at our publisher's, price *now* fourpence.

Stem rather erect, bluntly angular, slightly prickly, more or less hairy above (often quite smooth); prickles small, deflexed, variable, confined to the angles? Leaves green on both sides, and slightly hairy; leaflets obovate or elliptical, somewhat acuminate (oblong pointed), deeply and sharply toothed, some of them lobed; stipules lanceolate, fringed. Flowers in branched, spreading panicles. Sepals smooth and black or tawny externally, internally clothed with long, thick, white down (shaggy at the edges), reflexed in flower. Petals large, two or three times as large as the sepals. Fruit red.

In woods and groves. Shrub. July, August.

Var. *β. trifoliatus.*—Leaves all ternate; fruit bright red.

Var. *γ. fissus,* Leight. Fl. Sh. 225.—L.c. (4).—Prickles not confined to the angles, numerous and contiguous; calyx spreading-erect. (See 'Phytologist,' vol. iii. p. 72.)

3. **R. plicatus,** W. and N. *Upright Blackberry.*—E.B.S. 2714. L.c. (5). A. 12. C. 22. Lat. 51–56°.

Stem nearly erect, angular, furrowed, glabrous except at the top, prickly. Prickles on the angles of the stem, dilated at the base, curved, uniform, deflexed. Leaflets ovate-oblong, leathery, with prominent nerves and prickly midrib. Flowers in a spreading panicle or cluster, on long pedicels. Sepals lax, ovate-acuminate, densely tomentose on the inside. Petals large, conspicuous. Fruit nearly black.

In damp and boggy places. Shrub. July–September.

Var. *β. carinatus,* Bell Salter in An. Nat. Hist. vol. xvi. p. 365.—Leaflets lanceolate, strongly keeled and veined below.

R. fastigiatus, W. and N.?—Stems angular, glabrous, with few, equal, straight, deflexed prickles, which are confined to the angles of the stem. Leaflets cordate, acuminate, green on both sides, flexible, large, unequally toothed and serrated, downy and paler beneath. Panicle simple, elongate.—Woods. Scotland. Shrub. August, September.—This is a sylvan form of *R. plicatus* in the third edition of the 'Manual;' in the fourth it is invisible.

b. Stem glabrous or slightly hairy, with straight prickles and spreading hairs.

4. **R. incurvatus,** Bab.—L.c. 10. A. 4. C. ? Lat. 51–55°.

Stem angular, sulcate, slightly clothed with scattered hairs, and armed with distant, declining prickles. Leaflets ovate-acuminate, ending in a curved point, undulating, crisp and toothed

and serrated. Panicle leafy, long and flexuous. Peduncles downy and densely hairy. Sepals downy, incurved about the flowers and immature fruit.

Thickets. Shrub. July?—'Phytologist,' vol. iv. p. 822.

5. **R. imbricatus,** Hort., An. of Nat. Hist. vol. ii. ser. vii. A. 1. C. 2. Lat. 51–53°.

Stem angular, furrowed, purplish-red; prickles small, deflexed on a long (broad) base. Leaflets roundish-cordate, cuspidate, imbricate (overlapping each other). Panicle narrow, leafy below. Fruit roundish.

Valley of the Wye, near Monmouth; plentiful. Shrub. June–August.

6. **R. rhamnifolius,** W. and N. *Buckthorn-leaved Bramble.* E.B. 2604. L.C. (11). Cybele, No. 12. A. 10. C. 15. Lat. 51–56°.

Stems angular, furrowed. Prickles uniform, straight, deflexed on very broad bases; prickles on the petioles curved, much deflexed. Leaves ternate or quinate. Leaflets on the barren stems oblong or obovate, pointed, petiolate, lowest pair deflexed, those of the fertile stem sessile, all ovate-oblong or rhomboid, finely and sharply toothed, more or less hairy on both sides, whitish below, green above. Flowers in rather dense, panicled clusters at the base; dense, and on short peduncles on the upper part, open, and on long, axillary peduncles. Sepals ovate, shortly acuminate, densely shaggy on both sides, reflexed, about half as long as the petals.—Shrub. July, August.

Var. *R. cordifolius,* W. and N., differs from *R. rhamnifolius* in its rather more flexible and greener leaves, terminal leaflet slightly cordate at the base, rounded, and shortly and sharply acuminate.—This is rather a synonym of *R. rhamnifolius* than the name of a variety.

7. **R. affinis,** W. and N. *Related Bramble.*—L.C. (7). Cybele, No. 8. A. 11. C. 17. Lat. 51–57°.

Stem angular, hairy; prickles slender, deflexed, slightly curved. Leaflets ovate, coarsely serrated, dark green above, paler beneath, more or less hairy on the under side. Flowers in a long, straggling panicle. Fruit of many large, black grains.

Woods. Shrub. August?

Compare Leighton in 'Shropshire Flora,' p. 226. This is entered in deference to the authors of the London Catalogue.

8. **R. Grabowskii,** Weihe? *Grabowsky's Bramble.*—L.C. (12). Cybele. No. 13. A. 1. Leicester. Lat. 52–53°.

Stem glabrous, or slightly downy, with blunt angles; prickles numerous, slender, straight or hooked, much deflexed, slightly hairy at the base. Leaves of the barren stem quinate, of the fertile ternate, on petioles furnished with numerous strongly hooked prickles. Leaflets shortly petioled, rounded, cordate at the base, shortly acuminate, unequally and finely serrated; teeth mucronate; midribs furnished with numerous strongly hooked prickles, glabrous above, pale green and slightly hairy below. Flowers in simple clusters; rach (common peduncle) very prickly; prickles very long, straight or hooked; hairs spreading, not numerous, except on the pedicels.

Woods, etc. Shrub. August.

9. **R. nitidus,** W. and N. *Shining-stalked Bramble.*—L.C. (6). A. 9. C. 16. Lat. 51–56°.

Stem quite smooth (*fere glabro* = almost smooth), with blunt angles, more or less prickly; prickles of the stem deflexed, not straight, compressed and dilated at the base. Leaflets all petiolate, ovate or obovate or oblong, more or less acuminate, slightly cordate at the base, doubly, coarsely and unequally toothed, glabrous above (on the upper surface), soft and downy underneath, green on both sides. Petioles, both general and partial, thickly armed with hooked, deflexed prickles, which extend along the midrib of the leaflets of the barren stem.—*Note.* The lower pair of leaflets are stalked, and do not overlap the intermediate pair (*Babington*). Panicle prickly, composed of divergent, horizontal branches. Sepals whitish, densely shaggy, with short points. Petals twice as large as the sepals. Fruit small.

Hedges and thickets. Shrub. July–September. (See 'Phytologist, vol. ii. p. 101–2, vol. iii. pp. 75, 360.)

Var. *R. affinis,* W. and N. (see No. 7, L.C.)—(Cybele, No. 8. A. 11, 17. Lat. 51–57°.)—Stem angular, with rather stouter, strongly curved prickles? than *R. nitidus;* leaflets more leathery, and rather tomentose on the under side; flowers in rather more erect, axillary corymbs; sepals more acuminate.—Compare 'Phytologist,' vol. iii. pp. 73, 325. See Leighton's 'Shropshire Flora,' where there is an elaborate description of this and the other Salopian Brambles. (See before, p. 189.)

Var. *R. macrophyllus,* W. and N.—E.B. 2625. L.C. (21). Ba-

bington's 'Manual,' p. 101, 2nd ed.—Stem angular, furrowed, very slightly hairy, shining, prickly; prickles nearly straight and nearly horizontal, those on the petioles deflexed, all much compressed and dilated at the base; leaflets large, rounded, with coarse, unequal, spreading teeth, green on both sides, and rather more cordate at the base; flowers in very lax leafy corymbs; sepals with longish, filiform points.

Var. *amplificatus*, Lees.—Stem hairier, with more deflexed and rather stouter prickles; leaflets narrower, with more erect teeth; panicle not very open; sepals more acuminate.—*Note.* The leaflets in this variety vary between broadly obovate and cuneate; the sepals are elongate, and more tapering than in the preceding varieties. A var. of *R. macrophyllus.* (See Babington's 'Manual,' p. 101, 4th ed.)

The forms in this group, viz. *rhamnifolius, nitidus,* etc., are distinguished by petiolate lower leaflets, which are always more or less declinate.

R. latifolius, Bab.—L.c. (8). (A. 3. C. 3. Lat. 54–57°.)—Stem angular, furrowed, glabrous, purplish or green; leaflets very large, cordate at the base, rounded, acuminate, very broad; lower pair of leaflets overlapping.—See 'Phytologist,' vol. iv. p. 969, where Mr. Baker informsus that it is a connecting link between *R. corylifolius* and *R.nitidus,* as we understand the passage. He says that it is probably a luxuriant state of the former.

10. **R. Salteri,** Bab. *Salter's Bramble.*—L.c. (20). A. 3. C. 3. Lat. 51–55°.

Stem angular, furrowed, slightly hairy, with uniform, straight, deflexed prickles, which are confined to the angles of the stem. Leaflets ovate, pointed (apiculate), hairy above and downy beneath, not overlapping. Panicle compound, with lax hairs and no seta.

Apse Castle Wood, Isle of Wight. Shrub. July–September.

Var. *R. Balfourianus.* L.c. (35).—Stem angular, slightly hairy, shining; prickles numerous, straight or a little curved, horizontal; prickles of the petioles hooked and deflexed; lower pair of leaflets sessile and overlapping, ovate-rounded; terminal leaflet of the barren stem cordate, rounded, all with long, thick, shaggy down beneath, prominent, prickly midribs, and equal and mostly double serratures; flowers corymbose; sepals shaggy, large, with acuminate points.

11. **R. corylifolius,** Sm. *Hazel-leaved Bramble.*—E.B. 827. L.C. (36) 2. A. 8. C. 8. Lat. 50–56°.

Stem roundish, smooth, or slightly hairy, with one or two very blunt angles; prickles straight, uniform, horizontal, or very slightly deflexed; prickles on the petioles curved and deflexed. Lower pair of leaflets sessile, and consequently slightly overlapping the intermediate pair, slightly but decidedly declinate; terminal leaflet ovate or cordate at the base, oblong or rhomboid, sharply and unequally toothed, slightly hairy above, densely tomentose beneath. Flowers in lax corymbose panicles. Sepals shaggy, pointed.

Woods and hedges. Shrub. July–September.

Var. *sublustris,* Lees. (A. 8. C. 11. Lat. 51–56°.)—Whole plant green; prickles slender; leaflets more velvety below. See Leighton in 'Phytologist,' vol. iii. p. 165.

Var. γ. *Smithii,* and δ. *intermedius.* See Leighton in 'Phytologist,' *ib.* These two varieties are distinguished by their purplish stems, furnished with numerous strong prickles and smaller leaflets. The var. δ is more prickly than var. γ.

c. CARPINIFOLII.—Stems slightly hairy; hairs spreading.

12. **R. carpinifolius,** W. and N. *Hornbeam-leaved Bramble.*—E.B. 2664. L.C. (16). A. 14. C. 22. Lat. 50–57°.

Stem stout, rounded or angular; prickles strong, enlarged at the base, on the angles, when the stem is angular, deflexed. Leaflets usually petiolate; lower pair declining, sometimes nearly sessile and declinate, and slightly overlapping, often cuneate (tapering) at the base, oblong or rhomboid; terminal leaflet of the barren stem rounded, obovate, or somewhat rhomboid, cordate at the base, and shortly and sharply acuminate, mostly finely and sharply toothed, both sides of the same colour, rather coriaceous above, slightly hairy below. Flowers in rather close panicles or clusters, terminal or axillary, on horizontal or erect branches. Sepals ovate, with short points, shaggy on both sides, reflexed. Petals usually of a light pink colour. Fruit small.

Woods and hedges. Shrub. July–September.

R. macrophyllus, W. and N. *Long-leaved Bramble.*—E.B. 2625. L.C. (21). A. 11. C. 19. Lat. 50–56°.

Stem angular, hairy, with small straight prickles. Leaflets elliptical ovate, lowest pair not overlapping, doubly serrated, with

long points, downy or hairy beneath. Panicle compound, with ascending branches. (Babington, 'Manual,' p. 161.)

Woods and hedges; not common. Shrub. July–September.

13. **R. pampinosus,** Lees.—L.C. (18).

Stem angular, polished, with short inconspicuous hairs, and many small declining prickles. Leaflets ovate or cordate-ovate, large, thin, flexible, with coarse serratures. Panicle very long. Sepals densely hairy, loosely reflex in flower and fruit.

In dense thickets. Shrub. July? (Compare 'Phytologist,' vol. iv. p. 822.)

R. sylvaticus, Leighton's fasc.—*mucronatus,* Blox. fasc. *Sylvan Bramble.*—L.C. (19).—Stem angular or rounded, furrowed, smooth; prickles few, small. Leaves ternate or quinate; leaflets rounded, obovate, or oblong, pliant, nearly of the same colour and slightly hairy on both sides, equally and deeply toothed, slightly and abruptly acuminate. Panicle simple, few-flowered; rach and pedicels hairy and glandular, with few prickles.

Woods? Shrub. July–September.

Note.—In the third edition of the 'Manual' this species was divided between three, or formed part of *R. villicaulis, R. mucronatus,* and *R. calvatus;* in the fourth edition the latter species has been hung on to *R. Salteri,* with the candid observation, that they seem to be the extremes of one species.

R. humifusus, W. and N. (See 'Phytologist,' vol. iv. p. 923.) E.B.S. 2664.—Stem procumbent; prickles and aciculi numerous, slender, often gland-tipped. Leaves ternate or pedate-quinate; leaflets cordate-acuminate, doubly and unequally serrated. Branches of the panicle appressed, thickly clothed with bristles, aciculi, and gland-tipped prickles. Sepals lanceolate, setose, prickly.

Woods and thickets; very rare. Shrub. June, August.

This was collected long ago under a dense growth of Brambles, etc., in a shady lane at Bellsize House, near Hampstead. This locality no longer exists; the place does, but the shady path has shared the fate of Hagbush-lane. (See 'Every Day Book,' 870. —A. I.)

15. **R. Sprengelii,** W. and N. *Sprengel's Bramble.*—L.C. (22). A. 8. C. 13. Lat. 51–55°.

Stem rounded or angular; prickles small, straight or hooked, deflexed. Leaves ternate or quaternate, thin, of the same colour

on both sides, smooth; leaflets cuneate at the base, oblong-ovate; lower pair on short petioles, with large, sharp teeth. Flowers in close, terminal and axillary clusters; rach glandular, hairy, with a few long, slender prickles. Sepals acuminate, nearly as long as the petals. Fruit enclosed in the calyx.

Woods. Shrub. July–September.

Var. *R. Borreri,* Bell Salter, An. Nat. Hist, vol. xv. p. 306.—Stem rounded or angular; prickles slender, deflexed, unequal. Leaves of barren stem quinate, of the same colour on both sides. Leaflets oblong-obovate, deeply and sharply toothed or doubly toothed, lower pair not overlapping? Flowers in branched, compact panicles; rach shaggy, glandular? Sepals ovate, pointed, very shaggy.

15*. **R. leucostachys,** Sm.—*R. vestitus,* W. and N. *White-stalked Bramble.*—E.B. 2631. L.C. (15). A. 10. C. 19. Lat. 51–56°.

Stem angular or rounded, clothed with white hairs or down; prickles straight, horizontal, strong, equal, hairy and enlarged at the base. Leaves quinate, leathery, smooth and green above, soft and whitish below, shaggy or tomentose, always with white, shining hairs; leaflets petioled, the lowest pair deflexed, obovate or oblong, pointed, sharply serrated, with mucronate teeth. Panicle branched and leafy below, more or less dense and narrow above. Pedicels shaggy, with long and short hairs interspersed with a few setæ and glands (aciculi and setæ). Fruit purplish-black.

Var. *vestitus.*—Leaves more or less pliable, slightly hairy above, shaggy or tomentose below; leaflets more rounded than in the type. Sepals hairy, glanduliferous.

Var. *villicaulis.*—Stem rather more densely hairy. Leaflets obovate or oblong.

Var. *argenteus.*—Stem angular, very shaggy. Leaves oblong-obovate, white below. Sepals shaggy, armed with prickles.

Var. *R. Leightonianus,* Bab.—Stem angular or rounded, hairy, with straight, slightly deflexed prickles, which are on a dilated, hairy base. Leaflets thin, roundish, doubly toothed, pale green and hairy beneath. Panicle with rather distant, spreading branches, densely clothed with hairs and setæ (bristles bearing glands).—Compare 'Phytologist,' iii. 176, where the Rev. W. A. Leighton clearly shows that this is neither a species nor even a variety, but the veritable *R. leucostachys,* var. *vestitus.* It is

entered here in deference to the learned authors of the London Catalogue.

d. TOMENTOSI.—Stem angular, with concave sides, more or less clothed with silky hairs; prickles mostly on the angles of the stem, stout, clothed at the base with silky down (pubescence). Leaves of the barren stem quinate, of the fertile one ternate or quinate, white or hoary below. Flowers in mostly leafless, downy panicles.

16. **R. discolor,** W. and N.—*fruticosus,* E.B. 715. L.C. (14). *Two-coloured-leaved Bramble.* A. 9. C. 21. Lat. 51–55°.

Stems glaucous, with minute, silky hairs; prickles stout, mostly hooked, of the same colour as the stem, except at the tops, where they are yellowish-brown, and without down (tomentum). Leaflets all petioled, not overlapping, cuneate, oblong, or obovate, pointed, serrated, teeth unequal, glabrous above, white and downy below. Flowers in compound or simple clusters; rach and branches downy. Sepals ovate, clothed with short down, with short points. Petals varying from pure white to deep red.

Very common in hedges. Shrub. July, August.

Var. *β. thyrsoides,* Bab. L.C. (13). (A. 5. C. 12. Lat. 51–54°.)—Stems and prickles glabrous, nearly without pubescence. Leaflets more elongate and not so leathery nor so white below as in the typical form; panicle closer and more elongate.—Compare 'Phytologist,' iii. 182.

Var. *γ. macroacanthus,* Bell Salt.—Stem greenish, rough with spreading hairs and long slender prickles; leaflets broad, rounded, coarsely toothed, teeth mucronate, hoary below.

Var. *argenteus,* L.C. (17).—Stem purplish, with fewer spreading hairs; prickles more hooked or declinate, not clothed half way up with shaggy hairs. Leaflets petioled, obovate, with unequal teeth, hoary below. Flowers in compound clusters. Sepals shaggy.

Var. *villicaulis.* (A. 9. C. 16. Lat. 51–55°.)—Stem hairy or woolly. Leaflets obovate, sharply serrated, not so tomentose underneath as the above forms of *discolor.*—Nearer to *R. leucostachys* than to *R. discolor?*

e. Stems hairy.

17. **R. rudis,** Weihe. *Rough Bramble.*—L.C. (26). A. 10. C. 20. Lat. 51–56°.

Stem angular, furrowed with numerous setæ and aciculi (small prickles); prickles equal, nearly straight, deflexed, long and slender,

more or less enlarged, and slightly hairy at the base. Leaflets petiolate, with strongly-hooked prickles on their midribs, ovate-acuminate, coarsely and doubly serrated, pale green and hairy below. Panicle open and branching towards the base, dense above, leafy throughout. Sepals ovate-acuminate, with long leaf-like points. Petals longer than the sepals.

Bushy places. Perennial. Shrub. July.

17*. **R. pallidus,** W. and N.—L.c. (6). A. 12. C. 15. Lat. 51–57°.

Stem angular, armed with distant prickles, copiously fringed with hairs, setæ, and aciculi. Leaflets elliptical, obovate, narrowed at the base, bright-green above, pallid beneath. Panicle broad, hairy and setose.

Woods. Shrub. July?

Var. *Leightonii.*—Prickles more flattened. Leaflets stalked, distinct, obovate or oblong, shortly acuminate. Panicle spreading, leafy below.—Besides this, there are several varieties of this form: viz. *Reichenbachii,* with round leaflets; *denticulatus,* with shallow teeth; *attenuatus,* leaflets with long tapering points.

18. **R. pyramidalis,** Bab. *Pyramidal Bramble.*—L.c. (30). A. 3. C. 4. Lat. 51–54°.

Stem angular or rounded, armed with many short, strong prickles, which are enlarged at the base, intermixed with a few aciculi, setæ, and hairs. Leaflets hairy on both sides, toothed and serrated. Panicle pyramidal, leafy below; rach straight, rigid. (Babington.)

Woods? Shrub. July?

19. **R. Güntheri,** Weihe. *Gunther's Bramble.*—L.c. (31). A. 3. C. 5. Lat. 51–53°.

Stems rounded or angular, with flat sides, hairy and glandular; prickles unequal, usually small, straight and declining. Leaves ternate or quinate; leaflets petioled, cordate at the base, rounded, ovate, obovate, or oblong, sometimes green on both sides, sometimes nearly white below, teeth of the serratures mucronate. Flowers numerous, in branching panicles, clustered and leafy below, dense and leafless above. Sepals reflexed, densely shaggy, prickly, with short, callous tips (points).

Woods. Perennial. Shrub. August.

R. Babingtonii, Bell Salt. *Babington's Bramble.*—(A. 6. C. 9. Lat. 51–54°.)—Stem angular, with concave sides, hairy, glandular

in the variety *β Bloxamii;* prickles declining, strong, short, hairy and enlarged at the base. Leaves mostly ternate, hairy on both sides; leaflets broad, obovate, unequally toothed or lobed, with short, abrupt points. Panicle spreading, on long, leafy, very prickly branches, scarcely glandular, very hairy. Sepals densely shaggy.—This form or species has degenerated into a var. of *R. Hystrix*, W.; the var. *R. Bloxamii* has advanced a step. See *infra*.

20. **R. Bloxamii,** Lees.—L.c. (23).

Stem sulcate, with numerous aciculi and setæ (*qy.* prickles?). Leaflets soft and green!!! hairy on both sides. Panicles very long. Compare 'Phytologist,' iv. 921.

21. **R. Kœhleri,** Weihe. *Kœhler's Bramble.*—L.c. (28). A. 9. C. 15. Lat. 51–56°.

Stem angular, with flat, ridged sides; prickles very unequal, usually small, hooked or straight, declining. Leaves quinate, on prickly stalks, prickles strongly hooked, smooth above, soft and hairy below; leaflets obovate, pointed with scalloped margins and long mucronate teeth, lower pair deflexed. Panicles leafy below, clusters on downy, hairy, prickly, glandulous, short branches. Sepals lanceolate, pointed, densely downy, nearly as long as the narrow, clawed petals.

Woods, hedges, and bushy places. Perennial. Shrub. July, August.

Var. *fusco-ater*, L.c. (29).—Stem very prickly; prickles rather stronger than in the type, mostly straight, deflexed; lowest pair of leaflets on or attached to the petioles of the central pair.

Var. *fuscus.*—(A. 3. C. 3. Lat. 52–53°.)—Leaves more coriaceous, more rigid, and less hairy below than in the typical form; petioles and midribs red; prickles, aciculi, and setæ reddish; hairs white.—A var. of *R. glandulosus* ('Manual,' p. 105).

22. **R. hirtus,** W. and N. *Hirsute Bramble.*—L.c. (32). A. 3. C. 6. Lat. 51–55°.

Stem angular, furrowed with long, spreading hairs, and with aciculi, setæ, and slender, unequal, deflexed, nearly straight prickles. Leaves pliant, nearly of the same colour on both sides; leaflets mostly petioled, ovate-lanceolate or rounded and shortly acuminate, nearly equally serrated with longish, mostly ascending teeth. Panicle leafy below. Sepals hairy and glandular without. Petals elliptical, longer than the sepals.

Woods. Shrub. July, August.

Var. *foliosus*, W. and N.—Leaves ovate or obovate, coarsely and doubly toothed; lower pair of leaflets slightly overlapping the intermediate pair. Fruit small.

23. **R. scaber,** Weihe. *Scabrous Bramble.*—L.C. (34). A. 4. C. 5. Lat. 51–54°.

Stem angular, furrowed with deflexed very unequal prickles intermixed with aciculi (pricklets) and setæ (glandular hairs). Leaflets ovate or obovate, sharply serrated with mucronate teeth, rigid, smooth, with only a few scattered hairs on the under side. Panicle spreading, with long, horizontal branches. Sepals lanceolate. Fruit small.

Woods. Shrub. July?–September.

24. **R. Bellardi,** W. and N. *Bellard's Bramble.*—L.C. (33 *a*). A. 4. C. 6. Lat. 51–55°.

Stems rounded, armed with prickles, aciculi, and in the upper part densely hairy or shaggy; prickles small, unequal, straight, slender; hairs spreading, dense on the petioles. Leaves ternate; leaflets rounded or obovate-oblong, sharply serrated with mucronate teeth. Panicles compound, branched, more or less dense; rach shaggy with glandular hairs. Sepals narrowly lanceolate, spreading.

This is now a var. of *R. glandulosus*.

Woods and hedges. Shrub. July–September.

25. **R. glandulosus,** Bellardi. *Glandular Bramble.*—E.B. 2883. L.C. 33. Area and range as in 24.

Stem slightly angular or rounded, furrowed, hairy-glandular; prickles slender, unequal. Leaves ternate in γ *rosaceus*, quinate, deep-green on both sides, more or less hairy; leaflets petiolate, lower pair on the barren stem declinate, none overlapping; terminal leaflet ovate or obovate, or oblong, all with sharp, unequal teeth. Panicle branched, leafy below; rach hairy-shaggy, with numerous setæ (bristles bearing glands) and very unequal slender prickles. Sepals lanceolate, glandular, and armed with small prickles (aciculi). Shrub. July, August.

Var. *Lejeunii*, Bell Salter, 'Phytologist,' vol. ii. p. 135.—Leaves of barren stem ternate, pliant, deep-green, finely but unequally serrated; one of the leaves subtending a branch of the panicle is broadly cordate, and one or two broadly ovate or ovate, less glandular than the typical form.

Var. γ. *rosaceus*.—Leaves of the barren stem quinate, the lower pair of leaflets deflexed (none overlapping); leaflets ovate or oblong, unequally and coarsely serrated. Rach and pedicels densely shaggy, glandular and prickly.

Var. δ. *dentatus* (Babington's 'Manual,' 2nd ed.).—Leaves of barren stem ternate; leaflets obovate-oblong, cordate at the base, with short, abrupt points, finely and unequally serrated.

26. **R. Radula,** W. and N. *Hairy Bramble.*—L.c. (25). A. 11. C. 15. Lat. 50–56°.

Stem angular and rounded, furrowed, hairy, glandular, and prickly; hairs spreading, glands on longer or shorter setæ; prickles not uniform, deflexed and hooked. Leaflets of barren stem elliptical-oblong, of the fertile stem sessile or subsessile, obovate, finely and unequally serrated, with ascending teeth, mucronate, of a paler colour, and hairy and soft below. Flowers in panicles, leafy below, in a simple cluster above; rach hairy, with a few long prickles. Sepals ovate-acuminate. Petals large.

Var. *Hystrix*, W. and N.—L.c. (24).—Stems less hairy; leaflets elliptical-oblong; sepals longer and more acuminate than in the type.

Var. *foliosus*.—Leaflets broader than in *R. Hystrix*; panicle leafy throughout.

Var. *Lingua*, Weihe.—*scaber*, W. and N.? Stem rounded or slightly angular; prickles nearly equal, small, deflexed, with numerous aciculi, glands, and spreading hairs. Panicle very open, on long, spreading branches or peduncles. Sepals glandular and pointed.

27. **R. nemorosus,** Hayne.—*R. dumetorum*, W. and N. *Bramble of the Bushes.*—L.c. (37). A. 9. C. 13. Lat. 50–55°.

Stems bluntly angular or round, with numerous prickles, aciculi, hairs, and glands; prickles very unequal, mostly straight and horizontal. Leaves imperfectly quinate, hairy, and of the same colour on both sides; leaflets obovate or oblong or rounded, somewhat cordate at the base, acuminate, coarsely or finely, or simply or doubly toothed, paler and softer on the under side. Panicle compound, spreading, Sepals reflexed in flower, embracing the fruit when quite ripe. Petals large and showy.

Of this there are numerous varieties, characterized by their names, viz. *glabratus*, *bifrons* (leaves with two colours, a common character in this genus), *pilosus*, *horridus*, etc.

f. Cæsii.—Stems and fruit more or less glaucous.

28. **R. cæsius,** L. *Dewberry.*—E.B. 826. L.C. (38).

Stem round, barren stem angular rounded, glaucous, furnished with prickles, glands, and hairs; prickles variable, straight or declining. Leaves ternate, those on the barren stem quinate or ternate, with lateral external lobes on the lower pair; leaflets (lower pair) nearly sessile, overlapping, ovate-acuminate, deeply and unequally toothed. Panicle nearly simple; rach and pedicels prickly, glandular and hairy. Sepals ovate-elongated, with short points, embracing the fruit. Petals obovate. Fruit glaucous, with more or less of a bluish tint.

Hedges. Flower, June; fruit, August.

R. tenuis (A. 10. C. 17. Lat. 51–55°.)—Stem weak, without hairs and setæ? (Dr. Bell Salter.)

29. **R. Wahlbergii,** Arrh. *Wahlberg's Bramble.*—A. 3. C. 4. Lat. 51–53°.

Stem rounded angular, glaucous, downy, with numerous long, nearly equal, straight or curved prickles, enlarged and hairy at the base; barren stem angular, furrowed with strong, decidedly hooked, and declinate prickles. Leaves quinate, rather thick, slightly hairy above, downy and whitish or grey below, with prickly petioles; leaflets roundish, abruptly pointed, cordate at the base, unequally serrated, the lower pair (when the leaf is quinate) deflexed, and not overlapping. Panicle branched and leafy below, prickly, downy, and slightly glandular. Sepals spreading. Fruit large, dark-purple.

Hedges in the south of England. Shrub. August.

Note.—The plants called *R. Wahlbergii* are now referred, in the 'Manual,' to *R. corylifolius* and *R. nemorosus.*

Var. *cæsius.*—*R. aquaticus,* W. and N. Stems long and slender, with very few and small prickles. Flowering branches erect, slender, acicular and glandular, scarcely prickly. Flowers few, on filiform, glandular pedicels.—This has disappeared in the fourth edition of the 'Manual.'

Note.—The Dewberry Brambles have a tendency to produce numerous erect branches originating in the same joint; these branches are often abortive, a tuft of scaly sheaths and leaves only remaining to indicate the usual places of their growth.

g. Stems half-shrubby, not prickly.

30. **R. saxatilis,** Lin. *Rock Bramble.*—E.B. 2233. L.C. 338 A. 14. C. 40. Lat. 51–61°. Alt. 0–900 yds. Tem. 46–38°.

Stem erect, with (usually) a few minute prickles. Leaves ternate, on long, hairy, prickly petioles; leaflets ovate-elliptical, tapering at both ends, serrated, downy. Flowers few, in a corymb, yellow. Fruit 1–4 large red drupes.

Near Settle, Yorkshire. In mountainous, stony places. Shrub. July–September.

31. **R. Chamæmorus,** Lin. *Cloud-berry.*—E.B. 716. L.C. 337. A. 11. C. 30. Lat. 53–59°. Alt. 200–1100 yds. Tem. 43–36°.

Stems creeping underground, flowering-shoots erect, unarmed, herbaceous, 6–10 inches high. Leaves simple, 5–7-lobed. Lobes short, obtuse, plaited, toothed. Petals white.

Note.—True stem underground, creeping, woody. (Mr. Babington.)

Turfy bogs on lofty mountains. Perennial; July, August.

R. arcticus, L. *Arctic Bramble.*—(E.B. 1585. L.C. Excl. Sp.) —Stem erect, one-flowered. Leaves *ternate.* Petals purple.—Isle of Mull and on Ben Ghlo? Said to be doubtful. Has long disappeared.

The fruit of this species is much esteemed in Sweden, and preserved for the tables of the great.

Hooker and Arnott separate the *Rubi* into three sections, containing as below:—

Sect. I. *R. idæus.*

Sect. II. *R. suberectus, R. fruticosus, R. rhamnifolius, R. carpinifolius, R. corylifolius, R. glandulosus, R. cæsius.*

Sect. III. *R. saxatilis, R. arcticus, R. Chamæmorus.*

These judicious authors state, in a note (see Hooker and Arnott's 'British Flora,' p. 122. ed. 7), their opinion of the *Rubi,* which is here condensed, viz. that all the *Rubi* comprehended in Sec. 2 are mere varieties, approaching on the one side to *R. idæus,* and on the other to *R. saxatilis,* with both of which many fertile and permanent hybrids may have been formed and are still forming.

The following is Dr. Bell Salter's arrangement, which is a modification of what may be called the modern views, represented in this country by Mr. Babington and his followers:—

Under the Group I. Suberecti, Lindley, are described three forms,—*R. idæus, R. suberectus, R. plicatus.*

Group II. Corylifolii. *R. rhamnifolius, R. macrophyllus, R. corylifolius, R. Salteri.*

Group III. Carpinifolii. *R. carpinifolius, R. Sprengelii.*

Group IV. Tomentosi. *R. discolor, R. argenteus, R. leucostachys.*

Group V. Radulæ. *R. Radula, R. rudis.*

Group VI. Kœhleriani. *R. Guntheri, R. Kœhleri, R. humifusus, R. hirtus, R. glandulosus.*

Group VII. Cæsii. *R. Wahlbergii, R. nemorosus, R. cæsius.*

Group VIII. Herbacei. *R. saxatilis, R. arcticus, R. Chamæmorus.*

Dryas, *L.*—Perennial, herbaceous plants, with simple, short, leafy stems. Leaves simple or compound. Flowers large, solitary, terminal. Calyx 8–10-parted or cleft, in one row. Petals 8–10. Stamens indefinite. Carpels (achenia) ovate-oblong, with long feathery appendages on a depressed, downy, minutely cellular receptacle.—This genus is known by its fruit, which has long feathery tails, by its large solitary flowers, and by its localities, mountainous or alpine heights.

D. octopetala, L. *Mountain Avens.*—E.B. 451. L.C. 320. A. 5. C. 9. Lat. 54–60°. Alt. 0–900 yds. Tem. 46–38°.

Roots woody, widely spreading. Flowering-stems very short, with tufts of leaves at their base; barren stems prostrate or ascending, leafy. Leaves oblong, blunt, deeply serrated, shining and green above, white below, or very downy. Petioles persistent. Stipules linear, setaceous, hairy. Flowers white, solitary, terminal on long hairy stalks. Sepals 8, rarely 10 or 6, lanceolate, uniform. Petals obovate, as many as the sepals (divisions of the calyx)! Styles densely feathery, with long silky down.

Yorkshire, Craven district, mountainous parts of England and Wales, Scotland, and Ireland. Perennial; July, August.

Note.—This interesting plant has only recently been satisfactorily ascertained to be an occupant of the lofty mountains of Carnarvon, North Wales. (See 'Phytologist' for this month, January, 1858, p. 313.)

Geum, *L.*—Herbaceous, perennial, thick-rooted plants. Root-leaves pinnate, with unequally lobed or toothed or incised segments; the terminal lobe large, the lateral very small; stem-leaves usually ternate; stipules large, leaf-like. Flowers solitary, yellow or red or purple. Calyx in five divisions, with an

outer calyx consisting of five bracts. Styles terminal, *very much elongated after flowering,* each *hooked* (bent or twisted) *at about one-third of its length from the point,* the terminal joint falling off (caducous). Carpels dry, hairy, in a globular head, and arranged on a cylindrical receptacle.

G. urbanum, L. *Herb Bennett,* or *Common Avens.*—E.B. 1400. L.C. 321. A. 17. C. 75. Lat. 50–58°. Alt. 0–150 yds. Tem. 52–47°.

Root short, truncate. Stems branched, rarely simple, erect or nearly so, round, hairy and leafy. Leaves petiolate, with *ternate, pointed, terminal lobes.* Calyx *green, reflexed some time after flowering.* Petals obovate, rounded at the apex. Carpels sessile at the bottom of the calyx; upper joint of the style nearly glabrous.

Hedges, woods, and moist shady places. Per.; June, July.

G. intermedium, Ehrh. *Intermediate Geum.*—L.C. 321 *b.* Fl. Dan. p. 1874. Area and range undetermined?

Root elongate. Stems branching, rarely simple? Flowers *drooping.* Sepals reddish, horizontal after flowering, not reflected as in *G. urbanum.* Petals abruptly contracted into a short claw. Carpels sessile at the bottom of the calyx.—By this character, viz. the absence of the carpophore (fruitstalk), and by the spreading, not erect, sepals, it is distinguished from *G. rivale.*

Woods and moist shady places. Perennial; May–August.

G. rivale, L. *Water Avens.*—E.B. 106. L.C. 322. A. 18. C. 70. Lat. 50–60°. Alt. 0–950 yds. Tem. 50–37°.

Root rhizomatous, elongated. Stems erect, branching, 12–18 inches high, hairy, leafy. Flowers pendulous. Calyx reddish, very hairy, *erect after flowering.* Petals broad cuneate, with long claws. Carpels *on a round stipitate head* (on a stalk rising from the base of the calyx); upper joint of the style furnished with long spreading hairs.

In moist grassy places, woods, river-banks, etc. Perennial; May–July.

Unfrequent in the south and middle of England.

TRIBE III. *ROSEÆ.*—Carpels numerous, one-seeded, dry, not opening, enclosed in the calyx-tube, which enlarges after flowering, and is fleshy when ripe; stamens indefinite.

ROSA, *Linn. Rose.*—Shrubs often with creeping roots. Stems

prickly. Leaves compound, with singly- or doubly-toothed leaflets; stipules laterally attached to the petioles. Flowers large, solitary or aggregate, axillary or terminal. Calyx-tube urceolate, constricted at the top, increasing after flowering, and fleshy when ripe, the inner surface lined with rough hairs; limb in five rarely entire divisions. Corolla imbricated before flowering (when in bud). Styles with lateral insertion (not on the centre of the ovary), either free or united above. Carpels numerous, bony, irregular in shape, covered with hairs, inserted on the inner side of the calyx-tube.

Sect. I.—Carpels stipitate, at least the central ones; stipes about as long as the carpel.

§ 1. Caninæ. Root-shoots arched; prickles uniform, hooked; leaflets ovate, without glands; divisions of the calyx deciduous, the throat surrounded by a thick, elevated disc.

R. canina, L., *R. bractescens*, *R. cæsia*.

§ 2. Rubiginosæ. Root-shoots arched, with unequal prickles; leaves glandular; calyx-divisions persistent, throat with a more or less thick disc.

R. sepium, *R. rubiginosa*, *R. micrantha*, *R. inodora*.

§ 3. Villosæ. Shoots and prickles nearly straight; leaflets with diverging teeth; sepals persistent, converging; calyx-throat closed by a thick disc.

R. hibernica, *R. villosa*, *R. tomentosa*.

Sect. II.—Carpels sessile or very shortly stipitate; stipes shorter than the carpel.

§ 1. Pimpinellifoliæ. Shoots acicular (bristly); prickles straight or nearly straight; calyx-divisions persistent; disc thin or wanted.

R. Sabini, *R. involuta*, *R. Wilsoni*, *R. spinosissima*, *R. rubella*.

§ 3. Cinnamomeæ. Shoots with or without bristles (setæ); leaflets elongate, without glands; disc thin.

R. systyla, *R. arvensis*, *R. cinnamomea*, *R. Dicksoni*.

Sect. I.—See above.

§ 1. Caninæ.

R. canina, L. *Dog-Rose.*—E.B. 922. L.C. 351. A. 18. C. 81. Lat. 50–61°. Alt. 0–450 yds. Tem. 52–42°.

Stems much branched, spreading; prickles of the old wood *nearly equal, robust, enlarged, and compressed at the base, abruptly terminating in a hooked point.* Leaflets 5–7, ovate or oblong, doubly toothed, *the upper teeth almost connivent;* stipules of the floral leaves dilated, erect. Flowers white or pale-rose, mostly solitary. Divisions of the calyx pinnatifid, reflexed after flowering. Fruit ovate-oblong or globular.

Flower, June; fruit, August–November.

There are several varieties and sub-varieties of this Rose, viz.:—

R. bractescens, Woods. *Bracteated Dog-Rose,* Jos. Woods, in Lin. Trans.—Prickles hooked. Leaflets simply serrated, downy beneath; bracts overtopping the fruit. Calyx-tube round. Styles woolly. Fruit round.

Westmoreland. Shrub. June, July.

Apparently a variety of *R. canina,* Hooker and Arnott.

The two following are described as species by some botanists:—

R. systyla, Sm. *United-styled Rose.*—E.B. 1895.—Leaflets 5–7, with simple serratures. Sepals nearly entire. *Styles united.* Fruit elliptical, smooth? (See Sec. II. § 2, *infra.*)

R. cæsia, Sm. *Glaucous-leaved Dog-Rose.*—E.B. 2367. L.C. 351 *g.*—A much-branched shrub. Prickles strongly and uniformly hooked, numerous. Leaflets 5, serrated and glandular at the edges, smooth or downy. Stipules large, with short, broad tips. Calyx-divisions sparingly pinnatifid. Fruit elliptical, smooth.

Var. *β, incana.*—Prickles strongly uncinate, from a much lengthened base.—Hooker and Arnott, who say, "We do not distinguish this from *R. canina.*"

The area, range, etc., of these varieties have not yet been determined.

β, R. sarmentacea, Woods.—E.B.S. 2595.—Leaflets keeled, smooth. Calyx-divisions long, pinnatifid. Fruit elliptical, with a longish collar.

γ, R. surculosa, Woods.—Leaflets flat, smooth, with unequal serratures.

δ, R. dumetorum, Woods.—E.B.S. 2610.—Leaflets simply serrated, hairy, with glandular petioles and stipules on very short stalks. Fruit oblong-elliptical, with a short collar.

ϵ, R. Forsteri, Sm.—E.B.S. 2611.—Leaflets more or less folded. Fruit ovate-roundish, with a short, tapering collar.

§ 2. RUBIGINOSÆ.

R. sepium, Thuil. *Small-leaved Sweet-Briar.*—E.B.S. 2653. L.C. 350*.

Shrub 3–4 feet high, with numerous large and hooked and small straight or subulate prickles, interspersed with setæ (bristles). Leaflets 5–7, serrated, *glandular on both margin and disc.* Divisions of the calyx mostly entire (simple), glandular at the margin. Fruit smooth, ovate-elongate, with *a longish thick neck, crowned by the diverging divisions of the calyx.*

Midland counties. Shrub. June.

For area, etc., of this and the two following, see *R. rubiginosa.*

R. inodora, Fr. *Scentless Briar.*—E.B. 2759. L.C. 348.

Stout shrub. Prickles equal, hooked, with very broad bases. Petioles and stipules bristly, the former prickly, the latter with a short, abrupt point. Leaflets 5–7, slightly glandular, doubly and deeply serrated. Bracts leaf-like and pinnatifid. Peduncles bristly and prickly. Divisions of the calyx pinnatifid, with linear, serrated lobes. Fruit ovate-oblong, smooth, with *a short neck, not crowned by the calyx-divisions.*

Hedges. June, July.

R. micrantha, Sm. *Small-flowered Sweet-Briar.*—E.B. 2490. L.C. 349.

Very similar to the last described, in stem, prickles, and leaves. Divisions of the calyx and segments longer and more leafy. Fruit *elliptical-ovate, without a neck.* Leaves sprinkled with rusty glands.

Hedges. Shrub. June, July.

R. rubiginosa, L. *Sweet-Briar.*—E.B. 991. L.C. 350. A. 16. C. 50. Lat. 50–58°. Alt. 0–200 yds. Tem. 51–47°.

Shrub densely branched with straight shoots; prickles numerous, unequal, the larger curved. Leaflets 5, hairy, glandular beneath and on the margin. Stipules broadly lanceolate. Divisions of the calyx elongated, persistent. Fruit obovate (pear-shaped), slightly bristly, crowned by the persistent calyx. Closely allied to the two preceding species.

Shrub. June, July.

§ 3. VILLOSÆ.

R. villosa, Linn. *Hairy-leaved Rose.*—E.B. 583. Sup. L.C. 346.

Stems stout, with slender, nearly straight prickles. Leaflets 5–9, rounded, with double, acute, nearly glandular serratures, downy on both sides. Tube of calyx furnished with glandular bristles. Fruit *large and globular, crowned with the leaf-like sepals.*

Yorkshire, West Riding. Common. Fruit, September.

Var. *mollis.*—E.B. 459. A. 18. C. 82. Lat. 50–61°. Alt. 0–560 yds. Tem. 51–41°.—Fruit smaller. Sepals narrower and more pointed than in the type.

R. tomentosa, Sm. *Downy-leaved Rose.*—E.B. 990, 1896. L.C. 347.

Root-shoots erect or bending. Prickles nearly uniform, straight or curved. Leaves on short, bristly, glandular petioles; stipules pointed, spreading, glandular; leaflets about 5, ovate, singly or doubly serrated, downy on both sides. Divisions of the calyx pinnatifid; segments elliptical-lanceolate, serrated. Fruit hispid, crowned with the spreading divisions of the calyx.

Hedges. Shrub. June, July.

A var. of *R. villosa?* The leaves of both are doubly serrated, but in the latter they are more pubescent, or rather shaggy about the midrib. The sepals are simpler in the former than in the latter; in both they are glanduliferous. The petals are rather larger in *R. tomentosa*, and white; in *R. villosa* they are deep rosy-red. These are both common forms in Scotland, but especially the first described.

R. hibernica, Sm. *Irish Rose.*—E.B. 2196. L.C. 342.

Stem erect, bushy; prickles not numerous, unequal, slightly hooked; young shoots hairy, sometimes prickly, not glandular. Stipules broad, slightly serrated, glandulose. Leaflets roundish-ovate, simply serrated with deeply-cut, sharp teeth, slightly hairy below. Tube of calyx round; divisions about as long as the petals, acuminate, pinnatifid, with spreading, linear, slightly glandular segments. Styles distinct. Fruit *roundish-ovate,* red or orange, sometimes round, *crowned with the upright segments of the calyx.*

North of Ireland. Shrub. June–November. Hibernian.

Sect. II.—See page 204.

§ 1. PIMPINELLIFOLIÆ.

R. Sabini, Woods. *Sabine's Rose.*—E.B.S. 2594. L.C. 345.

Stem erect, with reddish-brown spreading branches; prickles numerous, unequal, straight, or nearly so. Peduncles with glandular setæ (stiff, glandular hairs). Leaflets 5–7, elliptical or ovate, rounded at both ends, rarely acute, never acuminate, doubly and sharply serrated with glandular secondary teeth, hairy and pale beneath. Stipules rather broad, with sharp, spreading auricles, glandular and hairy. Flowers solitary or in threes. Calyx-tube ovate; segments about as long as the petals, hairy, bristly, glandular, one or two with secondary linear segments. Fruit *dark-red, globular* or somewhat *urceolate,* crowned with the *erect persistent segments of the calyx.*

North of England and Scotland. Shrub. June.

Var. *a, doniana,* Lind.—E.B.S. 2601. L.C. 345 *b.*—Prickles very numerous and very unequal. Leaves very hairy. Calyx-segments almost entire.

Wood near Ingleton, Yorkshire.

Var. *β, gracilis,* Borr.—L.C. 345 *c.*—Large prickles more hooked, one of the segments of the calyx slightly toothed.

Near Newcastle.

R. involuta, Sm. *Prickly unexpanded Rose.*—E.B. 2068. L.C. 344.

Dwarf shrub, spreading widely. Prickles and setæ (bristles) straight, numerous, very unequal. Leaves on short, bristly petioles; about 7 leaflets; leaflets ovate, folded (plicate), doubly serrated; stipules pointed, ciliated. Peduncles and calyx bristly; calyx-tube ovate; divisions entire, spreading in flower. Fruit *ovate, bristly, crowned by the converging divisions of the calyx.*

This Rose has some resemblance to *R. spinosissima.*

West Highlands and islands of Scotland. June, July.

R. Wilsoni, Borr. *Wilson's Rose.*—E.B.S. 2723. L.C. 343.

Bush about three feet high, with slender, spreading branches and reddish foliage. Prickles very unequal, most of them slightly curved, the larger much dilated at the base, intermixed with setæ. Leaflets serrated, hairy, 7–9; stipules with ovate, diverging points. Calyx-divisions simple, glandular. Fruit *ovate-roundish,* with a short neck crowned with the persistent, *spreading* segments of the calyx.

North Wales, Wilson. Shrub. June.

R. spinosissima, L. *Burnet-leaved Rose.*—E.B. 187. A. 18. C. 60. Lat. 50–60°. Alt. 0–650 yds. Tem. 52–40°.

Stems erect, much-branched at the summit, forming a low, tufted bush. Prickles very numerous, especially above, very unequal, slender, straight, more or less deflexed. Leaves of 5–9 leaflets, with uniform, nearly linear, stipules; stipules of the upper (floral) leaves somewhat broader, with spreading auricles; leaflets roundish or oblong-roundish, serrated, with usually simple teeth, glabrous, pale-green. Divisions of the calyx lanceolate, acuminate, two of them with erect, setaceous teeth, woolly at the edges, nearly half as long as the corolla, shaggy or downy within. Petals pure white, slightly yellow above the claw. Styles dis-

tinct, shorter than the stamens. Fruit nearly glabrous, globular, somewhat depressed, purplish-black when ripe.

On sandy heaths. Perennial; flower, June, July; fruit, August, September.

Var. *β, hispida.*—Peduncles more or less hairy, nearly prickly.

R. rubella, Woods, Trans. Lin. Soc. vol. xii. p. 177. *Red Dog-Rose.*—E.B. 2521. Area, etc., not given in 'Cybele.'

Stem 2–3 feet high, bushy; prickles straight, slender, *intermixed with glandular setæ* (bristles). Leaflets 7–11, broadly elliptical, blunt. Fruit small, *globular*, scarlet.

Northumberland seacoast (Mr. Winch). Shrub. July.

§ 2. CINNAMOMEÆ.

R. systyla, Woods. *Close-styled Dog-Rose.*—E.B. 1895. A. ? C. ? Lat. 50–58°. Alt. 0–100 yds. Tem. 50–46°.

In habit and usual habitat like *R. canina.* Prickles strongly hooked, with broad bases. Leaflets 5–7, serrated, not glandular, downy beneath. Calyx-divisions nearly simple, deciduous. Styles united, smooth. Fruit smooth, *elliptical, with a convex disc crowned by the united styles.*

Hedges. Shrub, June.

R. arvensis, Huds. *Trailing Dog-Rose.*—E.B. 188. A. 14. C. 60. Lat. 50–56°. Alt. 0–200 yds. Tem. 51–47°.

Stems slender, low, except when supported; branches divaricate, long, arching, and sometimes rooting; prickles numerous, conical or compressed, more or less curved, rarely almost straight. Leaves glabrous, of 5–7 leaflets, whitish-green below; leaflets oblong or roundish, simply serrated, teeth large (sometimes doubly and unequally serrated); stipules uniform, slightly glandular, with lanceolate spreading auricles. Calyx-tube smooth; segments ovate, pointed, nearly entire. Styles united in a cylindrical column, about as long as the stamens. Fruit red when mature, roundish or oblong.

Heaths and bushy places, etc. Shrub; June–September.

Var. *R. stylosa.*—Leaves broader and hairier below. Segments of the calyx more acuminate.

R. cinnamomea, L. *Cinnamon Rose.*—E.B. 2388. L.C. Excluded Species. Alien.

Shrub, with brown, erect branches. Prickles strong, slightly curved. Shoots (suckers) densely prickly with setæ (bristles). Leaves 5–7 leaflets; leaflets *lanceolate*, serrated, wrinkled, smooth

above and downy beneath. Stipules broad, concave, somewhat fringed; petioles slender, unarmed. Flowers 1–3; bracts large, reddish at the edges, concave; peduncles and calyx-tube quite unarmed. Divisions of the calyx entire, *narrow*, ciliated, spreading. Styles hairy, distinct. Fruit ovate or globular, crimson, crowned by the *converging sepals*.

R. Dicksoni, Lind. *Dickson's Rose.*—E.B.S. 2707. L.C. Excluded Species.

Stems slender, with scattered, subulate, slender prickles. Leaflets large, with large, unequal teeth, slightly glandular. Divisions of the calyx entire, elongate, ciliated with setæ. Fruit *ovate-urceolate, with a long tapering neck,* and a few glandular hairs.

Ireland, Mr. Drummond. "Scarcely a native: it may prove to be a mere garden variety of *R. cinnamomea,* Hooker and Arnott." Hibernian.

TRIBE IV. *AGRIMONIEÆ.*—Herbaceous plants or under-shrubs, with alternate, stipulate, compound, or simple leaves. Calyx with a thickened disc-lined tube and a three- to five-lobed limb. Stamens definite (in *Agrimonia* 8–20), inserted in the orifice of the calyx. Ovary solitary, with solitary or twin ovules. Fruit a nut (in *Agrimonia* 1–2), enclosed in the tube of the indurated calyx.

Genera.—AGRIMONIA, SANGUISORBA, POTERIUM, ALCHEMILLA.

SYNOPSIS OF THE GENERA.

AGRIMONIA.—Leaves interruptedly pinnate; stamens 8–20.
SANGUISORBA.—Leaves pinnate; flowers perfect, capitate; stamens few.
POTERIUM.—Leaves pinnate; flowers diœcious, small; stamens 30–40.
ALCHEMILLA.—Leaves lobed, digitate or palmate; stamens few.

AGRIMONIA, *Linn. Agrimony.*—Hairy, herbaceous plants. Leaves interruptedly pinnate, rarely ternate; leaflets incised. Flowers spicate, yellow. Calyx five-cleft, with hooked bristles, constricted with a glandular ring. Petals five, notched, spreading. Stamens 7–20, inserted with the petals into the constricted part of the calyx. Ovaries 2, sometimes 3, with styles as long as the stamens; stigmas obtuse. Fruit usually 2 indehiscent carpels, one-seeded, enclosed in the indurated, turbinate calyx. Seed inverted.

A. Eupatoria, Linn. *Common Agrimony.*—E.B. 1335. L.C. 323. A. 16. C. 75. Lat. 50–58°. Alt. 0–200 yds. Tem. 52–47°.

Roots thick, tufted. Stems erect, round, tapering, simple or branching above, hairy. Leaves interruptedly pinnate, with an odd leaflet; leaflets ovate-oblong, deeply-toothed, intermediate and smaller leaflets entire or incised, all pubescent below; petioles and midribs furnished with longer reddish hairs. Stipules leaf-like, clasping, incised or toothed. Calyx usually with *one ripe carpel.*

Waysides. Perennial; July.

A. odorata, Thuil. Var. of the preceding (?).—Stems taller than in *A. Eupatoria,* and branching at the summit, leafy; calyx of the fruit *globular, much larger than in the typical form.* This enlargement of the calyx is caused by the development of *both* carpels.

A. agrimonioides, Linn. *Aremonia agrimonioides,* DC. Fl. Gr. 458.—Stem-leaves ternate; stamens 8 (?); fruit smooth.—This plant has recently been detected in the woods about Scone and in several parts of Perthshire. (John Sim, in 'Phytologist,' N. s. vol. ii. p. 272.)

Sanguisorba, *Linn. Burnet.*—Herbaceous plants, with pinnate leaves, and cut or serrated leaflets, with densely spicate flowers. Perianth four-cleft, coloured, with four scales or bracts at the base, and constricted by an annular disc. Stamens 4. Ovary with four angles. Fruit covered by the hardened calyx-tube, one-celled, indehiscent, one- or two-seeded.

S. officinalis, Linn. *Common Burnet.*—E.B. 1312. L.C. 354. A. 14. C. 40. Lat. 50–56°. Alt. 0–200 yds. Tem. 52–47°.

Root thick, woody. Stems erect, rigid, branching above, angular, smooth. Leaves pinnate, 9–15 leaflets; leaflets cordate, lanceolate, serrate, shining above, glaucous below; stipules leaf-like, toothed. Flowers in dense ovate or obovate-cylindrical heads. Perianth dark-purple; segments ovate, pointed, keeled.

Moist upland pastures and meadows. Perennial; July.

Poterium, *Linn. Salad Burnet.*—Herbaceous or shrubby plants. Leaves pinnate, with cleft or serrated leaflets. Flowers in terminal heads or spikes, monœcious; the upper fertile, the lower barren. Calyx with three sepals. Corolla of the male flowers tubular, with a four-parted limb; of the female flowers rotate, with a very short tube, constricted at the throat by an annular disc and four deep, reflexed, permanent segments. Stamens 20–30, with long, flaccid filaments and roundish two-lobed an-

thers. Ovaries 2 or 1, ovate-oblong in the calyx-tube. Style capillary. Stigmas tufted. Fruit an angular, rugged achenium, one- or two-celled, covered by the hardened urceolate calyx-tube, with oval, solitary seeds.

P. Sanguisorba, Linn. *Common Salad Burnet.*—E.B. 860. L.C. 355. A. 12. C. 40. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Root somewhat woody. Stems erect, angular, hollow, furrowed, especially above, densely downy below, nearly glabrous above. Leaves compound, 6–8 pairs of roundish or oblong toothed leaflets, with an odd one; the lower on long petioles, the upper sessile, all stipulate; stipules of the lower leaves membranous, attached by their whole length, with linear, herbaceous segments; those of the upper leaves broader, incised or toothed; leaflets oblong-obovate, mostly truncate at the top and truncate or cordate at the base, deeply toothed, glaucous green below. Fruit *reticulated, wrinkled,* more or less downy, with four prominent angles. Calyx-lobes deciduous.

Dry banks. Perennial; June, July.

P. muricatum, Spach. *Warty-fruited Burnet.*—L.C. 355*. Area undetermined.

Stems erect. Leaflets oblong, incised or deeply serrated; teeth long, sharp. Tube of the calyx indurated, quadrangular; angles winged, sides pitted, *elevated margins of the pits dentate.*

Essex (Saffron-Walden); Warwickshire (near Leamington station); Somersetshire. Perennial; June. (Compare 'Phytologist,' vol. iii. pp. 707–715.)

ALCHEMILLA, *Linn.*—Annual or perennial plants, with palmately-lobed or palmately-parted leaves. Flowers in corymbose, terminal and lateral cymes, or in tufts opposite to the leaves. Calyx in 8, rarely 10, divisions, in two rows; the outer sepals smaller than the inner. Stamens 4, or fewer by abortion, on a disc. Style central, basal, or with a capitate stigma. Carpels 1, rarely 2, enclosed in the calyx, which becomes cylindrical. Seed erect.

A. vulgaris, Linn. *Common Lady's Mantle.*—E.B. 597. L.C. 356. A. 18. C. 75. Lat. 50–60°. Alt. 0–1200 yds. Tem. 50–35°.

Root somewhat woody. Stems slender, ascending or erect, round, hairy, branching at the top. Leaves hairy or downy,

reniform, plaited, lobed, roundish, the root-leaves on long stalks, the upper ones nearly sessile; lobes more or less deep, rounded, toothed or serrated; teeth mucronate; lower stipules scarious, surrounding the stem; upper ones herbaceous, leaf-like, toothed or incised, spreading. Flowers in dense, terminal corymbs. Perianth (calyx) slightly hairy.

Pastures. Perennial; June–September.

Var. *β, subsericea,* Koch.—Stem-leaves and petioles silky.

A. alpina, Linn. *Alpine Lady's Mantle.*—E.B. 244. L.C. 357. A. 6. C. 15. Lat. 54–60°. Alt. 150–1400 yds. Tem. 45–34°.

Root woody. Stems several, erect, downy, branching above. Radical leaves on long stalks, 5–7-*parted;* divisions obovate-oblong, obtuse, serrated at the end, beautifully silky silvery below. Lower stipules scarious, upper ones like the leaves. Calyx spreading, reflexed.

Mountains. Perennial; June.

A. conjuncta, Babington, is distinguished from *A. alpina* by the lobes *being connected for about one-third of their length;* also by its large size and more silky appearance.—Clova Mountains (Mr. G. Don). Common in gardens, and it flowers at the same time as the typical plant.

A. arvensis, Scop. *Parsley Piert.*—E.B. 1011. L.C. 358. A. 18. C. 80. Lat. 50–60°. Alt. 0–150 (550) yards. Tem. 52–43°.

Root annual. Stems prostrate-ascending, producing lateral bundles (bunches) of flowers throughout nearly its whole length, hairy or downy. Root-leaves with a rounded or orbicular outline, *palmate, with cuneate lobes,* decayed before the plant flowers. Stem-leaves equal; stipules subulate, fleshy, united at the base, and closely embracing the bunch of flowers. Calyx downy, with erect, spreading teeth, which have a pearly-white margin.

In poor soils, sandy places, and roadsides. Annual; May–August.

POMACEÆ, *Juss.* (a section of ROSACEÆ). THE APPLE- AND PEAR-TREE FAMILY.

An order of trees and shrubs, sometimes spinous (spines are abortive branches). Leaves scattered, often in tufts, simple or pinnatifid or pinnate. Stipules *free* (not joined together as in *Rosaceæ*), caducous. Flowers in umbellate tufts in few-flowered

clusters or corymbs, often developed before the leaves. Sepals combined in a tube which is combined with the ovary (ovary attached), persistent, withering or caducous, valvular before expansion. Petals inserted on a disc, imbricated in prefloration. Stamens 15–30. Anthers introrse. Ovary united with the calyx, consisting of 5 carpels or of *one* by abortion, and with bi-ovular or pluri-ovular cells (cells with 2 or several ovules). Ovules *inserted on the inner angle of the cell,* ascending, reflexed. Styles 5, or 1–4 by abortion, free or more or less united at the base. Stigmas undivided. Fruit crowned by the calyx or depressed at the summit (umbilicate), fleshy or pulpy, formed externally by the developed tube of the calyx, 5-celled, or 1–4-celled by abortion, cells 2-seeded, or one-seeded by abortion, rarely many-seeded; endocarp membranous or cartilaginous or bony. Seeds ascending, rarely horizontal, without albumen. Embryo straight. Radicle directed towards the hilum.

TRIBE I.—Ovary with a bony endocarp (fruit a nut).

SYNOPSIS OF THE GENERA.

MESPILUS.—Calyx-segments *leaf-like;* fruit turbinate; *carpels exposed.*

COTONEASTER.—*Fruit turbinate;* nuts adherent to the fleshy calyx, but not cohering at the centre.

CRATÆGUS.—Fruit *globular, concealing the nuts.*

MESPILUS, *L.*—A tree or shrub with nearly entire leaves and caducous stipules. Flowers white, with persistent bracts. Calyx 5-parted, with leaf-like divisions. Ovary 5-celled, with 2 ovules in each. Styles 5. Fruit globular-turbinate, *crowned by the enlarged divisions of the calyx,* forming a dilated disc-like surface and containing 2–5 bony cells with 2 seeds in each.

M. germanica, L. *Medlar.*—E.B. 1523. L.C. 359. A. 4. C. 5. Lat. 50–54°. Alt.? Tem. 50–48°.

Shrub branching from the base, slightly spinous: rarely a low tree. Leaves on short stalks. Flowers large, with linear bracts. Calyx woolly, with divisions longer than the tube. Fruit large, fleshy, finally becoming pulpy and sweet (when fermentation takes place).

Hedges. April, May. Fruit in September.

COTONEASTER. *Lindl.*—Shrubs with simple entire leaves and partly procumbent branches. Calyx turbinate, 5-toothed. Petals rounded, erect. Styles 2–5. Ovary 3–5-celled; cells bony,

concealed in the fleshy calyx and attached to its sides, with 2 ovules in each. Fruit turbinate, or crowned by the persistent calyx-limb.

C. vulgaris, Lindl. *Dwarf Quince-leaved Medlar.*—E.B.S. 2713. L.C. 361. A. 1. C. 1. Lat. 53–54°. Alt. 0–200 yds. Tem. 48–47°.

Small tree or bush. Leaves roundish, ovate or obovate, on short petioles, leathery, smooth above, densely downy, cottony, or shaggy below, alternate. Flowers pale red, drooping. Calyx-segments ovate, blunt. Petals round; styles three. Fruit pear-shaped, at first red, finally black or dark-brown.

Great Orme's Head, North Wales. Shrub or tree. July.

Cosson and Germain remark that this shrub is rarely subspontaneous in the hedges within seventy miles of Paris (the limits of their Flora), but they say it is planted in gardens and plantations.

CRATÆGUS, *L. in part.*—Spinous shrubs with more or less lobed or incised leaves and leaf-like persistent stipules. Flowers in branching corymbs, usually white or roseate, and with caducous bracts. Calyx 5-lobed. Ovary 1–2- rarely 3–5-celled, with 2 ovules in each cell. Styles 1–2, rarely 3–5. Fruit *nearly globular, crowned by the withering lobes of the calyx,* containing one bony nut, rarely 2–5 nuts.

C. Oxyacantha, Linn. *Common Hawthorn.*—E.B. 2504. L.C. 360. A. 17. C. 75 (80). Lat. 50–59°. Alt. 0–500 yds. Tem. 52–44°.

Shrub very spinous, forming a tufted bush, and sometimes a small tree. Leaves glabrous, leathery, petioled, obovate, wedge-shaped, more or less deeply divided into 3–7 lobes, lobes toothed or incised above. Stipules toothed. Calyx reflexed, downy or glabrous. Fruit red, farinaceous, pulpy.

Flowers in May; bears fruit in September. Woods and hedges. A valuable hedge-shrub.

Var. *α, vulgaris.*—Leaves deeply pinnatifid; peduncles and calyxes of the flower downy or hairy; style usually single; fruit bearing a single nut.

Var. *β, oxyacanthoides.*—Leaves less deeply pinnatifid; peduncles and calyx of the flower glabrous, or nearly so; styles 1 or 2, rarely 3; fruit larger, bearing 1–2, rarely 3, nuts.—A later-flowering plant than var. *α.*

Tribe II.—Fruit with a thin endocarp, sometimes *cartilaginous*, never bony.

Pyrus, *Lin.*—Trees of greater or less elevation, with toothed leaves and umbellate flowers. Calyx 5-cleft. Petals 5, roundish. Ovary 2–5-celled, with 2 ovules in each. Styles 2–5. Fruit round or turbinate, crowned by the persistent limb of the calyx. Endocarp (lining of the cell) cartilaginous or membranous.

P. Malus, Lin. *Apple-tree.*—E.B. 179. A. 16. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 51–47°.

Tree of moderate elevation, with spreading branches. Leaves ovate or oblong or orbicular, toothed or crenulate, slightly downy when young, on very short petioles. Flowers large, roseate on the outside or entirely white, on short pedicels. Fruit large, downy when in a young state, glabrous when old, umbilicate both at the base and at the apex.

Woods and hedges. Perennial; April, May. In fruit September and October.

Var. *α, glabra.*—Leaves glabrous. Fruit very austere.

Var. *β, tomentosa.*—Leaves pubescent. Fruit agreeable. This tree or this variety is said to be the original of the hundreds, or probably thousands, of sorts of Apple-trees, which have been cultivated everywhere from time immemorial.

P. communis, Lin. *Pear-tree.*—E.B. 1784. L.C. 362. A. 8. C. 20. Lat. 50–54°. Alt. 0–100 yds. Tem. 51–48°.

A more or less lofty tree: often a branching shrub in a wild state. Leaves ovate or obovate or ovate-oblong, petioled, with short points, finely toothed or crenulate, downy below, coriaceous shining above. Flowers large, *on long stalks.* Fruit smooth, bitter in the spontaneous, and more or less sweet in the cultivated state.

Hedges and woods. Flowers in April; bears fruit in August.

P. domestica, Sm. *True Service-tree.*—E.B. 350. L.C. p. 15.

Trunk large, with erect branches. Leaves pinnate, stalked; leaflets lanceolate or elliptic-lanceolate, sharply serrated, downy. Flowers in rather dense panicled cymes, densely woolly. Fruit large, pyriform.

A solitary tree in Wyre Forest. See 'Phytologist,' N. S. vol. i. pp. 278, 343, 354, 392. Flowers in April and May; is in fruit in September.

P. Aucuparia, Linn. *Rowan-tree. Mountain Ash.*—E.B.

337. L.C. 366. A. 18. C. 75. Lat. 50–61°. Alt. 0–900 yds. Tem. 50–38°.

Small tree, with erect branches. Leaves pinnate; leaflets 10–14, with a terminal one, opposite, ovate-oblong, toothed, glabrous above, hoary-silky below. Flowers small, white, corymbose. Fruit *small, globular*, with 2–3 unequal cells, rarely 4: red, pulpy-succulent, acid, bitter.

Flowers, May, June; fruit, September.

P. torminalis, Crantz. *Wild Service-tree.*—E.B. 298. L.C. 364. A. 8. C. 30. Lat. 50–54°. Alt. 0–200 yds. Tem. 50–48°.

Small tree or bush. Leaves broadly ovate or slightly cordate at the base, *with lanceolate or triangular serrated lobes*, glabrous. Flowers corymbose, on downy or shaggy peduncles and pedicels. Fruit "ovate, brown."

In Worcestershire the fruit of this tree is occasionally seen brought to market, especially at Stourbridge. The tree abounds in Wyre Forest. Perennial; April, May. Fruit in September.

This tree is often confounded with *P. domestica*. *Its fruit is not of good repute.*

The following account of *P. torminalis* is from the late Dr. Bromfield's 'Flora Vectensis,' p. 167. The dimensions were taken last summer, August, 1857, from which we ascertained that it was still growing and thriving.

"The largest Wild Service-tree in the island, with which I am acquainted, stands in Quarr Copse, about twenty yards from the Binstead entrance, on the left-hand, and perhaps a dozen yards from the main path, overhanging a deep hollow. The girth of this tree, at about two feet from the ground, I found to be six feet eleven inches; at three feet, it measured five feet six inches; and at five feet, five feet two inches. Its height I estimate at little under forty feet. The large, rounded, oak-like head, spreading limbs, and leaning trunk, render it a very picturesque object, and especially so when clothed in the gorgeous covering of autumn. The specimen is probably of great age, and, though flowering freely, fruits but sparingly. Trees sufficiently large or old for bearing, are indeed seldom to be met with in our woods, from its being cut periodically with the copse-wood.

"This species has long been, and still is, strangely confounded with the true Service-tree (*P. domestica*), a very different kind, with much larger, pear-shaped fruit and pinnated leaves, like

those of the Mountain Ash, but which there is no reason to believe was ever found wild in Britain, and certainly is not so with us, though described as common in the Isle of Wight, our *P. torminalis* having been uniformly mistaken for it, and the error perpetuated by the similarity of names and unscrutinizing habits of compilers.

"The Wild Service-tree is not a native of either Scotland or Ireland."

P. Aria, Crantz. *White Beam-tree.*—E.B. 1858. L.C. 365. A. 13. C. 40. Lat. 50–59°. Alt. 0–300 yds. Tem. 51–45°.

Usually a taller tree than the preceding. Leaves *white-cottony below* in all stages, *ovate or oblong,* doubly or unequally toothed, base tapering, nearly entire. Styles 2–3, hairy below. Fruit roundish, pulpy when ripe, of an acidulous taste.

Hedges. Common on chalky hills. Perennial; May. Fruit, August, September.

P. fennica, Kalm. *P. pinnatifida, P. hybrida,* Sm. 365 b. *The Hybrid Beam-tree.* (Area, etc., not determined.)—Lower portion of the leaves truly pinnate, pinnatifid in the centre, and doubly and deeply serrated towards and at the apex. The divisions of the leaves seem to be the sole characteristic difference between this plant and *P. Aria.*—Isle of Arran.

P. scandica, Fr. L.C. 365 *c.*

Leaves broadly lobed. Lobes triangular-ovate, toothed most deeply about the centre of the leaf. Finely serrated at the base, and one-fourth upwards, narrowly lobed from three-fourths from the base to the apex. The lobed leaves appear to be the sole distinction between this plant and *P. Aria.*

Note.—Are not *P. fennica* and *P. scandica* cultivated varieties of *P. Aria,* and consequently found in plantations and shrubberies?

ONAGRACEÆ, *Juss.* The Willow-herb Family.

Chiefly herbaceous perennial plants, with simple and entire or toothed leaves, and axillary, solitary flowers. Calyx united with the ovary, and having a 4-parted or 4-toothed limb, either caducous or persistent, valvular in prefloration. Petals 4, imbricated, twisted in prefloration, rarely wanting. Stamens 8, rarely 4, inserted with the petals at the top of the calyx-tube. Anthers

2-lobed, introrse. Ovary united with the calyx, consisting of 4 carpels (4 many-seeded cells). Ovules ascending, attached to the inner angle, rarely pendulous and reflexed. Style filiform. Stigmas 4, either spreading or contiguous. Fruit capsular, 4-celled, 4-valved, many-seeded, dehiscence loculicidal. Seeds ascending or pendulous. Perisperm none. Embryo straight. Radicle towards the hilum.

SYNOPSIS OF THE GENERA.

EPILOBIUM.—Calyx-tube 4-*angled, very long.* Fruit *linear.*
ŒNOTHERA.—Calyx-tube long, *cylindrical.* Fruit oblong, *angular.*
ISNARDIA.—Calyx-tube campanulate, short. Fruit *short*, angular.
CIRCÆA.—Petals and stamens 2 respectively. Fruit *roundish-obovate.*

EPILOBIUM, *Linn.*—Roots perennial, often stoloniferous. Leaves scattered or opposite, toothed or entire. Flowers roseate or purple, in terminal spike-like clusters or in leafy panicles. Calyx-limb 4-parted, caducous after flowering; calyx-tube very long, 4-angled, united with the ovary (the outer covering of the ovary). Petals 4. Stamens 8, erect or reflexed. Style filiform. Stigmas 4, spreading or united in a mass. Capsule (fruit) linear, 4-celled, many-seeded, opening from the apex to the base with 4 diverging, curled (involute) valves. Seeds numerous, shagreened-tubercular, terminated by a silky plume.

Sect. I. CHAMÆNERION.—Leaves scattered; petals entire; stamens and style reflected (curved).

E. spicatum, Lam.—*E. angustifolium,* Linn. *Rosebay Willow-herb,* or *French Willow-herb.*—E.B. 1947. L.C. 367. A. 18. C. 70. Lat. 50–61°. Alt. 0–850 yds. Tem. 50–39°.

Stems erect, often reddish, simple or branched above, glabrous. Leaves sessile or on short stalks, lanceolate, slightly toothed, glaucous below. Flowers purple, in long, lax, spike-like clusters; calyx coloured. Petals ovate or obovate, entire or slightly notched. Stigmas cruciate.

In dry places and woods. Perennial; July.

Var. β, *E. brachycarpum,* Leigh.—Capsule short. This form, Dr. Bromfield (Fl. Vect. 171) states, is only found in the Isle of Wight as a garden plant; the other, on the same high authority, "is the prevailing, if not the only genuine wild state of the species throughout England, etc."

E. rosmarinifolium, Hænke. *Rosemary-leaved Willow-herb,* Reh. Ic. Cr. 341.—Root creeping; stem short, erect or prostrate.

Leaves *linear*, not veined, abruptly tapering at both ends. Flowers rose-coloured or white. Petals elliptic-oblong, without claws. Style as long as the stamens. (*Fide* Mr. Babington, p. 117, 4th edit.)

Glen Tilt. Perennial; August.

In *E. rosmarinifolium* the leaves are quite entire; in *E. spicatum* they are slightly toothed; in this, the petals are more pointed; they are rounded at the apex in *E. spicatum*.

Sect. II. LYSIMACHION.—Leaves opposite (the lower ones at least); petals notched; stamens and style erect (not declining).

§. 1. *Stigmas spreading, cruciate.*

E. hirsutum, L. *Woolly Willow-herb.*—E.B. 837. L.C. 368. A. 15. C. 60. Lat. 50–57°. Alt. 0–200 yds. Tem. 52–47.

Roots perennial, stoloniferous. Stems erect, *round, not winged,* tapering, hairy, branched, leafy. Leaves lanceolate or oblong-lanceolate, toothed, soft and downy with some glandular hairs, sessile and clasping. Calyx-limb lanceolate, half as long as the petals, strongly mucronate. Petals deep rose-purple. Stigmas dilated, spreading, elliptic-lanceolate.

In water and wet places. Perennial; July–September.

E. parviflorum, Schreb.—*E. molle,* Lam. *Small-flowered Willow-herb.*—E.B. 795. L.C. 369. A. 17. C. 75. Lat. 50–59°. Alt. 0–200 yds. Tem. 52–47°.

Stem as in *E. hirsutum,* only usually less elevated and with fewer branches. Leaves lanceolate, narrower *and more laxly toothed* than in the former. The stem and leaves are also softer and clothed with shorter and denser pubescence. Calyx-limb oblong, *scarcely mucronate,* downy, nearly as long as the petals. Petals smaller and paler than in *E. hirsutum*. Buds obtuse. Fruit erect, 5 or 6 times as long as the pedicels. Seeds obovate, with a fine silky crown.

With the former. Perennial; July–September.

E. montanum, L. *Mountain Willow-herb.*—E.B. 1177. L.C. 370. A. 18. C. 82. Lat. 50–61°. Alt. 0–600 yds. Tem. 51–41°.

Root horizontal, fibrous below and stolon-bearing above. Stem erect, simple or branched, pubescent or glabrous, without prominent lines, leafy. Leaves pubescent or glabrous, strongly toothed, *the lower ones cordate at the base and stalked* (the petioles, though short, are present in both lower and upper leaves),

the upper leaves tapering at both ends. Flowers pink or white, or very pale rose-colour. Petals twice as long as the sepals, notched. Seeds ovate or oblong, finely shagreened.

In moist and dry places, walls, etc. Perennial; June–September.

E. lanceolatum, Fr. *Lanceolate-leaved Willow-herb.*—L.C. 370 *b.*

Stem erect, round, pubescent, leafy, from one foot to a yard high. Leaves *lanceolate,* crenate-serrated, with stout callous teeth, tapering at the base; the axils of the leaves are generally furnished with abortive shoots or small leaves. Segments of the calyx ovate, lanceolate. Seeds conical-cylindrical, smooth and shining.

Stapleton, near Bristol, Mr. Thwaites. Perennial; June, July.

The herbage of this species or variety is usually reddish.

Query.—Is the range the same as in *E. montanum,* of which it is probably only a variety?

§ 2. *Stigmas united in a mass (globular).*

E. palustre, Linn. *Marsh Willow-herb.*—E.B. 346. L.C. 372. A. 18. C. 82. Lat. 50–61°. Alt. 0–650 yds. Tem. 51–40°.

Stems round, simple or branching, glabrous or nearly so, leafy, with stoloniferous roots. Leaves elliptic-lanceolate, tapering at the base and petiolate, entire or toothed, glabrous. Flowers pale rose-colour. Sepals oblong, mucronulate, half as long as the petals. Seeds scarcely shagreened; plume stipitate.

In marshy places. June–September.

This is a very variable species. The plant is often bushy, branching from the base. The stem is often pubescent or puberulent, and the leaves are often strongly toothed. It varies in size with the various localities where it is found.

E. tetragonum, L. *Square-stalked Willow-herb.*—E.B. 1941. L.C. 373. A. 18. C. 80. Lat. 50–60°. Alt. 0–700 yds. Tem. 51–40°.

Stem erect or ascending, *with 2–4 elevated lines.* Leaves glabrous, oblong-lanceolate, often narrow, closely toothed, rarely sinuate, opposite, sessile or nearly so, on decurrent petioles, forming the prominent lines of the stem. Flowers in clusters or in leafy panicles, axillary and solitary, small, rose-coloured. Seeds oblong, *with a sessile plume.*

Moist places, ditches, etc. Perennial; July.

Var. β.—Stem branchy, with four prominent lines; leaves erect, lanceolate, narrow, deeply toothed.

E. obscurum, Schreb. — *E. virgatum*, Bab. An. Nat. Hist. ser. 2, vol. xvii. p. 236. Fr.?—The author of this species says, "resembling *E. tetragonum*, but the capsule much shorter." See 'Manual,' *in loco*, 118, Florileg. Brit., fig. 624. Stem 1–3 feet high, with very faint lines; scions from the lower joints not ending in a rosette of leaves. Leaves lanceolate, slightly toothed, *not decurrent;* lower leaves tapering towards their *rounded, slightly denticulate base.* Stigma undivided. Seeds *oblong-obovate*, not *pointed.*

Deep ditches in peat bogs. Perennial; July, August.

"*Epilobium obscurum*, Schreb." *E. parviflorum* (Schreb.), Sm., is our commonest species. I also take it for granted, that "*E. obscurum*, Schreb." is synonymous with *E. tetragonum* (L.), Sm. R. J. Lowe, on Höll's List of Madera Plants, 'Journal of Botany,' vol. i. p. 41.

E. ligulatum?, Baker.—Stem nearly two feet high, much branched, quadrangular below, procumbent and creeping widely at the base, sending out rootlets and stolons; stolons numerous, elongated, leafy; at the flowering-time slender, the lower ones afterwards thickened, and bearing a rosette of obovate leaves. Leaves lanceolate-ligulate, varying in breadth, when narrow nearly or quite entire, when broader sparingly denticulate, narrowed more or less gradually to a decurrent haft (petiole?). Sepals lanceolate; stigmas entire at first, finally sometimes quadrifid; seeds about half a line long, oblong-fusiform, broader above. (Phytologist, N.S. vol. ii. p. 19.)

In the same volume of the 'Phytologist,' N.S. vol. ii. pp. 366, 369, Mr. Babington appears to think that there is more than one species included under Mr. Baker's name *ligulatum*, to which appellation the learned author of the 'Manual of British Botany' also offers several objections. To Mr. Babington's paper and to Mr. Baker's observations or remarks on the same in the April number of the 'Phytologist,' vol. ii. p. 404, those who are interested in the question are referred.

E. roseum, L., Schreb. *Smooth-leaved pale Willow-herb.*—E.B. 693. L.C. 371. A. 2. C.? Lat. 50–58°. Alt. 0–200 yds. Tem. 50–47°.

Root horizontal, with strong branching fibres. Stem erect or ascending, glabrous or slightly puberulent, with 2–4 prominent lines, leafy. Leaves glabrous or only slightly pubescent below, oblong, pointed at both ends, toothed; teeth unequal, opposite (usually) and *petiolate;* petioles decurrent. Flowers pale rose-colour, small; petals cleft, nearly twice as long as the sepals. Fruit pubescent, on short stalks. Seeds oblong or obovate, with a sessile plume.

Usually in moist places. In Hyde Park, near Bayswater, 1852. North Wales. A weed in the author's garden at Chelsea. Perennial; July–September.

E. alsinifolium, Vill. *Chickweed-leaved Willow-herb.*—E.B. 2000. L.C. 374*. A. 8. C. 15. Lat. 50–59°. Alt. 200–1000 yds. Tem. 45–37°.

Roots widely creeping. Stems several, 6–12 inches high, simple, angular, with 2 elevated hairy lines, leafy, reclining at the base. Leaves *ovate-pointed,* with a few minute teeth on the margin, nearly sessile, glabrous. Petals notched, rose-coloured, veiny. Fruit downy.

North of England and Scotland, in mountainous districts. Perennial; July.

E. anagallidifolium, Lam. Annal. Nat. Hist. ser. 2, vol. xvii.—Flowering stems from a long rooting base. Sepals *oblong, blunt.* It grows on higher mountains than those on which *E. alpinum* grows.—Perennial; July.

Note.—The barren stems of this plant are described as æstival (of summer growth?), leafy, not rosulate (without the rosette-like tuft of root-leaves formed the previous season).

E. alpinum, L. *Alpine Willow-herb.*—E.B. 2001. L.C. 374. A. 5. C. 12. Lat. 53–59°. Alt. 400–1300 yds. Tem. 41–34°.

Roots creeping. Stem erect or flexuous, a few inches high, round, with alternate hairy lines, leafy. Leaves attenuated below, elliptical-lanceolate, toothed, on very short petioles. Flowers few, 1–3, bright red, drooping in bud. Calyx-segments ovate, half as long as the cleft petals.

Alpine rivulets in Scotland. Perennial; July.

ŒNOTHERA, *Linn.*—Annual, biennial, or perennial plants, with scattered leaves, and large, solitary, axillary flowers, arranged in terminal, leafy clusters. Calyx-limb reflexed, longer than the ovary; each division terminating in a round, tapering beak.

Petals 4. Stamens 8. Style filiform. Stigmas 4, cruciate. Fruit coriaceous or somewhat woody, oblong, ovate-quadrangular, tapering at both ends. Seeds without a crown.

Œ. biennis, Linn. *Evening Primrose.*—E.B. 1504. L.C. 375. Alien. A. 11.

Stem erect or reclining, simple or branched, rigid and stout, more or less hairy, leafy. Leaves oblong-lanceolate, pubescent, tapering at both ends, entire or slightly toothed. Flowers large, yellow. Divisions of the calyx membranous, linear-lanceolate, pointed, reflexed. Petals large, notched or without an entire margin, longer than the stamens.

Naturalized in many places. In woods, on rubbish, etc. Biennial; July–September.

ISNARDIA, *L.*—Calyx bell-shaped, with a 4-toothed limb. Petals wanting. Stamens 4, opposite to the calyx-teeth. Style filiform; stigma capitate. Capsule short, 4-valved, 4-celled, many-seeded, with loculicidal dehiscence.

I. palustris, L. *Marsh Isnardia.*—E.B. 2593. L.C. 376. A. 1. C. 2. Lat. 50–51°. Alt. 0–50 yds. Tem. 50°.

Stems prostrate, rooting or swimming, often branching, glabrous, leafy. Leaves oblong or oblong-roundish, pointed, entire, tapering at the base, on short petioles. Flowers herbaceous, with 2 small bracts. Fruit ovate, bluntly 4-angular, calyx persisting and spreading horizontally.

Pools and marshy places. Petersfield and Brockenhurst, Hants; Buxted, Sussex. Perennial; July, August.

Note.—It has not been seen for several years in the Petersfield and Buxted localities. A better fate may have befallen it in the New Forest.