(THE)

JOURNAL OF BOTANY

BRITISH AND FOREIGN.

EDITED BY

JAMES BRITTEN, K.S.G., F.L.S.

VOL. XLV.

ILLUSTRATED WITH PLATES AND CUTS

LONDON:
WEST, NEWMAN & CO., 54, HATTON GARDEN.
1907.
CONTRIBUTORS
TO THE PRESENT VOLUME.

Eleonora Armitage.
E. G. Baker, F.L.S.
Arthur Bennett.
G. A. Boulenger, F.R.S.
E. A. Bowles, F.L.S.
James Britten, F.L.S.
Cedric Bucknall.
N. Colgan.
A. D. Cotton, F.L.S.
A. A. Dallman, F.C.S.
F. H. Davey, F.L.S.
H. N. Dixon, M.A., F.L.S.
E. Drabble, D.Sc., F.L.S.
H. Drabble.
G. C. Druce, M.A., F.L.S.
S. T. Dunn, B.A., F.L.S.
M. L. Fernald.
Alice M. Geldart.
Antony Gepp, M.A., F.L.S.
Ethel S. Gepp.
E. G. Gilbert, M.D.
E. S. Gregory.
Percy Groom, D.Sc., F.L.S.
W. B. Grove, M.A.
Henry Groves, F.L.S.
James Groves, F.L.S.
W. B. Hemsley, F.R.S.
E. M. Holmes, F.L.S.
A. R. Horwood.
W. Ingham.
A. B. Jackson.
Frederick Keeble.
K. Krause, Ph.D.
H. W. Lett, M.A.
Augustin Ley, M.A.

E. F. Linton, M.A.
Arthur Lister, F.R.S.
Julie Lister, F.L.S.
M. A. G. Livett.
J. M. Macfarlane, D.Sc.
Symers M. Macvicar.
E. S. Marshall, M.A., F.L.S.
J. Cosmo Melvill, M.A., F.L.S.
W. F. Miller.
Spencer le M. Moore, F.L.S.
R. Paulson.
Henry Peirson.
J. F. Rayner.
A. B. Rendle, D.Sc., F.L.S.
H. J. Riddelsdell, M.A.
L. H. Riley.
W. Moyle Rogers, F.L.S.
R. A. Rolfe, A.L.S.
C. E. Salmon, F.L.S.
C. S. Sargant, F.L.S.
James Saunders, A.L.S.
W. A. Shoolbred, F.L.S.
Annie L. Smith, F.L.S.
H. S. Thompson, F.L.S.
R. F. Towndrow.
A. H. Trow, D.Sc., F.L.S.
T. Wainwright.
John Weathers.
William West, F.L.S.
J. A. Wheldon, F.L.S.
J. W. White, F.L.S.
E. N. Williams, F.L.S.
Florence H. Woolward.
Directions to Binder.

Tab. 484 . . . . . . to face page 81
,, 485 . . . . . . ,, 169
,, 486 . . . . . . ,, 217
,, 487 . . . . . . ,, 417
Portrait of Frederick Justen ,, 62
,, Maxwell Tylden Masters ,, 257
,, Edward Arthur Lionel Batters ,, 385

Or all the Plates may be placed together at the end of the volume.

The Supplement ('A Flora of Glamorganshire') should be placed separately at the end of the volume.
OBSERVATIONS ON SARRACENIA.

By J. M. Macfarlane, D.Sc.

I.—History of the Generic Name.

During recent years vigorous efforts have been made toward correct determination and application of generic and specific names. This has resulted in the disentangling of not a few complicated webs of botanical history, and has laid bare not a few botanical errors and prejudices. Until quite recently the writer did not suspect that the generic name Sarracenia had other than a simple and exact history; he now finds that this history has been a chequered one. Most have been aware that Tournefort wrote the dedicatory name Sarracena, though he wrote the Quebec botanist’s name “Sarrazin”; that Linnaeus altered this to Sarracenia; and that Hoffmannsegg protested against both spellings, and suggested that the genus be written Sarrazenia. The history seems to be as follows.

In 1719, Tournefort, ignoring the older names of Coilophyllum, Bucanehoron, Bucaneffylum, &c., applied by his predecessors, wrote: “Sarracenam appellavi a Clarissimo D. Sarrazin, Medicinæ Doctore, Anatomico et Botanico Regio insigni, qui eximiam hanc plantam, pro summa qua me complectitur benevolentia è Canada misit.” As his description and figure show, he referred only to S. purpurea, and in his generic dedication had in view a Canadian medical man and scientist, by name Sarrasin or Sarrazin, who did active work about the years 1700–1720. But in Tournefort’s “Explicatio Nominum,” prefaced to his Institutiones, is “Sarracenus, Gallice Sarrazin, Medicinæ Doctor peritissimus, apud Canadenses Botanicius et Anatomicus Regius, accuratissimus Rerum Naturalium explorator.” The above clearly shows that Tournefort regarded his Quebec correspondent’s name to be most neatly expressed in Latin as Sarracenus, and so he named his genus Sarracena. At the same time, and probably wrongly, he applied
the French word for *Fagopyrum esculentum*, or Buckwheat, to the physician.

An examination of the Memoirs of the French Royal Academy of Sciences from 1700 to 1720 shows that the Quebec scientist was no ordinary worker. Thus, in *Memoires de l'Academie Royale des Sciences*, xix. 48 (1704), is a long communication entitled "Extrait d’une Lettre de M. Sarrasin, Medecin du Roy en Canada, touchant l’anatomie du Castor, lieu a l’Academie par M. Pitton Tournefort; de Quebec le 25 Octobre, 1700"; the above title and succeeding paper are exactly reproduced in English in Martyn and Chambers’s *History and Memoirs of the Royal Academy of Sciences*, ii. 181 (1742). A perusal of the paper, even in its apparently abridged form, shows that the author must have been an exceptionally acute observer and investigator, and have well deserved the encomium passed on him by the French traveller Charlevoix *—* "On est surpris de trouver dans une colonie un homme d’une mérite aussi universel, aussi habile dans la medecine, dans l’anatomie, dans la chirurgie, et dans la botanique, que M. Sarrasin, qui a l’esprit fort oué et ne se distingue pas moins dans le conseil supérieur, dont il est membre, que par son habileté dans tout ce qui est dans sa profession." In Martyn and Chambers’s *History and Memoirs*, iv. 253, is *The History of the Carcajou, an American Animal*. M. Sarrasin, the King’s Physician at Canada, and a Correspondent of the Academy, from whom we have seen a very curious and exact history of the Castor or Beaver in the Memoirs of 1701, has also sent such another of the Carcajou, of which we here give an abridgment *; and then follow two pages of description. In the same volume is a paper "Of the American Rat, or *Mus alpinus*. M. Sarrazin, physician at Quebec," &c.

It will be noted that, alike in Charlevoix’s account and in the French Academy Memoirs, the name is spelt Sarrasin. But in the original Swedish edition of Kalm’s *Travels* two correct index page-references are given to Sarrasin; in the English edition both are omitted, although the descriptions to which the page-references would have guided are retained. In the earlier quotation the name is spelt Sarrasin, and reference is made to his death by malignant fever while visiting the sick at the hospital in Quebec. In the second quotation (iii. 165 (1771)) we read, "Dr. Sarrazin has therefore (as I was told by the eldest of the two Jesuits here) got a small quantity of wheat and rye, of the winter corn sort, from Sweden."

From Rees’s *Encyclopaedia* we learn that "Sarracenia was so named by Tournefort in honour of his friend Dr. Sarrazin, who collected numerous plants in Canada, specimens of which we have seen in the dried collections of the Museum at Paris. While they lay there for ages unnoticed, the discovery of the same plants has been attributed to more recent travellers, who indeed could know nothing of Dr. Sarrazin’s acquisitions." Provancher’s *Flore Canadienne*, i. 30 (1862), is "Dédié par Tournefort au

* *Voyages*, p. 97.
Dr. Sarrasin, de Québec, qui vers 1730 lui envoya du Canada la première Espèce connue." The date, as well as the latter part, is erroneous, but Sarrasin may have lived till after 1730, for Kalm was there in 1749, when the Quebec naturalist's death seems to have been fresh in mind.

In Catesby's *Flora of the Carolinas*, in Gronovius's *Flora Virginica*, and in Linnæus's *Hortus Cliffortianus*, Tournefort's generic spelling is retained, but Linnæus (*Species Plantarum*, ii. 510 (1753)) changed it to *Sarracenia*, a terminology that was generally accepted till 1824. Then Hoffmannsegg † introduced alike confusion and doubt into the situation by confounding the Quebec naturalist with Dr. Jean Antoine Saracen, of Lyons, and by insisting that since Tournefort spelt his correspondent's name Sarrasin, the genus should be written *Sarrasina*, "in honorem D. M. quondam celebris gallici, Sarrazin"; accordingly he adopted his new form. From that time to the present day this mixing up of the two authors has been largely perpetuated. It seems appropriate, therefore, that the separate identity of the Lyons naturalist should be clearly established. Had Hoffmannsegg carefully perused the *Isagoge in Rem Herbarium*, prefixed to and consecutively paged with Tournefort's *Institutiones*, he could not have failed to discover that two naturalists of somewhat similar name had lived about a century apart. Thus, on p. 37 of *Isagoge*, Tournefort writes: "Cum Camerario conjungi debet Janus Antonius Sarracenus Lugduneus, cujus demum summa cura et diligentia Dioscoridis opera si pristine dignitati non fuerint restituta, summum tamen nitorem adepta sunt: nee adeo multum superest quod intelligi nequeat, si Con-ringio credamus. "Sarracenus enim plurimorum codicum potitus et caeterorum interpretem labore adjutus," &c.; and on p. 65: "Lignonius demum et Sarracenus viri optimi, quorum prior in insulis Americanis, alter in Canada Regis mandato plantarum inquisitioni incumbunt."

In spite of the above clear distinctions, Hoffmannsegg credited the Quebec naturalist with the names Jean Antoine, and this has led subsequent botanists astray. Thus Wittstein, in his *Handwörterbuch*, ed. 2, 787 (1856), condenses the history of the genus thus:—"Sarracenia, L. Nach Jean Antoine Sarrasin, Arzt in Lyon, gab 1598 eine Uebersetzung des Dioscorides heraus.—Ein anderer Sarrasin, Arzt in Quebec in der ersten Hälfte des 18. Jahrhunderts, schrieb über die Naturgeschichte Canadas." It will be observed here that Wittstein wrongly credits the dedication of the genus to the Lyons physician, and only refers to the real recipient of that honour. It is scarcely surprising, therefore, that Pritzel, in his *Thesaurus* (p. 278), falls into a similar mistake: "Sarrasin, Jean Antoine, Arzt in Lyon, Uebersetzer des Dioscorides (Sarracenia, L.)." Lyon 25 April 1547, † Lyon 29 Nov. 1598." This mistaken dedication of the genus has been perpetuated up even to the present day, and in careful manuals; in Britton and Brown's *Flora of the N. States and Canada*, ii. 159 (1897), we read, "Named

† Verzeichniß der Pflanzenculturen, 223 (1824).
in honour of Dr. Jean Antoine Sarracin, a botanist of Quebec." Such mistakes have doubtless originated from consultation of Wittstein's and Prizel's works.

The subjoined is a brief summary of the facts relating to the two botanists:

Dr. Jean Antoine Saracen, or Sarracen, a physician of Lyons, France, who issued a translation of Dioscorides in 1598; b. 25th April, 1547, d. 29th Nov. 1598.

Dr. D. Sarrasain, physician, anatomist, and botanist of Quebec. Correspondent of Tournefort, who dedicated the genus Sarracena (Sarracenia L.) to him. Correspondent of, and contributor to, the French Royal Academy of Sciences from 1700 to 1714. Died at Quebec (about c. 1738-1740?). Name by some spelt, but probably incorrectly, Sarrazin.

II. — Sarracenia Catesbei Elliott.

In Contrib. Bot. Lab. Univ. Penn. ii. 426 (1904), I have traced the history of a very distinct species of the genus, whose home is in the Gulf States. From Elliott’s short description, Dr. Small and the writer inclined to regard it as identical with Elliott’s S. Catesbei. But Elliott’s type-specimen is now known to exist in the Charleston Museum, and through the kindness of Professor Rea, I have been able to examine it. Study shows it to be a natural hybrid between S. flava and S. purpurea. Such a hybrid is at times frequent throughout the Southern States, and the writer has recently put on record several localities where it is more or less abundant. Fully two years ago he discovered a typical leaf of the same hybrid in the Sloane Herbarium (x.ciii. f. 74). Consultation of Ray’s Historia, ii. 1344 (1693), shows that that author described this specimen, and fully appreciated its differences in comparison with descriptions and figures of S. purpurea, published by Clusius and Parkinson. The specimen must therefore have been collected more than two hundred years ago, and is the oldest example of a hybrid known to us in the genus. The Circum-Gulf species, formerly supposed to be identical with Elliott’s S. Catesbei, has now been named by the writer S. Sledcei, and the observations made in the Contributions from the Botanical Laboratory accordingly apply to it.

III. — Sarracenia Drummondii Croom.

Our knowledge of this species dates much further back than has hitherto been supposed, and opens up nomenclatorial points of some interest. Croom described it from leaves gathered by Drummond in 1835, and from flowers gathered by Chapman in 1836, both collected round Appalachian. But the plant had been collected, described, and named many years before by W. Bartram, by M. Robin, and by Rafinesque. Before referring to their records,

it may be well to emphasize that the only other species with which
the present might be confused is S. minor (variolaris). The geo-
graphical range of the latter species is along the Atlantic coastal
plain, from southern North Carolina to north Central Florida, but
it never seems to cross the land divide that separates the Atlantic
and Gulf coastal plains. S. Drummondii, on the other hand, is
only known in Florida on the gulf side of the divide, from near
Appalachicola on the east to the Alabama River on the west.

In his Travels, ed. 2, 417 (1794), W. Bartram describes S.
lacunosa, which he found round Pensacola. He says: "In the
level wet savannas grew plentifully a new and very elegant species
of Saracenia (Saracenia lacunosa); the leaves of this plant, which
are twelve or fourteen inches in length, stand nearly erect, are
round, tubular, and ventricose; but not ridged with longitudinal
angles or prominent nerves, as the leaves of the Saracenia flava
are; the aperture at top may be shut up by a cap or lid, of a helmet
form, which is an appendage of the leaf, turning over the orifice in
that singular manner; the ventricose, or inflated part of the leaf,
which is of a pale but vivid green colour, is beautifully ornamented
with rose-coloured studs or blisters, and the inner surface curiously
inscribed, or variegated, with crimson veins or fibres. It was past
the time for flowering, but the plant in any situation is a very great
curiosity." The locality and description alike absolutely prove his
species to have been identical with S. Drummondii. But, regard-
ing S. lacunosa as a synonym of S. minor, R. M. Harper says,"32
"Bartram's description of S. lacunosa is sufficiently complete to
leave no doubt as to what species he had in mind, and his name
antedates that of Michaux by a dozen years." In a later paper†
he returns to the subject, and gives as synonyms of S. minor,
Bor. Am. i. 510. 1803." The portion of Bartram's description
which has probably misled Harper is that in which he says, "the
aperture at top may be shut up by a cap or lid, of a helmet form,
which is an appendage of the leaf, turning over the orifice." But
Bartram probably saw these plants in September—October, when
the autumnal crop of finely coloured leaves were being produced,
and so would note that the lid had at first a helmet form in the
opening pitchers.

The direct statement by W. Bartram that he found his S.
lacunosa near Pensacola, at least two hundred miles west of any
locality for S. minor, that the pitchers were of a vivid green
colour, ornamented with rose-coloured studs, and that the interior
had crimson veins, demonstrate conclusively that his plant was
identical with S. Drummondii, and his name should take priority.

The French writer, M. Robin, travelled in the Southern States
from 1802—06, and published an account of his journey at Paris in
1807. He described many of his impressions of Pensacola, and
(ii. 48) gave a graphic history of his finding the species now under
consideration. His locality was probably the same as that from

† Ibid. xxx. 331 (1903).
which W. Bartram obtained his specimens, and which has been visited by the writer. While describing the pitchers accurately, he mistook these for a floral part—probably a spathe—and so says: "La fleur et son parapluie. colorés de blanc et veinés de rouge, ne présentent cependant aucun vestige de fécondation, ni étamines, ni pistils, ni ovaires," &c. Having no special botanical proclivities, he failed to name the species so graphically described, but this want was supplied by Rafinesque, who gathered Robin's account into the following diagnosis:—"17 Sarracenia leucophylla Raf. Folliis tubulosis, strictis, elongatis, teretis, albo coloratis, rubro venatis, intus retrorsum liriositis, fauce undulata, appendice fimbriata dilatata operculis Ratpathe (sic) velut! Rob. p. 332, and v. ii. p. 48. Grows in swamps near Pensacola; leaves smelling like honey, and decoy- ing insects, who, seeking for the honey, are entrapped within the leaves, and prevented to come out by the rigid thick hairs. Robin took the leaves for a flower or spathe."

Thus Bartram's S. lacunosa (1794) and Rafinesque's S. leuco- phylla (1807) alike antedate Croom's name (1814), and both writers sufficiently characterize the species. It seems remarkable, therefore, that Gray, in his Synopticl Flora, i. 79 (1895), should say, under the section S. Drummondii, "S. leucophylla Raf. Fl. Lud. is essentially fictitious." One is at a loss to understand how a botanist—speaking of the work of another botanist, erratic though he may have been—should have so characterized a good specific description, even though drawn from the observations and descriptions of another. Granting, as seems to be true, that Rafinesque wrote his descriptions of species collected by Robin from the writings of the latter, without having seen his specimens, the reference to Rafinesque's diagnosis as "essentially fictitious" cannot be justified, particularly as Gray seems to have made no effort to compare Rafinesque's and Robin's descriptions, or to ascertain if such a plant grew in the Pensacola region.

IV.—Sarracenia minor Walt. (S. variolaris Michx.).

This species was first sufficiently described by Walter under the above name in his Flora Caroliniana, p. 153 (1788). Though his nomenclature has since been retained by various European and American botanists, the later name of Michaux—S. variolaris—has gained greater popularity. I do not see, however, that the prior name should be supplanted, especially as it has gained fairly wide acceptance. But the species was known much earlier, and several good specimens exist in the older herbaria which long antedate Walter's time. Thus, in the Sloane Herbarium, vol. cccxiv. 34, are two leaves and three flowers of this species labelled, "Limonio congeneri Clusii affinis." Ray's description is by no means so perfect as might be desired, but it antedates that of Walter by fully eighty years.

Mr. Britten has brought together information regarding the collector William Young, and he kindly drew the writer's attention...
to the herbarium and book of drawings made by Young, which are in the Department of Botany of the British Museum. Numbers are given on the herbarium sheets which portend to correspond with like numbers on the sheets of drawings; but a slight comparison shows that the specimens and drawings do not correspond. On p. 11 of the herbarium is an example of S. minor leaf, and alongside it a flower that is more likely a small one of S. flava than an average one of S. minor, though minute examination would alone determine accurately. But No. 31 in the book of drawings is a rough though quite typical illustration of S. psittacina, so that both species must have been collected by Young before 1767.

We now come to Walter’s period. On a single page of his “Herbarium Carolinianum,” which is also preserved in the Department of Botany, are examples with names attached of S. flava, S. rubra, S. purpurea, and S. lutea. The specimen bearing the last name was published by Walter as S. minor, as has already been pointed out by R. M. Harper.* But S. lutea, though probably a nomen nudum, has been more widely published than has hitherto been suspected, and this through the medium of Frasers’ Garden Catalogues. Mr. Britten has reprinted two of these (Journ. Bot. 1899, 485; 1905, 329) from copies existing in the Department of Botany, and Prof. Greene published a third—the latest in date and botanically (though not in this case) the most important—in Pittonia (ii. 116; 1890). In the earliest, probably published 1794-5, a footnote to the list of seeds offered for sale runs:—“Living plants of the above seeds, as well as Phloxes, New Magnolias, Rhododendrons, the four distinct species of Sarracenia mentioned in Walter’s Flora Carolina, &c., many of which are not to be found as yet in any other persons’ possession but himself, will be ready for inspection in a short time.” In the second Catalogue, bearing date April 8th, 1796, it is said: “J. Fraser begs leave to inform the public that he has completed his fifth voyage from America, and has procured the following plants and seeds, which he intends to dispose of at very moderate prices.” Then, on the second page, are offered “Sarracenia flava, rubra, lutea, and purpurea”; so from this it is evident that the name lutea obtained currency for a time. We may hazard the conjecture that S. lutea probably originated with the Fraser firm, but for some reason was rejected by Walter in favour of his S. minor. The third Fraser Catalogue merely says, “Sarracenia, four species.”

In the volume of drawings prepared by W. Bartram for Dr. Fothergill, now in the Department of Botany, British Museum, is a bold and characteristic figure of S. minor (p. 69), which must have been made before 1780. This may be the plant intended by W. Bartram under the name S. galeata, published (without description) in the Introduction to his Travels (p. xviii). It must however be borne in mind that he must often have traversed hundreds of acres of land abounding in S. psittacina, and it is quite possible that this was the species he intended by the name.

PLANTS OF THE ENGLISH LAKE DISTRICT.

By the Rev. W. Moyle Rogers, F.L.S.

These few notes are supplementary to those of Messrs. Ley and W. R. Linton, published in this Journal, 1906, pp. 171-3, as well as to Mr. J. G. Baker's Flora of the Lake District, and Mr. A. W. Bennett's paper in this Journal for 1885, pp. 330-1.

They refer to plants observed by me in the district last summer, during a first visit, which lasted five weeks and included all July. They also contain a few localities from which my daughter brought me living specimens. These are distinguished from the rest by the addition of her initials, M. A. R. The lakes, the shores and neighbourhood of which I partially botanized, were Windermere, Ullswater, Grasmere, Thirlmere, and Derwentwater. While examining the general flora as completely as I could at from 300 to 800 ft. above the sea-level, I paid especial attention to the Rubi; and my full report of these, given below, includes a description of one of the most generally distributed and most constant forms met with, which is certainly new to our British list, and distinct from all the allied Continental forms represented in my herbarium. For this I am suggesting the provisional name R. lacustris. Localities for it, and for all the other brambles seen, are given in detail; but a brief summary of the results may not be out of place here. My R. dasyphyllus (R. pallidus Bab. non Wh. & N.) proved to be far the commonest, as usually the most luxuriant, fruticose Rubus throughout the district; as I believe it to be in the hilly parts of North England generally. At times it was the only bramble seen for miles; and in most neighbourhoods it seemed at least as abundant as all other forms put together. Next after it in frequency came R. Selmeri Lindeb.; and then, I think, my R. lacustris. R. pulcher-rimus Neum. seemed to be the only other common bramble; though R. Lindelii P. J. Muell., R. Lindelianus Lees, and a few of the Sub-receu were fairly frequent locally. Cæsians were all rare, and nearly all the glandular forms; while R. leuchostachys Sm. was confined to two localities, and I altogether failed to find R. rusticanae Merc. and several other of our frequent south country species. This experience might of course have been considerably modified had I been able to explore the country to the west of Grasmere and Derwentwater, or even to examine more exhaustively the country through which I passed.

The two counties Westmoreland (Top. Bot. 69) and Cumberland (70) are indicated by their initial letters; and what I believe to be new records for either have an asterisk prefixed.

Ranunculus Lenormandi F. Schultz. C. Near Threlkeld, Keswick.—Trollius europaeus Linn. W. By Goldrill, about midway between Patterdale and Brothers' Water; in good quantity.

Meconopsis cambrica Vig. The great abundance of this throughout the district is so remarkable as to justify its claim to be a denizen at least in both W. and C. It occurs by the River Rothay,
between Rydal and Ambleside, as well as by remote farms and round the lakes and villages. I saw no Papaver or Funaria.


Polygala oxyptera Reichb. W. Patterdale; Howtown. In several places, but only thinly scattered. C. Glencoin. The usual hill-side form, and apparently more frequent up to 800 ft. above sea-level than P. serpyllacea Weihe. But the sparse representation of the genus for several hundred feet below this level is remarkable. I saw no P. vulgaris Linn. P. oxyptera is not recorded for either county in Top. Bot. or in Mr. Arthur Bennett’s “Supplement” (Journ. Bot. 1905); but Mr. Baker, in his Flora, says that he has seen it on Whittbarrow.

In the following notes on the distribution of the fruticoso Rubi I give usually all my localities, so in a few instances repeating and confirming previous records.—R. jissus Linöl. W. Upper Langdale; Brothers’ Water to Ullswater, in several places and considerable quantity.—R. suberectus Anders. W. Rather frequent at Langdale Head by small becks.—*R. sulcatus Vest. C. Burns, near Threlkeld; in dense thickets for about fifty yards of exposed wet ditch. Undoubtedly this species, and growing in great luxuriance, though, as in some other English counties, with less conspicuously large flowers than in the type.—R. plicatus Wh. & N. W. Upper Langdale. C. Threlkeld.—R. Rogerisii Linton. W. In good quantity about half-way between Chapel Stile and Langdale Head. Red Bank Wood, Grasmere.—R. incurvatus Bab. W. Kirkby Lonsdale, by River Lune; Casterton to Middleton, very luxuriant and in great quantity.—R. Lindleianus Lees. W. By Windermere. In several places round the lake at Grasmere, and between Grasmere and Rydal. Between Coniston and Ambleside (South Lancashire), M. A. R. ! C. Watermillock, abundant.—R. rhannifolius Wh. & N., sp. coll. W. In two or three spots near Windermere and Langdale, but nowhere quite characteristic. C. In one place by Ullswater, near the Westmoreland border.—*R. nemoralis P. J. Muell. C. By Derwentwater, in two places near Friars’ Crag; very characteristic.—R. Schentziil Lindeh. C. Threlkeld; frequent, and identical with the common Scottish plant.—R. pulcherrimus Neum. Widely distributed and locally abundant in both counties. —R. Lindebergii P. J. Muell. W. Fairly frequent and very luxuriant at Langdale Head and round Grasmere. C. Watermillock. By Thirlmere, on both sides. Threlkeld.

R. lacustris, sp. (vel subsp.) nov. Stem only moderately arching, dull greenish red, at first with fairly many long white hairs (clustered and single), glabrescent, subsulcate. Prickles many, rather short, mostly declining and stout based. Leaves 5-nate, chiefly pedate, small, with long strongly armed petioles. Leaflets conspicuously narrow, thin, usually not imbricate, green and striose above, paler and at first considerably hairy (though rarely felted)
beneath, sharply serrate, with compound teeth towards the point; terminal narrowly obovate with fairly long cuspidate-acuminate point, narrow subcuneate emarginate base, and strongly armed petiolule nearly or quite half its length; the short hooked prickles of all the petiolules extending far up the midribs. Panicle long, rather broadly cyindrical, lax, racemose above, with patent or subpatent 2-4-flowered branches in the middle, and two or more ascending racemose branches below; with many strong, declining and falcate prickles and pricklets on the greenish hairy rachis and pedicels; rachis rather wavy; leaves 3-nate below, with several narrow lanceolate-acuminate ones above (in well-developed panicles) and some deeply cleft bracts. Flowers many, very handsome and starlike in sunshine. Sepals externally greener than in most Rhamni-
oflians, but densely hairy; with short stout acicles, and narrow white margin; strongly reflexed on fall of petals. Petals large, white, broadly obovate but not contiguous. Stamens many, con-
spicuously long, white, far exceeding greenish styles. Frequent and constant by the lakes and streams, and in hedges, W. Langdale Head to Grasmere. About Patterdale and the south end of Ulls-
water (immature, but apparently identical). South Lancashire. Between Coniston and Ambleside, M. A. R. ! C. Watermillock. By Thirlmere and Derwentwater. Threlkeld. While strongly recalling R. Lindebergii in such conspicuous characters as the strongly armed and somewhat wavy panicle-rachis (with a tendency to fasciculation in the upper branches), the obovate outline of the leaflets and the handsome white flowers, R. lacustris differs from that species constantly in its weak subsulcate stem, narrow thin green leaflets with sharp compound teeth in the upper half, and (most markedly) by its many broad compound panicles, which, in spite of the comparative smallness of the bush, make this one of the most conspicuous brambles at the Lakes, where alone I have seen it. From R. pulcherrimus Neum. and R. Maassii Focke, which seem to be its other nearest allies, its subsulcate stem, narrow leaflets and broad large-flowered and strongly armed panicle sepa-
rate it readily. R. Maassii further differs from it by its "quite glabrous" stem.

R. mercicus Bagnall var. bracteatus Bagnall. W. Easedale, M. A. R. ! Grasmere, abundant. Near Casterton. C. By Der-
wood border.— *R. dasyphyllus* Rogers (*R. palidus* Bab.). W. and C. Very common from Windermere by Patterdale to Ullswater, and from Langdale Head by Ambleside, Grasmere and Thirlmere to Keswick and Threlkeld. From Kirkby Lonsdale by Casterton towards Tebay.—*R. corylifolius* Sm. sp. coll. C. Watermillock.—*R. casius* Linn. W. By River Rothay, between Rydal and Ambleside. By River Lune at Kirkby Lonsdale. Apparently uncommon. In addition to the foregoing (which I felt able to name without hesitation), I saw immature bushes which seemed to belong to *R. dunumontensis* Bab., in two or three places in Patterdale (W.), and others which looked like *R. foliosus* Wh. & N., under trees on the western shore of Ullswater (C.); both of which should be looked for by those who visit the localities later in the season.

*Alchemilla vulgaris* Linn., *a. pratensis* (Schmidt). C. Watermillock, Threlkeld. — *b. alpestris* (Schmidt). W. Patterdale. Langdale. Grasmere. Near Kirkby Lonsdale. — *c. jilicauuis* (Busier). W. Orrest Head, Windermere. The Rev. E. F. Linton, who has kindly examined my specimens, thinks that there may be room for doubt as to the Orrest Head plant, but confirms my naming of the others.—*t. alpina* Linn. W. By Goldrill near its junction with Ullswater at about 420 ft. above sea-level, as well as higher up by Grisedale Beck towards Helvellyn. C. On the western shore of Thirlmere, almost to the water’s edge.

*Saxifraga aizoides* Linn. W. Down to about 500 ft. above sea-level at base of Place Fell. C. Not far above the level of the water at Thirlmere.—*Cotyledon umbilicus* Linn. W. Easedale, near Grasmere, *M. A. R.*

*Curum verticillatum* Koch. W. Tebay, by Low Borrow Bridge, in plenty, *M. A. R.* Not recorded for Westmoreland in *Top. Bot*. or *Suppit*; but in his *Flora* Mr. Baker has the following note: “Gathered on Kingmoor (1882) by my friend Mr. W. Duckworth, of Stanwix, Carlisle (W. Hodgson).”

*Mimulus palustris* Relh. var. *striqulosa* Mert. & Koch. W. Patterdale. Rydal. C. Near Threlkeld. The variety frequent; type not seen.—*M. repens* G. Don and *M. cespitosa* F. Schultz were both abundant.

*Mimulus Langsdorffii* Donn. Alien. W. For a considerable distance along the beek below High Dungeon Ghyll Hotel.—*M. moschatuus* Doug.,? A plant, which Mr. Edmund Baker has kindly examined and thinks must be a scentless form of this species, grows luxuriantly in a beek that loses itself in a quarry near Rydal (W.). No doubt a “garden escape,” though now well established as a denizen.—*Veronica montana* Linn. W. Grasmere.—*Euphrasia officinalis* Linn. Abundant and flowering freely in both counties, but in most cases my specimens were not sufficiently mature for satisfactory determination. The one form as to which there could be no doubt was *E. Rostkovianna* Hayne. This was in great beauty by beeks and in damp meadows at from 300 to 700 ft. W. Langdale Head and Valley. Through Patterdale up to the south end of Ullswater, and on Grisedale, below Helvellyn; crossing the border into Cumberland. Other forms, kindly examined for me by

*Melampyrum pratense* Linn., var. *hians* Druce. W. and C. Abundant in many localities between Windermere and Derwentwater.


*Carex laxigluma* Sm. W. Patterdale, by a beck to the south-west of the Parish Church, on the eastern slope of Black Rigg, only slightly above the level of Ullswater; very characteristic. Described as “rare” in Mr. Baker’s *Flora*, where, in addition to one Cumberland locality, Westmoreland is only credited with the record. “in some places about Windermere (F. Clowes).”

*Festuca Myuros* Linn. Wall-top in outskirts of Ambleside. A luxuriant well-developed clump seen only as I drove past, but I believe quite unmistakable.

*Phlegopteris polypodoides* Fée. W. Hill above Grasmere, towards Easedale.

*Equisetum sylvaticum* Linn. C. Threlkeld Valley, in great quantity.

---

A REVISION OF *BERSAMA*.

BY EDMUND G. BAKER, F.L.S.

The genus *Bersama* was described by Fresenius (*Museum Senckenbergianum*, ii. 279) in 1837. The original description, which differs in one or two particulars from the description in Bentham & Hooker’s *Genera Plantarum*, was as follows:—“Flores hermaphroditici regularis in racemum oppositifolium dispositi. Calyx infenus gamosepalus pentamerus, ob sepala 2 inferiores usque ad apicem bidentatum coalita 4-partitus. Corolla infera eleutheroptala, pentamerata, petala sepalis alterna estivatione imbricata. Discus annularis hypogynus inter petala et stamina. Stamina 5 petalis alterna filamenta in tubum ovarium singentem coalita, antherae filamentorum apici infra medium dorsi insertae, oscillatoriae bilocularaes loculis rima longitudinali dehiscentibus. Ovarium superb num 5-loculare. Stylus filiformis. Stigma capitatum 5-lobum lobis crassis orectis.—Arbor folis imparipinnatis, stipulis intrapetiolaribus, racemis oppositifoliis.”

One species, *B. abyssinica*, is described and figured from Gondar Asamer, Tigre, Abyssinia, collected by Dr. Ruppell; of this there is a small specimen in the National Herbarium.

The genus *Natalia* was founded by C. P. Hochstetter (*Flora* xxiv. 663 (1841)) on a plant now known as *B. lucens* Szyl., collected by Krauss near the river Umlas in Natal. The principal characters differentiating it from the *Bersama* of Fresenius are the four stamens, the anticus being connate at the base, the posticus free;
the quadrilocular ovary attenuate above into a glabrous style; and the obtuse, subtetragonal stigma. Planchon (Trans. Linn. Soc. xx. 408) retains Natalia as distinct from Bersama; but recent authors, I think correctly, consider these genera should be united. In the case of B. paulinioides Baker, of which Vogel's type in the Kew Herbarium from Sierra Leone and the figure in Hooker's Niger Flora leaves no ambiguity, I have found several plants referred here from various localities which it seems advisable to separate. Thus I have ventured to distinguish plants from Angola, the Cameroons, and Uganda which have been placed here. I have not included in the following notes Holst. no. 2481, from Bipinde, Cameroons, which was distributed as a new species of Bersama but is either Canarium Schweinfurthii Engler, or a close ally.

The arrangement adopted by my father in the Flora of Tropical Africa was to place in the group Natalia the plants with four stamens, and in Eubersama those with five stamens, and Dr. Gürke (Pflanzenfamilien, v. 881 (1895)) groups the plants in a similar manner. But this character is by no means absolute, as in certain species—for instance B. Gossweileri and B. nyassae—flowers occur with either four or five stamens, in the case of the former in the same raceme, and the capsule may be either four- or five-valved.

It seems advisable to leave as undetermined certain specimens where the material is not very complete; and in this connection I may mention a plant from Nianniamland, collected by Dr. Schweinfurth, no. 3884 in Herb. Kew., which is only in fruit; also Gerrard, no. 1428, from Natal, and certain plants collected by Welwitsch in Angola. The genus is placed in Sapindaceae by Bentham & Hooker, but by Planchon, Gürke, Dalla Torre, and Harms, it is placed in Melianthaceae.

For the purposes of the following revision I have studied the authentic material in the National and Kew Herbaria.

**Bersama.**

Fres. in Mus. Senckenberg. ii. 279, t. 17 (1837); Bentham & Hooker fil. Gen. Plant. i. 412; Baker in Oliver, Flora of Tropical Africa, i. 433-435; Gürke in Engl et Prantl, Pflanzenfam. iii. 5, 381; et in Pflanzenwelt, Ost-Afr. c. 252.

Natalia Hochst. in Flora, xxiv. (1841). 663.

Rhaganus E. Meyer in Drege, Zwei Pfl. Docum. 216 (1843), nomen.

A. Stamens generally 4, rarely 5.*

a. Leaf rachis unwinged.

* Leaves imparipinnate, generally 2-3-jugate. Leaflets obovate, entire, shining, 8-0-5-0-8-5 cm. long.

1. B. lucens Szyszyl. in Polypet. Rehmann ii. 50 (1888); Wood & Evans, Natal Plants, i. 71, t. 88 (1899).

   Natalia lucens Hochst. in Flora, xxiv. 663 (1841).

   Rhaganus lucidus E. Meyer, l. c. (nomen).

Flowers with 4 stamens or with 5 stamens occur in B. Gossweileri and B. nyassae.

A form with rather smaller leaflets than type occurs in the woods near the mouth of the Kei River, Flanagan, no. 421! In this species the ovary above passes abruptly into a rather long slender style; the stigma is clavate.

** Leaves generally trijugate. Leaflets ovate, or ovate-oblong, or narrowly obovate, 5·0-8·0 cm. long.

2. B. Swynnertoni, sp. nov. Arbor mediocris ramulis sulcatis cicatricibus foliorum delapsorum notatris; stipulis intrapetiolariibus amplexicaulibus; folis imparipinnatis sepissime 3-jugis cum impari rachi tenue exalata; foliolis ovatis vel ovato-oblongis vel anguste obovatis subcoriaceis glabras margine integris supra nitidis breviuscula petiolulatis apice subacuminatis basi cuneatis costa superne impressa nervis lateralis tenuibus ante marginem inter se anastomosantibus; racemo plurifloro apicem versus confertifloro inferne nudo pedunculo sulcati; bracteis parvis subulatis; pedicellis calyci subacuilonis; petalorum lamina pubescenti oblongo-spathulata; staminibus 4 filamentis basi dilatatis duorum petalorum infimorum connatis 2 lateralium libesis; stylo inferne canescens-pubescenti; ovario 4-loculari. Species ab B. paulinioidi Baker differt primo intuitu foliolis paucioribus sepis-sime 3-jugis cum impari marginie hand serratis, rachi exalata, stigmatse minori, &c., ab B. lucente Szyszl. differt foliolis apice subacuminatis.


Leaf-rachis 7·0-10·0 cm. long. Terminal leaflet 7·0-8·0 cm. long, 3·0-3·2 cm. broad at the broadest part. Lateral leaflets rather smaller. Petiolule of lateral leaflets 2·2-2·5 mm. long. Petals 8 mm. long.

"A fairly large tree, of which several specimens have been found, all in Chipete. The bark is dark brown and rough, and the foliage dark glossy green, and the tree makes a great show when covered with its handsome purplish pink flowers."—C. F. M. S.

*** Leaves 4-5-jugate. Leaflets oval-oblong, obtuse or shortly apiculate, glabrous or glabrate, 3·0-4·0 cm. long, 1·0-1·5 cm. broad.

3. B. Tysoniana Oliver in Icones Pl. t. 2267 (1894).


A very distinct species, noticeable on account of the rather small leaflets and almost globose fruit; very rough externally. The ovary gradually attenuate to the style.

I append a description of a closely allied plant referred to by Oliver, t. c. It seems advisable to await more complete material before naming it:—
Arbor vel frutex? Ramulis cortice griseo tectis; foliis septicis 4-jugis cum impari petiolulato, foliolis petiolulatis oblongis apice apiculatis lateralibus aliquantulum inaequilateralibus oppositis vel passim alternis basi cuneatis vel interdum rotundatis coriaceis margine integris vel plus minus serratis costa superne impressa subtus subconspicua nervis secundariis tenuibus inter se juxta marginem anastomosantibus foliolis terminalibus oblongo-ob lanceolatis foliolis proximis quam distalibus minoribus; rachi omnino exalata; pedunculis quam foliis brevioribus; bracteis bracteolatis tomentosis; sepalis dorso pubescentibus apice obtusi antico latiore apice bidentato; petalorum lamina oblonga, disco semiannulari; staminibus 4 basi dilatatis alte hirtus duorum petalorum infimorum connatis; stylo erecto plus minus pilis vestito, stigmatic capitato parviusculo; ovario externe hirta.

Arbor vel frutex B. Tysoniana Oliver valde affinis, differt ambitu foliolorum parum diversa precipue latiori filamentis altius hirtis, &c. 


Rachis 10–11 cm. long. Leaflets 4-0-5-0 cm. long, 1-6-2-0 cm. broad. Petiole of terminal leaflets ± 7-0 mm. long. Interjugal spaces 2-0-2-5 cm. long. Pedicels 2-5 mm. long. Calyx 3-4 mm. long. Petals ± 8 mm. long.

**** Leaves often 7-jugate. Leaflets ovate or ovate-oblong or ovate-lanceolate, coriaceous, glabrous, margin entire, reaching 8 cm. long and 2-0-2-8 cm. broad.

4. B. coriacea, sp. nov. Arbor sec. cl. detectorem elegantissima; foliis ± 7-jugis cum impari subessili, foliolis glaberrimis utrinque nitidis septicissime circ. 3-plo longioribus quam latis ovatis vel ovato-lanceolatis basi cuneatis vel subrotundatis breviter petiolulatos apice subacuminatis costa subtus subconspicua nervis lateralis tenuibus margine integris oppositis vel passim alternis; rachi omnino exalata; floribus ignotis; pedunculis fructiferis glabris pedicellis fructiferis validis; capsulis lignosis 4 valvis externe atro-violaceis tenuiter rugulosis, spermis coccineis arillo cupuliformi munitis.

Species B. integrifolia Rich. affinis.


Rachis 15-0-25-0 cm. long. Leaflets 6-0-7-0 cm. long, 2-5-3-0 cm. broad. Capsule ± 1-5 cm. long, only slightly rugulose externally, not as in B. Tysoniana Oliver.

"A very elegant tree, 15 ft. or more high, erectly branched, leaflets coriaceous, glossy on both surfaces, capsule 4-valved, dusky violet, seeds scarlet with cup-shaped aril."—J. G.

The position of this plant must remain somewhat doubtful until flowering specimens have been obtained.

β. Leaf-rachis generally winged. Leaves 2-6-jugate. Leaflets elliptical or oblong, apex acutely acuminate or apiculate, glabrous.

5. B. acutidens Welw. ex Hiern, Cat. Welw. Pl. i. 173 (1896).
Hab. Lower Guinea. Angola, Golungo Alto, Welwitsch, no. 4536! 1697!

γ. Leaf-rachis winged.

* Leaves 7-10-jugate. Leaflets papyraceous, shortly stalked, lanceolate or ovate-lanceolate, base more or less cuneate, apex shortly cuspidate, remotely serrate, reaching 9.5 cm. long and 3.5 cm. broad. Bracts rather short.


Hab. Upper Guinea. Sierra Leone, Vogel, no. 99! Barter! Afzelius! Sweathman! Tree in bush near Toureh, Scott Elliot, no. 4476!

Various plants have been referred to this species which appear more or less readily distinguishable. I have not seen specimens of true B. paullinioides Baker from Angola. Welwitsch, no. 1699, from the spring of Quibolo, near Sango, is quite distinct, but is without flowers or fruit. The plant referred to the above from Fernando Po, Mann, no. 641, may also be distinct.

** Leaves 6-8-jugate. Leaflets glabrous, oblong, with a rounded base reaching 12.0 cm. long (or perhaps longer, as leaf material is not very complete). Bracts longer.


*** Leaves ± 8-jugate. Leaflets chartaceous, glabrous, ovate-lanceolate, acuminate, shortly stalked, 9.0-11.0 cm. long, 4.0-4.2 cm. broad.

8. B. Preussii, sp. nov. Folia circ. 8 juga cum impari sub-sessili, rachios parte distali alata parte proxima exalata; foliolis glabris chartaceis oppositis vel passim alternis ovato-lanceolatis basi plus minus rotundatis apice acuminatis margine subintegris vel remote serrulatis nervis lateralis utrinque circa 12-14 tenuibus juxta marginem inter se anastomosantibus brevissime petiolatis foliolis proximis quam distalibus paullo minoribus; pedunculis longis plus minus fusco-pubescentibus; racemo multifloro pedunculis longiusculis tenuibus strictis quam calyce longioribus; bracteis angustissimis pubescentibus longiusculis sepalis; 4 lanceolatis pubescentibus antico latiore apice bidentato; petalis dense cano-tomentosis petalorum lamina oblonga; staminibus 4 filamentis basi dilatatis duorum petalorum infimorum basi connatis longiusculis quam stylo longioribus superne glabris; stylo erecto superne fere glabro inferne pilis plus minus vestito, stigmat e capitato tenuiter 4-lobo; ovario hirto 4-loculari.

Species B. leiostegia Stapf affinis differt foliolis ovato-lanceolatis haud oblongis, staminibus longioribus filamentis superne glabris, &c.


Rachis in our specimen 33 cm. long. Proximal leaflets ± 9 cm.
long, ± 4 cm. broad. Distal leaflets ± 11 cm. long, ± 4·2 cm. broad. Calyx 8–9 mm. long. Petals ± 1·8–2·0 cm. long. Filaments of stamens 1·9–1·5 cm. long.

This plant was distributed as B. paulinioides Baker. It differs from this species in several important particulars. The leaflets are an entirely different shape, not so markedly attenuate to the base; the raceme is more copiously flowered and the filaments of the stamens longer.

**** Leaves ± 9-jugate. Leaflets papyraceous, base cuneate, ovate-oblong or obovate-oblong, glabrous, 15–18 cm. long, 5·0–5·8 cm. broad.

9. **B. Gossweileri**, sp. nov. Arbor e basi ramosa, ex cl. detectori. Folia circ. 9-juga; rachios parte distali alata parte proxima exalata; folioliis chartaceis glabris oblongo-obovatis margine integris basi cuneatis apice breviter apiculatis subsessilibus nervis lateralibus utrinque circ. 12–14 juxta marginem inter se anastomosantibus foliolis terminalibus basi magis cuneatis; stipula intrapetiolari; racemo multifloro; bracteis angustissimis quam pedicello brevioribus; pedicellis inferioribus quam calyce longioribus; sepalis 4 externe tenuiter pubescentibus antico latiore apice bidentato; petalis 5 petalorum lamina oblonga ± carnosa ex cl. detectore pallide cocinea; disco semilunari-angulato; staminibus 4 vel 5 filamentis basi dilatatis, stylo subæquilongis; stylo erecto glabriusculo, stigmati capitato; ovario externe hirti 4-loculari vel rarius 5-loculari; capsula lignosa subspherica leviter 4 vel 5 angulata extus molliter brunneo-tomentosa apice mucronata, spermis coccineis basi arillo flavo munitis.

Species **B. paulinioidi** Baker admodum affinis differt foliolis majoribus subsessilibus margine integris nervis lateralibus multi- oribus, ovario nunc 4-loculare nunc 5-loculare, bracteis longioribus, &c., ab **B. leiostegia** Stapf foliolorum basi ± cuneato.


Rachis reaching 50 cm. long. Terminal leaflet ± 16 cm. long, 5·5–6·0 cm. broad. Calyx ± 6 mm. long. Petals 1·6–1·7 cm. long. Filaments ± 1·0 cm. long.

The noticeable features of this plant are:—

a. The rather long rachis alate in the distal portion.

β. The papyraceous leaflets attenuate to both extremities, and subsessile with entire margins.

γ. The 4- or 5-celled ovary. The 4 or 5 stamens with filaments about as long as the style.

δ. The subspherical capsule slightly 4- or 5-angled.

"A palm-shaped tree stem branched from the base, branches erect, branchlets spreading, leaves irregularly imparipinnate, common petiole grooved on the upper surface towards the end decurrent, leaflets almost sessile, glossy on both sides, lower surface with reticulate venation in relief. Calyx 5-toothed deeply 2-lobed except the anterior. Corolla of 5 imbricate petals four times as
long as sepals, reflected over the calyx, partly fleshy pale scarlet with white margin, stamens 4 or 5, connate at the base, much exerted and quite erect. Style bent and protruding between the filaments, stigma globular, ribbed on ant. side surface. Ovary superior."

****: Leaves 5–6-jugate. Leaflets oblong or ovate-oblong, base cuneate or cuneate rounded, glabrous 6·0–7·5 cm. long, ± 3·0 cm. broad.

10. **B. angolensis**, sp. nov. Arbuscula trunco recto crassitudine brachi, ramuli nodosi cicatricati erecti foliorum fasciculocoronati seecus cl. detectorem; foliiis 5–6-jugis, rachios parte distali tenui ter alata, parte proxima omnino exalata, foliis tenuiter coriaceis oblongis vel oblongo-ovatis nervis lateralibus sempissime 11–12 margine integris vel serrato-dentatis supra lute viridibus parum lucidulis subitus pallide virescentibus, verniceo-nilentibus foliolis terminalibus subessilibus basi insigniter cuneatis lateralibus basi cuneatis vel cuneato-rotundatis sempissime 2–3-plo longioribus quam latis; stipulis intrapetiolari bus subacuminatis; racemo multifloro quam folio scpe subduplo breviori; bracteis angustissimis; pedunculis pubescentibus inferioribus quam calyce longioribus; calyceis segmentis 4 apice obtusus eiliatis antico latio apice breviter bifi dai; petalis lingulato-spathulatis villosulis flaviscenti-iridescentibus; disco semiannulari 3-crenato; staminibus 4 basi dilatatis duorum petalorum infimorum connatis; stylo quam staminibus brevior, stigmate ovato-capitato verticaliter subcostato obtuso, ovario externo hirto 4-loca lari.

Species **B. pauliniioides** Baker affinis differt ambitu foliolorum param diversa, bracteis angustioribus et longioribus.


A small tree, ± 4 m. high. Rachis 12–18 cm. long, only winged in the 1–2 distal segments. Leaflets 6·0–7·5 cm. long, ± 3·0 cm. broad. Bracts 4–5 mm. long. Calyx ± 5 mm. long. Petals lingulato-spathulate, ± 1·3 cm. long. The stigma in this plant is larger than in *B. Tysoniana* Oliver.

The leaflets are inclined to be oblong, not tapering so much to both extremities as in *B. pauliniioides* Baker; the bracts are very much longer and narrower than those in the type from Sierra Leone.

*Welwitsch* no. 1695, from Golungo Alto, and no. 1696, from Queta, differ in their larger leaflets and entire margins.

******: Leaves 7–10-jugate. Leaflets oblong-lanceolate, glaucous above scattered hairs below, 10–14 cm. long, 4–5 cm. broad.

11. **B. usambarica** Gürke in Engler, Pflanzenwelt Ost Afr. C. 252 (1895); Pflanzenfamilien, iii. v. 380, t. 188, figs. F–K.

Leaves 6-7-jugate. Leaflets sessile, oblong-elliptical or oblong, entire, with acute apices, reaching 20 cm. long and 6'0-7'2 cm. broad, but those with flowers smaller.

12. B. maxima Baker, t. c. 484; Icones Pl. t. 2268 (1893).

Leaves 5-7-jugate. Leaflets oblong, glabrous above, sessile, 7'0-11'0 cm. long, 2'6-4'0 cm. broad.

13. B. nyasense, sp. nov. Arbor foliis 5-7-jugis cum impari sessili; foliolis subcoriaceis oblongis apice acuminatis et mucronatis foliolis terminalibus anguste obovatis supra glabris et nitidis subtus primum pilis plus minus vestitis demum glabris costa superne impressa nervis lateralibus tenuibus arcuatis juxta marginem inter se anastomosantibus margine integris vel subundulatis foliolis lateralis sussilibus; rachis parte distali alata parte proxima exalata et plus minus rufescenti-pubescenti; racemo multifloro apicem versus confertifloro quam folis breviori; pedunculo striato; bracteis angustis pedicello subâequilongis rufescenti-pubescentibus; calyce extus ferrugineo-tomentoso sepalis 4 apice obtusi vel subacutis antico latiori statu frutescenti reflexis; petalorum lamina oblonga ungue sericeo-albida; disco semiannulari lobato; staminibus 4 vel 5 filamentis basi dilatatis; stigmate capitato globoso; stylo superne glabro inferne pilis tecto; capsulis lignosis 5-valvis spermis arillo cupuliformi crassiusculo munitis, testa corrugata.

Arbor B. maxima Bak. affinis differt staminibus interdum 5, pedicellis brevioribus, calyce lougiori et mollissime subferrugineo-tomentoso.


A plant collected by Mr. Scott Elliot in the Shire, no. 8582, is very closely allied to the above.

The following plants which I have seen in Herb. Kew. probably also belong here:—Mt. Zomba, Sir H. H. Johnston, no. 97! Buchanan, no. 218! Namasi, K. J. Cameron, no. 9!

Leaflets 7-0-11-0 cm. long, 2'6-4-0 cm. broad. Raceme with peduncle in specimen 28 cm. long. Petals ± 14 mm. long. Anthers ± 4 mm. long. Capsule ± 3 cm. long. Seed ± 7 mm. in diameter. Aril cupuliform, yellowish.

Leaves 7-8-jugate. Distal leaflets oblong ovate-oblong, proximal ovate, subsessile, 5'0-9'0-13'0 cm. long, 3'5-4'5 cm. broad.


Var. nov. serrata. Arbor, foliolis distalibus oblongis in parte 3 suipereiore margine argute serratis subtus cinereo tomentosis foliolis proximis ovatis omnibus subsessilibus; calyce segmentis 4 anguste
ovatis subacuminatis antico latiore bifido; petalis quam iis typi brevioribus; staminibus 4 anthesiis hirtis; stylo erecto superne glabo; stigmatibus globosis leviter 4-lobis; ovario pilis albidis vestito 4-loculari.


"Tree with white flowers."

Leaflets proximal 5-0-7-0 cm. long, distal 9-0-13-0 cm. long, 3-5-4-5 cm. broad. Calyx ± 5 mm. long. Petals ± 1-2 cm. long.

B. Stamens 5.

a. Leaf rachis generally unwinged (in B. abyssinica Fres. occasionally winged in the distal portion).

* Leaves with usually 4 pairs, 3-7-9, of slightly stalked, oblong-lanceolate leaflets generally 7-9-0 cm. long and 2-5-3-5 cm. broad.

15. B. abyssinica Fres. in Mus. Senckenb. ii. 281, t. 17; Baker in Fl. Trop. Afr. i. 434; Engler, Hochgebirgsflora, 293.

B. integrifolia Richard, Fl. Abyss. i. 107 (1847).


Planchnon considers B. integrifolia Rich. synonymous with B. abyssinica Fres., but retains B. serrata Rich. as distinct; in Fl. Trop. Afr. both are placed under abyssinica.

** Leaves ± 7-jugate. Leaflets oblong-lanceolate, glabrous, margin entire, apex mucronate, 5-0-13-5 cm. long, 2-4-0 cm. broad. Petiolule of terminal leaflets 1 cm. long.


Hab. East Tropical Africa. Usambara, near Mlalo, Holst, no. 2432!

Bagshawe, no. 379, from Kitara, Koki, is doubtfully placed here, as the flowers are not sufficiently developed.

*** Leaves 6-7-jugate. Leaflets oblong-lanceolate, apex acuminat, glabrous, towards apex serrate 8-0-10-0 cm. long, 3-0-4-5 cm. broad.


**** Leaves 5-7-jugate. Leaflets shortly stalked, oblong-ovate, apex acute or acuminate, margin entire, glabrous, 3-0-6-0 cm. long, 15-25 mm. broad.


β. Leaf rachis winged.

* Leaves 5-10-jugate. Leaflets ovate or oblong-lanceolate, thinly coriaceous, 6·0-12·5 cm. long, 1·2-5·0 cm. broad.


Var. nov. ugandensis. Arbor parva; foliis ± 9-jugis cum
impari sessili, jugis proximis quam distalisibus multo minoribus
foliolis oblongis acuminitis subitus ad nervos pilis sparse vestitis,
rachitos parte distali quam typo magis alata; racemo multifloro;
pedunculis quam iis typi brevioribus; floribus majoribus; calyce
extus griseo-lutescenti-sericeo; petalis 5 oblongo-spathulatis; stami-
nibus 5 basi dilatatis.

Hab. UGANDA PROTOCRATE. Toro, near Mpanga river, Bag-
shave, no. 1074! alt. 4000 ft.

"Tree with white flowers in vertical inflorescences." Herb.
Mus. Brit.

Leaves 20-35 cm. long. Leaflets proximal ± 5·5 cm. long,
distal ± 13 cm. long, ± 4 cm. broad. Calyx ± 8 mm. long.
Petals ± 17 mm. long; ± 4 mm. broad. Anthers ± 3·5 mm.
long. Stigma globose.

** Leaves 7-10-jugate. Leaflets oblong-lanceolate acuminate,
6·0-9·0 cm. long, 2·0-2·5 cm. broad.

B. Engleri Güürke MS. ex Engler, Hochgebirgsflora, 293.
Hab. EAST AFRICA. Fischer, no. 135.

A specimen of a tree, 20 ft. high, collected by Scott Elliot on
the Nandi Hills, no. 7027, is clearly allied to the above, but differs
somewhat in the stipules.

PLANTAGO LANCEOLATA L. var. SPHAEROSTACHYA Rohl.

Recently in going over the proof-sheets of my History of the
Dillenian Herbaria my attention was again directed to the plantain
referred by Mr. C. E. Salmon, in his paper in this Journal (1906,
126), to the above name. This may, as Mr. Salmon suggests, be
the plant referred to by Linnaeus (Species Plantarum, 114) as
"β Plantago trinervia, folio angustissimo Buhl. Pin. 189, prod.
98"; but is it the plant of Ray, with which Mr. Salmon also
identifies it, referred to in the Synopsis, ed. i. p. 126, n. 7 (1690),
as "Plantago an Alpina angustifolia J. B.? Narrow-leaved Moun-
tain-Plantain. In rupibus Trigvylehau supra lacum Lyllyn Boclyhn
prope Ecclesiam S. Perisii, D. Lloyd"? I think not.

Ray places the plant after P. maritima and P. Coronopus. Dr.
Richardson, who visited this spot with Lloyd, with whom he was
also in frequent correspondence, says, in a letter to Sherard dated
April 1st, 1726 (see Richardson, Correspondence, p. 239), "At the
top of the Glyder are Trigvulcaugh rocks; on the north side of which, growing out of the cliffs of the steep rocks, you'll find the *Plantago minor angustifolia* J. B.: this seems to me a distinct plant from the marine one; the leaves are shorter, narrower, and more rigid; the spikes shorter. I have kept it in my garden ever since I was in Wales with Mr. Lloyd, and it never varies: that from the bishoprick of Durham, and also from Northumberland, is no other than the marine one. I have this also in my garden." This description appears fairly conclusive as to the plant being allied to *P. maritima*; but we have further evidence. In the third edition of Ray's *Synopsis* (p. 315), Dillenius adds to the original name, "Plantam hanc e rupibus *Trigvulcaugh* orientem spectantibus in hortum intulii, ubi jam viret; D. Richardson. Plantaginii marinæ Græ. tam similis est ut distinguui nequeat. Spica saltem gracilior est, quod loci conditioni procul dubio debetur": and in his herbarium are plants sent by Dr. Richardson from Durham and Northumberland labelled, "sane non differt a *maritima*"; and also two specimens gathered on "Sept. 1727, on Triggvulchia Rocks by Mr. Brewer"—the latter are very narrow-leaved forms of *P. maritima*, not *P. lanceolata*. In a letter of Dr. Richardson to Dillenius, Oct. 25th, 1726, he says he wishes Dillenius had been on "the high rock Triggvulchy, which is at the very top of the Glydyr... that you might have gathered an *Plantago alpina angustifolia*? J. B. of Mr. Lhwyd then in flower"; he repeats the observations about it which he made to Sherard, and adds that it has remained constant in its characters in his garden. Therefore we may without doubt identify this plant of Ray as a variety of *P. maritima*.

*P. lanceolata* var. *sphaerostachya* is represented in the Dillenian *Synopsis*; being one of the new species added by Dillenius, it stands next to *P. lanceolata* on p. 315, n. 6, as *Plantago angustifolia minor* Tab. IE. 732. His herbarium specimens are from "pratis Insulæ Selsey non procul a maris littore copiose Junio," and from "Llanberris in saxosis folia glabra; Elthami in vulgarem transit," which suggests that it is rather a state than a variety. The fact that both plants occurred near Llanberis may have misled Banks, but I think I remember seeing *sphaerostachya* also on the Glydyr. S. F. Gray (Nat. Arr. Brit. Pl. ii. p. 293) puts the latter plant as var. *trinerveum* of *P. lanceolata* (his *Arnoqflossum lanceolatum*), characterized by its "leaves narrow, 3-ribbed"; while the former plant is wrongly identified with *P. alpimum* L., a plant unknown in Britain, and practically limited to Central Europe.

G. Claridge Druce.

When I read Mr. Druce's note, and in its light repurposed Mr. Salmon's paper, it seemed to me that the suggestion that both plants were found in the Llanberis locality was the solution of the matter. I wonder now that it did not strike either Mr. Salmon or myself when we read his paper in proof that the variety *sphaerostachya* did not correspond with Dillenius's remark, "Plantaginii marine *Græ.* tam similis est ut distinguui nequeat"; although it
entirely agrees with Hudson's diagnosis—"P. foliis lineari-lanceolatis basi lanatis, spica subrotunda, scapo tereti"—of what he considered to be Ray's plant. I regret it did not occur to me, when Mr. Salmon was working at his paper in the National Herbarium, to see whether Buddle's Herbarium threw any light on the matter, but the possibility of two plants being in question occurred to neither of us. I have now consulted Buddle and the result confirms this view.

On folio 33 of vol. x of his Herbarium Britannicum (Herb. Sloane cxxiii) are two small Plantains, labelled respectively:

"Plantago an angustifolia J. B. Lhwyd R. Syn. [ed. 2] 185 a D. Richardson collect. in eodem loco ibi notato, est potius Corno-
pus sive serpentina minima Ger. 425."


The first of these is certainly P. maritima; it is not, however, the plant figured by Gerard [ed. Johnson] on p. 425. The second is the plant which forms the main subject of Mr. Salmon's note. The figure of Tabernæmontanus cited is a small form of P. lanceolata and may quite well be the var. sphærostachya. A later hand has added to the note in Herb. Buddle a reference to Ray's Historia Plantarum, 878 (1686); here the plant is placed next to P. lanceo-
lata, and is called "Plantago angustifolia minor C. B. Park. quinquenervia minor Ger." Ray's description runs: "Parvitate sola omnium partium à precedente differt. Qu. annon loco natali 
debatur hæc diversitas." Gerard in 1597 reproduces Tabernæ-
montanus's figure (p. 339), but places it as a variety of P. media; 
in the later edition of the Herball, Johnson suppresses the figure, doubtless seeing it had nothing to do with media, but leaves 
Gerard's brief description, and adds under P. lanceolata a note—
"There is another less kind of this Rib-wort, which differs 
not from the last mentioned in anything but the smallnesse 
thereof."

It may I think still be argued that Ray's original plant, of 
which no description was given, was the form of P. lanceolata which 
Mr. Salmon identifies with sphærostachya; this latter was certainly, 
so far as the diagnosis goes, the montana of Hudson in the first 
edition of his Flora Anglica (p. 65). In his second edition, how-
ever, Hudson suppresses montana and places the Lianberis plant 
which he had referred to it under maritima. The labelling by 
Banks in his herbarium of one of his Welsh specimens of sphæro-
cephala "Plantago montana Huds. lanceolata β Linn." shows that 
Banks had identified his plant with Hudson's description, but had 
referred it correctly to Linnæus's variety of P. lanceolata. Is it 
worth a distinctive name?

JAMES BRITTEN.
NOTES ON LIMONIUM.

By C. E. Salmon, F.L.S.

V. — Limonium binervosum.

It is with feelings of regret, and yet of satisfaction, that I place the above name before British botanists to supersede that given in this Journal for 1903, 72, as L. occidentale; regret that the Rules of the Vienna Congress should cause another change, and satisfaction that it has become possible to utilize for all time a name that recalls the memory of that accurate British botanist, G. E. Smith. An excellent account of the present plant appeared in Eng. Bot. Supp. t. 2663 (1831), from the pen of this observer, under the name Statice binervosa, which antedates Lloyd's S. occidentalis by thirteen years.

The corrected synonymy will stand as:—

Limonium binervosum.

Statice cordata G. E. Sm. ! Cat. Pl. South Kent, 18, t. 2 (1829) (non al.).

S. spathulata Hooker! Brit. Fl., 145 (1830) (pro parte, non al.).


S. Bayonnensis Grenier, pl. exs. (1836)! et ex DC. Prodr. xii. 649 (1848).

S. occidentalis Lloyd! Fl. Loire-inf. 212 (1844).


The locality for this species in v.-c. 2 Cornwall East (Journ. Bot. 1903, 72), should be erased, as Mr. F. H. Davey tells me that Perranzabuloe Porth is in West Cornwall. The earliest record that I have noted for v.-c. 2 dates from 1839, in Herb. Borrer, with the locality, Tintagel Castle Island!

L. binervosum certainly occurs in Ireland in the counties of Wexford, Louth, Donegal, and Meath, besides those mentioned in my previous article (p. 73).

L. binervosum var. procerum.


I have examined examples of this variety from v.-c. 5 Somerset North, Birnbeck Island, Weston-super-Mare! 1896, D. Fry (Herb. J. W. White), v.-c. 52 Anglesey, Red Wharf Bay! 1858, S. H. Bickham, and from Dublin, Sutton side of Howth! 1868, ex herb. H. G. Carroll (Herb. Dublin); these plants have a slightly different aspect from the Ormes Head specimens.

L. binervosum var. humilis.

Staticce reticulata Hooker! Fl. Scotica, 97 (1821) (non al.).
S. spatulata Hooker! Brit. Fl. 145 (1830) (pro parte, non al.).

This is the plant referred to in Journ. Bot. 1903, 73, which may now be distinguished by the above name; the following characters serve to keep it apart from typical S. binervosum, omitting characteristics common to both.

Plant varying in height from 2–3 inches (the humilis of Girard) to 10–15 inches. Leaves, recalling in shape those of L. recurvum, always small, narrow and long-petioled, with petiole as long or longer than blade, oblanceolate-spatulate or more oblong, usually obtusely-pointed or rounded and not apiculate, 1–3-veined; in small specimens, 3⁄4 inch long and 1⁄4 inch wide, in large 1–1 1⁄4 inches long and usually less than 1⁄4 inch wide. Spathe slender, rather smooth, hardly tapering, erect or occasionally arcuate, branched from quite near base with a good many barren branches (rarely none). Branches and branchlets usually erect. Spikes distant, erect, rather long, narrow and loose-flowered (in small specimens, shorter, broader and more spreading and close together in a terminal corymb). Spikelets arranged rather laxly (more closely in small specimens), 2–3-flowered. Outer bract 1 1⁄2–1 3⁄4 lines long and apparently always green and not tinged with purple; shape, &c., as in binervosum, but longer in proportion to inner bract than in that species. Middle bract 1 2⁄3 lines long, otherwise as in binervosum. Inner bract 2 1⁄2–2 3⁄4 lines long, coloured as outer bract, and more elliptical-ovate than the obovate shape in binervosum.

In accordance with the Vienna rulings, Girard’s name humilis must stand for this variety; it is an unfortunate one for a plant attaining a foot or more in height, but Girard only saw examples 2–3 inches high. Moreover, he placed the variety under his S. Dodartii, a species I have not yet seen from any part of Britain.

So far, I have failed to find this variety amongst some hundreds of examples of L. binervosum from various localities in England, Wales, Ireland and the Continent, so at present it seems known only from Scotland.

The variety may be known at a glance by its small, narrow, long-petioled leaves and long, narrow, erect spikes, and, on closer inspection, by its outer and inner bract characters.

Distribution.—74. Wigtown. Mull of Galloway! 1823. Goldie (Herb. Kew); still existing there in one small patch.—89. Edinburgh. Near Cramond! 1842. G. W. Moyle (Herb. W. Moyle Rogers); said to be now lost.
THE NEW RULES FOR NOMENCLATURE.

Our readers are now in possession of the Rules for Nomenclature adopted by the International Botanical Congress at Vienna in 1905, which were issued as a Supplement to last year's Journal and may be obtained separately as a shilling pamphlet, and will thus be enabled to see for themselves the verdict upon the discussions which have been for some years past carried on in this Journal and elsewhere. Whatever opinion may be formed as to details, it is, as we have already said, desirable in the interests of uniformity and convenience that these Rules should be implicitly followed. The conclusions as a whole are eminently sane and reasonable—the ridiculous claim of "priority of place" and the duplication of names in the style of Linaria Linaria are ruled out of court, and the foolish distinction by which the adjectival form of the name of a person is spelt with a small letter while its substantive form has a capital is set on one side. The greatest possible care has been taken in defining the Rules and their application, and although the "recommendations" have presumably not the same binding force as the Rules themselves, we think that they will be generally accepted. The use of carefully chosen "examples" helps to the ready understanding of the Rules in their application.

The most important decision is that which asserts the supremacy of the earliest specific name, no matter under what genus it may have been used. In this Journal we have always maintained that the earliest combination under the accepted genus should be adopted, and as a matter of opinion we still consider that the more reasonable and satisfactory mode of procedure. But the great thing is to arrive at finality, and this can be done by the rule adopted. This will of course lead to numerous changes which must for a time cause inconvenience; but the fact that, this done satisfactorily, the names arrived at will be permanently fixed, will compensate for this.

A less satisfactory feature of the Rules—indeed, the only one to which serious exception can be taken—is the adoption and authorization of the "Index nominum genericorum utique conservandum" which was appended to the draft copy sent round for discussion before the Conference took place; the published account of the discussion regarding it shows that a considerable minority—37 as against 118—objected to its adoption. We entirely agree with Mr. Coville that this decision is the weakest taken by the Congress; a very slight investigation shows that the list is far from complete, and it is open to future Congresses to extend it. We have always protested against the arbitrary closure proposed in various forms by German botanists as being an infringement of the law of priority which in our judgement should alone govern nomenclature, and we fail to see what gain can result from the adoption of the Harms list, if it is to be regarded as capable of indefinite extension in the future. We think that, as the list has been adopted, it should be
accepted and acted upon; but we trust that any extension of it in the future will be strongly resented, in the interest of that stability which we observe one of the speakers considered would result from its adoption. Owing to the incompleteness of the list, the perverted ingenuity which has added so many useless synonyms to our nomenclature will still have scope for its exercise; and the honest worker himself will often be compelled by the force of logic to restore names which he would willingly overlook, for, by the wording of the Rules, all names not definitely excluded are available. Moreover, a considerable number of restorations, which would certainly be on the list had the compiler been aware of them, will maintain their position owing to their exclusion from it; thus, among British plants, Radiculara of Hill, adopted by Messrs. Groves in their edition of Babington's Manual for Nasturtium Br., will remain, although Cammarum of the same author is barred by the list; and Trichoon of Roth (1798), taken up by Dr. Rendle (Cat. Pl. Welwitsch, ii. 218), must replace Phragmites Trim. (1820). This list of course will not greatly affect British botanists, for whose convenience we have appended to the Rules a list of those genera as appearing in British books which will be affected by the Index. To this list must be added Peramium, which Messrs. Groves, following some American authors, substitute for Goodyera; this is invalidated by the fact that Salisbury published the name without any diagnosis.

It is to be hoped that any necessary changes will be effected with all possible care, and without that haste for the creation of new combinations to bear the name of their manufacturer which has hitherto been somewhat too prominent in work of this kind. Mr. Druce, with characteristic energy and ingenuity, has at once set to work, and has published in the Annals of Scottish Natural History for October a list of changes which he considers "may have the advantage of directing attention to the subject, and will allow the suggested names to be subjected to criticism." It seems to us that the "advantage" hardly compensates for the unwisdom of "suggesting names to be subjected to criticism"; criticism should surely precede publication, or the latter will only add to the numberless unnecessary synonyms already in existence. This indeed is to some extent the case with Mr. Druce's list; in his anxiety to secure new combinations he has not waited for the official publication of the new Laws and thus takes up names of genera which the Laws exclude; he even pursues this manufacture into synonymy! Nor do we see what is gained by rushing out what is manifestly only a small portion of the changes that will be necessary. There are undoubtedly in Mr. Druce's list names which will have to be taken up; but there are others which must pass at once into the lumber of useless synonymy.

We have no intention of entering into a detailed criticism of this first attempt to revise the nomenclature of some British plants; but we may deduce from it one or two conclusions of general

* The name of the British plant is T. Phragmites Rendle, i. c.
application, which we commend to the notice of others who take up the work. The first is that quotations should be verified: where this is not possible, it should be stated. Mr. Druce, for example, relies far too much upon Richter's *Plantae Europae*—a most useful compendium of synonyms, so far as the names go, but extraordinarily inaccurate in the matter of citations and dates. Folk never seem to realize that identity in blundering almost always betrays the source of the blunder. Thus Mr. Druce cites "*Mibora minima* Desv., Fl. d'Anj. 46, 1827"; this he takes bodily from Richter (the *Index Kewensis* has a similar reference, but without the date), but in this case title, page, and date are wrong, as any one can see who will take the trouble to look the matter up—the reference is to the *Observations sur les plantes des environs d'Angers*, p. 45, published at Angers and Paris in 1818. It may be said that those who have not access to a first-rate botanical library cannot check references satisfactorily; but is there any reason why such folk should enter on the tangled path of synonymy? Moreover Mr. Druce is a man of leisure, and the libraries of London are easy of access.

Again, the botanical side of the work of correction must not be neglected. On the faith of Richter's synonymy, Mr. Druce invents a new combination—*Festuca membranacea*—for the plant which is generally known as *F. uniglumis* Soland.; but Duval-Jouve (in Rev. Sci. Nat. ii. 34 (1880)) makes it clear that, whatever *Stipa membranacea* of Linnaeus may have been, it is not synonymous with *F. uniglumis*. Nor do we think *Hordem bulbosum* L., by which Mr. Druce would replace *H. secalinum* Schreb., is a synonym of that plant.

We would enter a protest against the practice which seems creeping in of quoting the *Index Kewensis* as if it were a botanical authority. The absence of any introduction to that invaluable work is to some extent accountable for the apparent misunderstanding as to its object, which is that of an index and nothing more; the entries—*e.g.* "Habenaria chloroleuca* Ridl. = bifolia"—do not imply that Mr. Jackson has critically investigated the botany of the matter, but only that some recognized authority—a monographer or other—has made the reduction. Mr. Druce cites names—*e.g.* *Galeopsis ochroleuca*—as "*Lam., Ency. ii. 600, 1780 and Index Kew.*"; but the addition of the *Index* adds nothing to the history of the plant or to the value of the citation.

It may be added here that a list of British species, drawn up in accordance with the new Laws by Dr. Rendle and Mr. Britten, will be published very shortly by the Trustees of the British Museum. This will be so arranged as to show the synonymy in Messrs. Groves's edition of Babington's *Manual*, in Hooker's *Student's Flora*, and in Bentham's *Handbook*. It will be a satisfaction to many to know that in this the new combinations necessitated by the Laws will be very few, the changes from the more accepted nomenclature being for the most part a return to that which was familiar twenty or thirty years back, before the recognition of the earliest name under the genus had become general.
The following additions have been made to the collections by presentation:—170 phanerogams and 80 cryptogams from Malay, from H. N. Ridley; 48 phanerogams from the Shan States, from Major C. H. Melville; 4 phanerogams from India, from Dr. T. Cooke; 45 phanerogams and 20 cryptogams from Hong-kong, from S. T. Dunn; 188 phanerogams from Eastern Mongolia, from C. W. Campbell; 1954 phanerogams and 186 cryptogams from Western China, collected by E. H. Wilson, from Messrs. Veitch; 69 phanerogams from Rhodesia, from E. R. Sawer; 21 phanerogams from Northern Nigeria, from Dr. Karl W. Kumm; 3 specimens of Convolvulaceae from Northern Nigeria, from Capt. G. B. Gosling; 122 phanerogams and 8 cryptogams from Angola, from J. Gossweiler; 153 phanerogams and 3 cryptogams from the Transvaal, from J. Burtt Davy; 106 phanerogams from the Uganda Protectorate, from Dr. A. G. Bagshawe; 3 specimens of Compositae from South Africa, from Dr. H. Bolus; 4 specimens of Coniferae from Mexico, from George Shaw; 11 specimens of violets from the United States, from Homer D. Howe; 6 phanerogams from California, from Dr. Davidson; 24 specimens of Sarracenia from Dr. J. M. McFarlane, Philadelphia; 249 phanerogams and 17 cryptogams, collected in Mexico, 1827-9, by G. J. Graham, from Mrs. Howgrave Graham; 36 specimens of Podostemaceae from A. W. Bartlett; 401 phanerogams and 17 cryptogams from Chili, from G. F. Scott Elliot; 7 flowering plants and 13 cryptogams from Tierra del Fuego, from Capt. Crawshay; 41 phanerogams and 13 cryptogams from the Falkland Islands, from Mrs. Vallentin; 5 specimens of Azalea critically determined, from Herr J. Valckenier Suringar; specimens of cultivated plants from A. Perry, James O’Brien, Walter Ledger, and E. A. Bowles; a section of yew from the Red Bog, near Ballyfin, Queens Co., Ireland, from R. D. Cole; a leaf of Ceratozamia mexicana and a specimen of Ecballium Elaterium for exhibition, from the Director, Royal Gardens, Kew; and 7 specimens of Characeae for exhibition, from H. and J. Groves; 100 ferns from the South Sea Islands and New Zealand, from Commander G. G. Webber; 3 ferns from the Pyrenees, from C. E. Salmon; 37 mosses from Fernando Po, from W. S. Sherrin; 13 mosses from the Swedish Antarctic Expedition, from M. J. Cardot; 24 hepatics from Jamaica, from Alexander W. Evans; 4 new marine algae from the Faroe Islands and Norway, from H. G. Simmonds; 24 tubes of freshwater algae, collected by J. H. Burkill, from Lt.-Col. D. Prain; photographs of 7 types of Japanese Sargassa in Herb. Harvey from Dr. E. Percival Wright; 33 lichens from Bombay, from Rev. E. Blatter; one or two specimens from Sir Daniel Morris, Miss Copland, J. W. Odell, F. Garry, Lieut. Rayner Cole, Franklin White, Dr. Britton, Dr. Morrison, Rev. R. P. Murray, W. Fawcett, Rev. J. Gerard, C. Kerr Wilson, Miss Anna Vickers, and J. T. Bennett-Poë; a drawing of a group of plants by
J. van Huysum, from F. Justen; and a large photograph of *Phalanopsis Schilleriana* for exhibition, from the Hon. Walter Rothschild.

The additions to the British Herbarium by presentation have been:—90 specimens from C. E. Salmon; 160 specimens from Rev. E. S. Marshall; photograph of wild cherry tree showing "witches' broom," from Jas. Saunders; 34 specimens from Rev. H. J. Riddelsdell; a large collection of Rubi collected by the Revs. W. H. Purchas and A. Ley, from Rev. A. Ley; 3 specimens from Miss E. Armitage; 28 specimens from G. C. Druce; 28 specimens from A. Bennett; 3 specimens from J. C. Melvill; 4 specimens of willows from Rev. E. F. Linton; 5 cryptogams from T. E. Beleher; 9 rare Hepaticae from Symers M. Macveiar; 3 fungi and 2 books of manuscript descriptions of British Tuberoidae and Discomycetes, from Worthington G. Smith; large specimens of *Laminaria* from Loch Eil, from Henry A. Hammond; and large specimens from the Scilly Isles, from C. B. Maggs and R. H. Banting; about 700 marine algae, mostly from the west coast of Scotland, from Monsignor Canon Bernard Ward; and single or two specimens from Prof. D. Oliver, Mrs. Gregory, W. P. Hiern, C. T. Green, H. W. Pugsley, E. Holland, Dr. C. B. Plowright, and Canon H. W. Lett.

The following additions have been made by exchange of duplicates:—487 specimens from South America and Mexico, and specimens of African Acanthaceae, from the Royal Botanic Museum, Berlin, through Dr. Engler; 2393 phanerogams and 227 cryptogams of the Philippine Islands, from the Bureau of Government Laboratories, Manila, through Prof. Elmer D. Merrill; 187 specimens from Brazil, collected by Malme, from the Botanic Garden of the Royal Academy of Science, Stockholm, through Prof. Wittrock; 127 phanerogams and 9 cryptogams, chiefly collected by R. Schlechter in South Africa, from the Botanic Museum, Zurich, through Prof. Hans Schinz; Cryptogamae Exsiccatae, Cent. x, xi, from the Vienna Hofmuseum; 123 specimens, mainly orchids, from New Guinea, from Dr. R. Schlechter; 61 New Zealand mosses, from T: W. Naylor Beckett; 138 mosses and hepaticae of Brazil, from Dr. C. A. M. Lindman.

The principal purchases during the year were:—1273 phanerogams and 39 cryptogams from Paraguay, from Dr. Hassler; 881 phanerogams and 84 cryptogams from Japan, Corea, and Formosa, from Rev. Urban Faurie; 200 phanerogams and 17 cryptogams from Siam, collected by Dr. Hosseus, from Dr. Wilms; 176 phanerogams and 21 cryptogams, "Iter Persiciun alterum, 1902," from J. Bornmüller; 537 South African plants collected by R. Schlechter, from Dr. Loesener; 590 specimens from Cameroons collected by G. Zenker, from Dr. E. Gilg; 445 phanerogams and 73 cryptogams from British Columbia, from C. H. Shaw; 800 specimens from South California, from L. R. Abrams; 460 specimens from North Mexico, from G. B. Metcalfe; Herb. Normale, Cent. xlv., from Dörfler; Flora Stiriae exsiccata, Cent. i., from Hayek; 117 specimens—Herb. Dendrologicum (Fascicule v.), from Kochne; 82 specimens Carices Exsiccatae (Fascicules xii.—xii. 1) and
Hab. 3

125 cryptogams of Germany, Austria, and Switzerland, from Migula; 160 Muscineæ of Cardiganshire, from Painter; 50 mosses of the Malay Archipelago, from Fleischer; 200 European Hepaticæ, from Schüffner; 58 mosses and 136 fungi of Brazil, from Ule; 75 North American algae, from Collins, Holden, and Setchell; 250 fungi imperfecti, from Kabát and Bubák; 20 Ohio fungi, from Keller; 14 microscope preparations of micro-fungi, from Miss A. L. Smith; 150 micro-fungi, from Vester gren; 50 fungi selecti, from Jaap; 50 Ascomycetes, from Rehm; 100 European fungi, from Rabenhorst, Winter, and Pazschke; 50 economic fungi, from Seymour and Earle; 150 fungi of Germany, 50 Uredineæ, 50 Phycomycetes and Protomycetes, from Sydow; 150 cryptogams of South Africa, from Wilms; 400 North American fungi, from Bartholomew, Ellis, and Everhart; 100 Saxon fungi, from Krieger; 25 parasitic fungi, from Briosi and Cavara; 3 exhibition sheets of water-colour drawings, from Worthington G. Smith; 80 water-colour drawings of British lichens for exhibition, from Highley.

Among the additions acquired by purchase, special reference may be made to 12 MS. volumes containing a classified series of annotated descriptions of the genera and species of British Basidio-mycetes, prepared by Mr. Worthington G. Smith, and illustrated with 135 ink drawings exhibiting the characters of the genera and subgenera. More than 2150 species are described, thus affording a valuable supplement to the fine series of coloured drawings in the Department.

THRINCIA NUDICAULIS.

By James Britten, F.L.S.

In his Prodromus Floræ Britannicæ, p. 70, Mr. Williams substitutes for the generally received Leontodon hirtum of British books the name L. Leysseri Beck, in this following the distinguished Austrian botanist in considering L. hirtum of Linnaeus to be a different plant. In the course of his disquisition Mr. Williams has a bibliographical note which may mislead future workers and which it may therefore be well to correct, especially as the correction materially affects the right naming of the species.

Mr. Williams says "In the copy of Sp. Plantarum ed. 2 in Herb. Mus. Brit., annotated by Solander, he has written opposite the description of L. hirtum, 'Hab. ad Petersfield Angliae, in Madera, Lincolnshire—nudicaule,' thus throwing doubt on the application of the Linnean name to the English plant. The specimen so labelled is in Herb. Banks."

In the first place it may be pointed out that Mr. Williams means the 1st edition, not the 2nd, and that the only MS. entry is the name Leontodon hirtum written by Dryander (not Solander) in
the margin opposite _Crepis nudicaulis_, which in ed. 2 was placed under _L. hirtum_ (there first published) as a synonym. The MS. locality quoted by Mr. Williams appears, not in Sp. Pl. but in the notes on the plant described in Solander's MSS. as _L. nudicaule_: it runs "Habitat ad Petersfield in Hampshire Angliae (Alchorne), in Madera"—the two last words were added later. Solander also gives, on another page, the locality "Habitat copiose prope Revesby in Lincolnshire."

In calling the plant _nudicaulis_ Solander was adopting the earliest specific name: it is the _Crepis nudicaulis_ of L. (Sp. Pl. 805). In his original description, Linnaeus does not refer to the "Hieracium pumilum saxatile asperum præmorsa radice" of Ray's Synopsis, ed. 3, 167, as a synonym; but this reference—the first record of the plant as British—was added by Hudson (Fl. Anglica 297 (1762)), who placed _Crepis nudicaulis_ as a synonym of his _Leontodon hispidum_ β, and adopted by Linnaeus in his second edition (p. 1123 (1763)), who there renamed _C. nudicaulis_ _Leontodon hirtum_. There is no specimen of _Crepis nudicaulis_ in the Linnean herbarium, but there is no reason to doubt its identity with the English plant which, as his citation from Ray shows, was certainly contemplated by Linnaeus when he described _L. hirtum_. Neither Prof. Beek nor Mr. Williams makes any reference to _C. nudicaulis_, although, as has been shown, Linnaeus himself quotes it as a synonym of _L. hirtum_; hence it is clearly the oldest specific name.

An examination of Solander's MSS. shows that by his _nudicaulis_ he primarily intended the British plant, as was pointed out by Lowe in a passage to be quoted later. His descriptions—there are two—were drawn up from Alchorne's specimen, now in the National Herbarium, and from the Revesby plant; and he cites the synonymy of Ray and Hudson. The reference to the Madeira plant was added later—I think by Banks; the citation of _Crepis nudicaulis_ was struck out also, I think, later, as had Solander himself done it he would, as he usually does in such cases of correction, have altered his own name for the plant, which is twice retained. This addition of the Madeira plant led Lowe into an error which he corrected later; in his _Primitia Fl. Mader._ (p. 28) he gave the name _Thrincia nudicaulis_ to the Madeira plant, quoting in synonymy "_Leontodon nudicaule_ Herb. Banks," but later, in his _Flora of Madeira_ (i. 535) says: "The sheet in B H [Banks Herb.] inscribed by Solander _propria manu_: ' _Leontodon nudicaule_ Mser. Madera,' is truly the common Mad. _T. hispida_ Roth. var. & Lowe. But _nudicaule_ Sol. MSS. in B H is a mixture of this with English _T. hirta_ Roth. For though Solander in his MSS. says of his _L. nudicaule_ 'Radix præmorsa,' it is distinctly fusiform or taipshaped in this his original Mad. spec. And his other localities, 'Revesby in Lincolnshire' and 'Petersfield in Hampshire' show him clearly to have had mainly in view _T. hirta_ Roth." I have already stated the position of this plant when commenting on the name as pub-

* The name is not in Solander's hand, but in that of one of the clerks employed by Banks.

The synonymy will be:

**Thrinicia nudicaulis** (comb. nov.).


_Leontodon hispidum_ β Huds. Fl. Anglica 297 (1762).


_L. nudicaulis_ Sol. MSS. in Herb. Mus. Brit. !


The following should be referred to _Thrinicia hirta_ Roth :

_Leontodon nudicaule_ Sol. MSS. quoad pl. Mader. ; Br. in Buch Canar. Ins. 194 (1825) ; Ind. Kew. ii. 52 (excl. syn.).

_Thrinicia nudicaulis_ Lowe Prim. 28 ; DC. Prodr. vii. 100.

**SHORT NOTES.**

_Cystopteris fragilis_ in Suffolk.—In Hind's _Flora of Suffolk_, p. 420, it is stated that Newman records this, but without locality, and the only localities given are "Buggay, Moore, 1859?" and "Yoxford, Moore?" In Mrs. Lyell's recent _Life of Sir C. J. F. Bunbury_ (ii. 181), Bunbury, writing from Barton to Sir Charles Lyell on Nov. 5, 1863, says: "About a week ago Scott brought me some leaves of a fern, which he had found growing on the brickwork lining of an old wall, very near here; it proved to be the _Cystopteris fragilis_, a fern which I had never before seen in Suffolk; and which I believe is generally rare in the plains of England." It may be noted that the _Life_ contains many allusions to and particulars concerning Bentham, with whom Bunbury was on intimate terms, and for whom he evidently had much affection; his name does not appear in the index (nor, so far as I have noticed, in the text) of Mr. Jackson's memoir, noticed in this Journal for November last.—James Britten.

Plants of Wybunbury, Cheshire.—In July, 1905, I spent a day or two in the above neighbourhood, when I was accompanied by Mr. A. H. Evans, and we were delighted to see that the "Moss" still offers much of botanical interest. The cranberry was fruiting freely, and the flowers of the beautiful _Andromeda_ were a great delight. _Lastrae Thelypteris_ is still abundant, although _L. cristata_ appears to have been eradicated. In the following notes plants new to district 6 of the _Flora of Cheshire_ are indicated by an asterisk; two asterisks indicate what is apparently a new county record. Where no locality is given the plant was found in the

**Journal of Botany.**—**Vol. 45. [Jan. 1907.]**

Ophrys Trollii Hegetschw. in Oxfordshire.—In 1905 some school-children at Finstock gathered a curious form of the bee-orchis in that neighbourhood, but it had withered too much before I saw it to allow me to identify it. This year it was sent again by Mr. H. Powell when I was away, but I was enabled to see that it was a form worth examination; and at the British Museum Herbarium I was enabled to identify it with the above plant. The very long gradually acuminate termination to the outer divisions of the perianth and labellum gives it a very striking appearance, although no doubt it is not specifically distinct. It appears to have only been recorded in Britain previously from Reigate.—G. Claridge Druce.

Parietaria officinalis L. (Journ. Bot. 1906, 429).—The peculiarity of the stamen-unfolding was pointed out to me many years ago by a friend—not a botanist; and one has often amused oneself by touching the stamen with a pin or pencil and making it jump, and fling its pollen. I imagined it was a fact well known to botanists.—H. J. Riddelesdell.

Vicia monosperma (Journ. Bot. 1906, p. 409).—M. Beauverd, of the Herbier Boissier, points out to me that this name was given in 1841 by Koch to a plant: a description of which he published in Linnaea, xv. 721. Unfortunately I overlooked this, but as Boissier
(Fl. Orient. ii. 579) and other authorities who have not totally ignored the name have reduced Koch's V. monosperma to V. cassubic a L., there seems no reason why the name should not be adopted for the new vetch from Porquerolles.—H. S. Thompson.

Aspicilia Lillieii.—The following description of a new British lichen by Dr. M. Bouly de Lesdain appears in the Bulletin de la Société Botanique de France, vi. 515 (1906): — "Aspicilia Lillieii B. de Lesd. nov. sp. Ecosse; Caithness, Ousdale supra saxa granitica. Leg. Révérend D. Lillie, 1905. Crusta tartarea, circa 0 mm. ·5 crassa, rimoso-areolata, alba, intus flavida, K — C — KC—. Apothecia minuta, atra, in areolis immersa, rotundiformia, vel lirelliformia. Epith. olivaceum, hypoth. incoloratum, paraphyses gelatinoso-concretæ, asci anguste clavati. Spores 4—6-nées, ellipsoidæ, 13—15 μ lat. 5—6 crass. Gelat. hym. I, intense cerulescit. Cette espèce a tout à fait l'aspect de l'Aspicilia calarea dont elle diffère par son thalle jaunâtre intérieurement, et par ses spores." In the same paper (p. 517) Rhizocarpon Lotum Stizenb. collected by Mr. Lillie in Caithness in 1905 is noted as new for Britain and described from Mr. Lillie's specimens.

NOTICES OF BOOKS.

Index Filicum sive Enumeratio omnium generum specierumque Filicum et Hydropteridum ab anno 1753 ad annum 1905 descriptorum adjectis synonymis principalibus, area geographica etc. By Carl Christensen. Hafniae: apud H. Hagerup. 1906. Fasc. xi. pp. 641–704; price 3 s. 6 d. Fasc. xii. pp. 705–744, i–lx; price 3 s. 6 d.

This important contribution to the literature of ferns has been in process of publication since the summer of 1905, the parts appearing at frequent intervals. With the issue of parts xi. and xii. it is brought to completion. The work is divided into three sections, which deal with the genera, species, and literature respectively. By far the largest of these is the second section, which consists of an alphabetical enumeration of the species and their synonyms; it occupies 670 pages, it necessitated upwards of 22,000 entries, and it comprises 5940 species. It was the first part of the book to be published, and was followed by the third section, which consists of a catalogue of all fern literature that contains descriptions of new genera or species. This bibliography occupies 74 pages, and is presented in three aspects: first, an alphabetical list of authors with the titles and dates of their papers (the abbreviated citations employed throughout the work receive here their explanation); secondly, a geographical grouping of the floras under continents, countries, islands (this cannot fail to be of great assistance to those who are in search of local floras, though all lists are excluded which do not contain descriptions of novelties); and, thirdly, a list of genera, with the special monographs which have been written upon them. Finally, we have that section of the
book that concerns itself with the genera; though held back till the rest of the work had been published, it will naturally take its place at the beginning of the volume when bound. It consists of a systematic enumeration of the 149 recognized genera, with their synonymy arranged both chronologically and systematically. It is based on Diels's classification in Engler and Prantl's *Die natürlichen Pflanzenfamilien*. The type species (if known) is quoted in a prominent position under each genus.

Now that the work is complete, it is possible to realize more clearly the great service which Herr Christensen has rendered to pteridologists by collecting and arranging in so concise and convenient a form such a vast number of citations and synonymy. Among the chief stumbling-blocks of pteridology in the past have been the want of correspondence between the rival systems of classification, the lack of coincidence in the ground covered by the genera of the respective systems, and the difficulty of determining the synonymy of the various species. These and other such troubles of nomenclature need trouble us no longer, thanks to Herr Christensen's patiently elaborated *Index*—a work which has taken long years to prepare, and which by the accuracy of its citations reveals the ungrudging care bestowed upon its compilation. In connection with English ferns it will be noticed that there is a slip which calls for correction. *Trichomanes pyxidiferum* of Hudson's *Flor.* Angl. p. 392 (1762), is referred by the author to *Hymenophyllum tumbrigense* as a synonym, but it is evident from the station quoted by Hudson for the plant that the latter is *T. radicans* Sw. Hudson says (loc. cit.) that it was found by Dr. Richardson "at Belbank, scarce half a mile from Bingley, at the head of a remarkable spring." It would of course be no matter for surprise should some errors of this sort be found in so intricate and exacting a piece of work, however carefully the author may have prepared his manuscript and revised his proofs. The real marvel is that anyone should have succeeded in producing a result so near perfection.

A. G.


In this handsome volume Sir Dietrich Brandis has summarized the results of half-a-century's study of his subject. During the twenty-eight years of his Indian service, beginning with his appointment in 1856 to the charge of the forests of Pegin, he was collecting material, and since his retirement he has devoted himself to its elaboration in relation to the great herbaria of this country—primarily to that of Kew, which for Indian plants is unrivalled. He has continually received notes and collections from his former colleagues and from those who have succeeded them, and, being thoroughly acquainted with the copious literature of the subject,
has embodied in his book the observations of others. His work therefore may, save for one omission—that of the Calcutta Herbarium—for which Sir Dietrich expresses his regret, be considered a complete résumé of our knowledge of Indian trees, using the term in the extended sense which appears on the title-page of the book.

An extended notice of the volume could only be fitly undertaken by an expert, but no intimate knowledge of the subject is required in order to judge of the completeness with which Sir Dietrich has executed the task he has set himself. He has not confined himself to the common and important species, although these are naturally his primary consideration, but has added in smaller type a large number of others which he tells us he has "dealt with in a very summary manner," but which are nevertheless sufficiently diagnosed to ensure recognition.

The sequence of orders follows that of Bentham and Hooker, but their limitation in some cases is that of Engler and Prantl. The "practical advantage" of the division of certain groups is, as the author says, "very great," and we are glad to see Vacciniacae combined with Ericaceae. In the matter of change of names, Sir Dietrich has exercised a conservatism which, although temporarily convenient, may perhaps be regretted; it is not easy, for example, to see why Stephegyne should not be replaced by the earlier Mitragyna, although the author says he does not "feel justified" in making the substitution and in his appendix (p. 711) discusses the question. But as the book must have been for the most part in type before the publication of the Vienna rules, conservatism was to be preferred to the system which has added so many useless combinations to our already over-abundant synonymy.

Considerable prominence is given to the vernacular names, as to which Sir Dietrich's dictum that "if sifted with care [they] are valuable whatever may be said to the contrary" is important, based as it is on so many years' experience in the forest. The two hundred figures, by Dr. Roland Anheisser of Cologne, add materially to the usefulness of the book in the field, from a botanical standpoint, and also—which is less satisfactory—to its weight, for we presume the heavy paper employed in the volume was rendered necessary by their requirements; they include many species not, we think, previously figured, the more common trees being omitted.

The addition of twenty-three pages of addenda, made during the printing of the book, shows the care that has been taken to bring it up to date. We note among them what appears to be a new species of poplar—Populus glauca Haines MSS.; Nauclea Gageana "King MSS." (p. 368) was published in the Flora of the Malayan Peninsula, but doubtless since Sir Dietrich's reference was in type.

The author modestly says that his book "is not intended for botanists, it is written for the use of foresters and of practical men," and of course, and very rightly, it is the latter whom he primarily considers; but the work will find a place in every botanical library as the most complete compendium of the subject of which it treats.

The Association Internationale des Botanistes and its indefatigable general secretary, Dr. Lotsy, are to be congratulated on the appearance of the first part of their new publication—Progress of Botany. It is now some years since the Association took over the Botanische Centralblatt, to make of it a résumé of current botanical publications; this has served and still serves a useful purpose in giving brief abstracts of single books and papers. The new work supplements the former, in giving a general account of work on specific lines over a longer period. If succeeding parts are equal in value to the first, the success of the work should be assured. Part i. contains contributions from four botanists. The veteran Professor Strasburger opens with an account (in German) of work done on the ontogeny of the cell since 1875. His paper fills one hundred and thirty-eight pages, and is illustrated with excellent figures from various sources, many from his own works, others from the works of botanists who have studied in his laboratory or gained inspiration from his writings. A great deal of matter is compressed into this comparatively short account, and further help is given by numerous references to literature. Those who have not made cytology a special study have in Professor Strasburger's account the opportunity of appreciating the present position of this recent development.

Dr. Scott's contribution (in English), "The present position of Palæozoic Botany," does for fossil botany what Professor Strasburger's paper does for cytology. And here again there is no need to emphasize the special fitness of the author for his task. Carrying on the work started by Williamson, Dr. Scott has, by his own effort and the efforts of younger workers whom he has gathered round him, brought palæozoic botany to such a position of strength and importance as probably Williamson never imagined. His lucid sketch of our knowledge of palæozoic plants and their affinities, as affected by recent discoveries, fills eighty pages, and is admirably illustrated by thirty-seven figures, including the large double plate of the now familiar restoration of Lycopodendron Oldhamiun. Mr. Arber's classified bibliography and literature on palæozoic fossil plants, including some of the more important memoirs published between 1870 and 1905, forms a useful appendix.

Lastly, there is the contribution in French by Prof. Charles Flahault on the progress of geographical botany since 1884, its present position, and its problems. Prof. Flahault's ecological work is well known, and the ecological aspect holds an important place in his eminently readable account of the position and prospects of the study of plant distribution, which fills more than seventy pages.

Succeeding parts will be issued at intervals of about four months, and each annual volume will contain about forty sheets. The price to members of the Association will be 13 marks a volume,
to outsiders 18 marks. The following parts of vol. i. will contain contributions on fungi, by Prof. G. Vuillemin; on physiological subjects, by Prof. Czapek and Prof. Noll; on hybrids since Mendel’s time, by Mr. Bateson; and on tertiary fossils, by Prof. Laurent.

A. B. R.

BOOK-NOTES, NEWS, &c.

At the meeting of the Linnean Society on 15th November, on behalf of Mr. John Cryer, of Shipley, the General Secretary exhibited a series of twenty-one specimens of *Polygala amarella* Crantz, selected to show its wide range of form under various conditions. In a communication which was sent with the plants, Mr. Cryer states that this species, which grows on the Great Scar Limestone, in the West Riding of Yorkshire, was to be seen the past season in great abundance over an area of about thirty-six square miles. The first six specimens shown were from three to eight inches high from an elevation of 750 ft. ; as the elevation increased the height diminished, till the plant became less than one inch high. Blue-flowered specimens were found well distributed over the whole area; white-flowered specimens were unequally distributed; rose-coloured plants were only found in one locality, but there it was locally abundant. Spathulate rosettes of root-leaves are the winter state of the plant. One characteristic of *Polygala amarella* is that it can grow where there is but little soil for its support. Mr. Cryer has found it growing on what was almost bare rock; it has the habit of thrusting its roots into the cracks and crevices of rocks, or between the stones and rocky fragments. Wherever he has found it, with one exception, there has been little or no depth of soil. A figure from specimens sent by Mr. Cryer from Grassington, and a description of the plant and its locality, will be found in this Journal for 1903, p. 113, t. 450.

An amusing and interesting article on Truffle-hunting by Harwood Brierley in the *Pall Mall Gazette* for Dec. 8 informs us that "the truffle’s scientific name is ‘Tuber aestivum’ and the potato’s name ‘Tuber solanum’; therefore both are tubers, and the artichoke is another." In a subsequent paper the same writer discourses on "the mistletoe, *Viscus (sic) album*," "of which botanists inform us there is one species only," and proceeds to say "Is it worth while making a suggestion that not mistletoe, but *Loranthus europae* was the sacred evergreen clipped by the Druids?" We think Mr. Brierley, whose papers indicate observation, would do well to refer them to a botanist before publishing, so as to ensure greater accuracy in details.

We are glad to learn that *The Flora of West Lancashire*, by Messrs. J. A. Wheldon & Albert Wilson, is in an advanced state of preparation and will be issued in the spring. It includes a list of flowering plants, ferns, mosses, hepatics and lichens, recorded for the vice-county, as well as a description of the physical geography.
and geological and botanical features of the eight districts into which the area has been divided; and an account of the more interesting plant associations, with chapters on meteorology and climate and the distribution of species as affected by altitude, and the physical and chemical characters of rocks and soils. The price to subscribers, who should communicate with Mr. Wheldon at 60 Hornby Road, Walton, Liverpool, will be 10s. 6d.

We learn with regret of the death of Professor Ernest Pfitzer, of Heidelberg University. Professor Pfitzer was with us a few months ago at the "Hybrid Conference," in the proceedings of which he showed much interest, and subsequently at the British Association meeting. His philosophical work on the morphology and classification of the orchids is well known; he elaborated the order for the Pflanzenfamilien, and his account is remarkable for the system of arrangement of genera, in which he abandons the supreme position given by Lindley to the character of the androecium, and takes into account the vegetative development of the plant. Prof. Pfitzer was engaged at the time of his death on a group of orchids for the Pflanzenreich, and in connection with this work had paid several visits to the great collections at Kew and the British Museum.

By the death, on Nov. 20, of Mr. Frederick Justen, proprietor of the firm known as Dulau & Co., a familiar figure to botanical book-lovers and to frequenters of the meetings of the Linnean Society has been removed from among us. We shall say more about him later.

Mr. G. C. Churchill, who died on Nov. 11 at his residence, Clifton, Bristol, aged 84, was for many years the distributor in this country of the sets of plants collected by Rupert Huter (with whom he was on terms of intimacy) and other Swiss botanists. Although he published but little, he had a good critical knowledge of the plants of the Dolomite region, which he frequented for many years, especially of Primulas; he contributed a note on Woodsia glabella to this Journal for 1864, p. 56. His herbarium has been sent to Kew.

The illustrated Haandbog i Norges Flora, by the late Axel Blytt, which, under the editorship of Dr. Ove Dahl of the Christiania Museum, has been appearing in parts since 1902, is now published complete in a handy volume of 800 pages, by A. Cammermeyer of Christiania. We hope to be able to notice it later, meanwhile our readers may like to have their attention called to it.

The Report for 1905 of the General (Fielding) Herbarium at Oxford announces that in connection with the investigation of the plants figured in Dillenius's Hortus Elthamensis, some of the specimens have been examined by Messrs. C. B. Clarke and J. G. Baker. These plants have hitherto been incorporated in the Sherardian Herbarium; they have now been sorted out, and will be preserved as a distinct collection. The Herbarium has acquired a collection of British plants (400) made by the late Mr. Johnson, and a small but interesting set of Persian plants, collected and presented by the Rev. Napier Malcolm.
ALABASTRA DIVERSA. — Part XIV.

By Spencer Le M. Moore, B.Sc., F.L.S.

New or Little-known African Gamopetaleae.

The following memoir is almost entirely devoted to some notices of plants sent from two regions of tropical Africa, regions in respect of the botany of which the National Herbarium has, thanks to the assiduity of various correspondents, assumed of late years a leading position among the great herbaria of the world. One of these correspondents, Mr. Fred. Eyles, has before been mentioned in these pages in connection with plants from Southern Rhodesia, especially the Matopo Hills. To the labours of the other, Dr. A. G. Bagshawe, we are already indebted for the consignments on which is based the recent memoir on the botany of the Anglo-German Uganda Boundary Commission, as well as for a number of specimens subsequently gathered in the Entebbe district, of which specimens some were described in this Journal last year. Latterly Dr. Bagshawe has visited the south-western districts of the Uganda Protectorate, and it is with the Gamopetaleae of the collections there made that the following pages partly deal. Dr. Bagshawe’s chief localities and their respective altitudes (in feet) above sea-level are as follows:—


In Uganda. Valley of the Kafu River (about 3000). North of Kakumiro (3500).

In Kitakwenda. Near Mpanga River (about 4000).

This latest exploration confirms the impression derived from the Uganda memoir mentioned above, as also from the report on Mr. M. T. Dawe’s work prepared at Kew, as to the eastward extension of many species hitherto known only from the Upper and Lower Guinea botanical provinces. At the same time the westward range, up to the limits of the Protectorate, of a fair number of eastern species has now been determined. In both these respects it is anticipated that Dr. Bagshawe, whose numbers already reach to over eleven hundred, will be the means of further additions to

---

our knowledge, as he is still in the field, and parcels from him are
arriving at frequent intervals.
Mr. Eyles's localities, also with their respective altitudes, are:

Mazoe (4300). Mazoe, Iron-mask Mountain, an ironstone for-
mation (5200-5300). Sebakwe, on open veld (4000). Bulawayo
(4500), and the Matopo Hills (5000).

Needless to say, no full list is here given, only species considered
new finding a place, and plants interesting from their rarity or
habitat.

Acknowledgments are due to Mr. Hieron, who kindly furnishes
the description of a new Euclea.

**Rubiaceae.**


Toro, near Mpanga Forest; *Bagshawe*, 1013.

*Randia maileifera* Hiern in Fl. Trop. Afr. iii. 98.
Near Hoima, Unyoro; *Bagshawe*, 940.

Mazoe, top of Iron-mask Mountain; *Eyles*, 201.

"A tree 15 ft. high. Flowers greenish. Fruit green."

**Vangueria Bagshawei**, sp. nov. Fruticosa rhamis patentibus
glabris sat gracilibus bene foliosis max puberulis novellis hirsutulis,
foliis parvis brevipetiolatis ovatis vel ovato-oblongis cuspidulatis
apice obtusis basi obtusis rotundatisse sepe aliquanto obliquis
tenuiter membranaceis utrinsecus pilis appressis hispidulis sparsi-
usculae obsitis costis secundariis utrinque 4 ascendentis-arcuatis,
stipulis linearis-subulatis acutis, floribus in axillis solitariis pedun-
culatis pedunculo puberulo juxta medium bracteato. Calycis puberuli
tubo cylindrico-turbinato quam limbus dentatus longiore, corollae
tubo (ovario) subcilindrico ima basi paullulum angustato extus
glabro 3-loculari lobis oblongo-lanceolatis longicaudatis quam tubus
longioribus extus hirsutulis, antheris subsessilibus subinclusis, stylo
breviter exserto glabro, stigmate tamido truncato leviter angulado.

Hab. Mpanga Forest, Toro; *Bagshawe*, 1009.

Folia modice 3-0-5-0 cm. × 1-5-2-5 cm., supra olivacea, subtus
pallida; petiolis gracies, setulosis, 0-2-0-4 cm. long. *Stipulae* 0-5-
0-7 cm. long., extus deorsum setulosis ceterum fere glabrae, hujus
basis diisculae persistens. Peduncae solenomiter circa 0-6 cm. long.;
bracteae inferne connatae, ovate, acuminatae, circa 0-2 cm. long.
Flores albi. Calycis tubus 0-15 cm., limbus 0-1 cm. long. Corolla
tota humectata 1-4 cm. long.; tubus 0-5 cm. long., ima basi 0-2 cm.
faucibus 0-8 cm. lat.; lobi 0-9 cm. long., inferne 0-2 cm. lat.
Filamenta 0-075 cm. long.; antheræ ovato-oblongæ, apice obtusæ,
appendicibus basilibus linearibus hund exemplis 0-2 cm. long.
Stylus deorsum incurvatus, sursum gracilior, 0-6 cm. long.; stigma
fere 0-2 cm. diam.

Known by the small thinly membranous leaves pale below, the
solitary flowers, long tails to the corolla-lobes, &c.
Fadogia oborata N. E. Br. in Kew Bull. 1906, 105.
Mazoe Valley; Eyles, 209.
"Plant 3-4 ft. high. Corolla-tube green, tips of segments white inside. Anthers brown. Stigma and berries green."

Pavetta assimilis Sond. in Fl. Cap. iii. 20.
Sebakwe; Eyles, 168.
A South African plant recently found by Dr. Bagshawe in the Uganda Protectorate.

Durro Forest, Toro; Bagshawe, 1082.
An Upper Guinea plant (Cameroons to Gaboon). Dr. Bagshawe's specimen has small flowers like those of Mann, 1729. The long-flowered form referred here by Hiern (Mann, 2159) may perhaps prove a distinct species.

P. Ceciliae N. E. Br. in Kew Bull. 1906, 106.
Mazoe, on Iron-mask Mountain; Eyles, 203.
Plant about one foot high. Flowers cream, with sour odour.
This is new to Rhodesia, the type having been found near Beira in Portuguese East Africa.

Coffea (§ Exsertae, Perennes) eugenioides, sp. nov. Frutex glaber, copioso ramosus, ramulis gracilibus ascendenti-patentibus bene foliosis, foliis oppositis pro rata parvis brevipetiolatis ovato-oblongis obtusissimis cuspidato-acuminatis basi breviter angustatis tenueri coriaceis costis secundariis utrinque circa 8 ascendenti-patulis marginem versus aperte fornicatis, stipulis parvis et basi latae in acumen breve subulatum exsertibus vel apice solummodo acutis, floribus in axillis solitariis vel 2-8-mis breviter pedicellatis, calyculo brevi ore denticulato, calycis tubo (ovario) ex calyculo emitenti oblongo-turbinato limbo brevissime neconv obscure denticulato, corollae 5-merae hypocrateriformis tubo sursum levissime expanso lobis oblongis obtusissimis tubum æquantibus vel paullo excedentibus, filamentis quam corollae lobi triplo brevioribus antheris exsertis linearibus acuminato quoque obtusis vel obtusi-sulcis, stylo incluso filiformi ramis exsertis linearibus sequentibus se ipsum excedentibus, baccæ oblonga exsucce loculo altero fere evanido 1-sperma.

Hab. Forest near Mpanga, Toro; Bagshawe, 1076.
Folia verisimiliter perennis solemnitae 4-0-7-0 cm. long., 2-0-3-0 cm. lat., in sicco supra olivacea vix niti dula, subtus pallescensia; acumen circa 0-8 cm. long., basi 0-5 cm. apice 0-2 cm. lat.; petioli 0-5-0-8 cm. long., fac. sup. late ac minime aliae canaliculati; stipulae max deciduae, 0-1 cm. long. vel minus. Calyculus vix 0-15 cm. alt. Pedicelli crassiusculi, 0-2 cm. long. Flores albi. Calycis tubus 0-15 × 0-175 cm. Corollae tubus 0-7 cm. long., basi 0-15 cm. faucibus 0-8 cm. diam., lobi 0-7-0-8 × 0-8 cm. Filamenta 0-25 cm., antheræ 0-75 cm. long. Stylus 0-65 cm., hujus rami 0-8 cm. long. Baccæ in sicco 0-9 × 0-6 cm., apice obtusissima, brunnea.
To be inserted next C. brachyphyltha Radlk., a Madagascar species with several differences in leaf and flower.

Wimi Forest, Toro; Bagshawe, 1082.
Grumilea saltiensis, sp. nov. Fruticosa, novellis puberulis exemptis fere omnino glabra, folis majusculis oblongo-ovatis breviter cuspidato-acuminatis apice acutis basi in petiolum longum extenuatis teneri coriacei pag. inf. summum obscure puberulis costis secundariis utrinque circa 12 proximalibus patentissimis paucis distalibus arcuato-ascendentibus omnibus prope marginem dichotomis. stipulis parvis inferne connatis ovatis acuminatis ferrugineo-puberulis max glabris dinceule persistentibus, floribus in cymis congestis pedunculatis plurifloris paniculam terminalem quam folia breviorem constituentibus dispositis, pedicellis brevissimis incrassatis, calycis tubo (ovario) subsphaerico piloso limbum cyathiformem breviter dentatum æquante. corolle tubo cylindrico calycem 2/₄-plo excedente faucibus albo-villosis lobis ₄ quam tubus paullo brevioribus oblongis obtusis extus puberulis, antheris sub-inclusis vel exsertis, disco incrassato, stylo incluso exserte ramis brevibus spathulatis, bacca parva sphaeroida calyce coronata levi 2-sperma, seminum albumine caseo-ruminato.

Hab. Toro, Mpanga Forest, also forest near Isunga; Bagshawe, 1006, 1092.

Caulis sat robustus statu juvenili aliquanto complanatus, in sicco fusco-olivaceus. Foliorum limbus 12-0-17₀ 0 5₂-8₀ cm., glandulis pellicidis cereberrime donatus, fac. sup. olivaceus vix nitidulus, altrinsecus dilute viridis; costa centralis (ut costule) fac. sup. impressa satis tenuis, fac. inf. basin versus fere 0₁₅ cm. lat., omnimodo prominens; petioli 3₀-₄₀ cm., stipule 0₆-0₉ cm. long. Panicula florescens ₄₀-₇₀ cm. long. et totidem diam., fructescens vero ex exemplario unico mihi obvio 1₃₀ ₁₀₀ cm. Flores albi vel lutei. Pedicelli ₀₁₃ cm., calycis tubus ₀₁ cm., limbus ₀₁ cm., corolla tota ₀₁₅ cm., tubus ₀₂₅ cm., lobi ₀₂ cm. long.; Filamenta nunc brevissima, sc. ₀₀₅ cm. long., nune ₀₁₅ cm. long.; antheræ oblongæ, obtuse, circa ₀₁ cm. long. Stylus nunc ₀₁₅ cm. nune ₀₂₅ cm. long.; rami ₀₁ cm. long. Bacca sicca ₀₆ ₀₅₅ cm.

Known by the leaves, the entire acuminate stipules, the paniculate congested cymes, &c.

This appears to be a heterostyled species. In spite of the difference in colour of the flowers noted by Dr. Bagshawe, I can see no reason to separate the two specimens described above.

COMPOSITE.

Vernonia pumila Kotsch. & Peyr. Pl. Tinn. 37, tab. 17 A. Hoima, Unyoro; Bagshawe, 947.

The specimens now to hand permit of a fuller diagnosis than has hitherto been the case. Thus the roots, frequently ₃ cm. in width, expand distally into tubers which may reach ₄₅ cm. in length, and in breadth ₀₆-₀₉ cm. Interesting, too, are the barren leaf-bearing shoots, of which the slender stem—about ₁₀ cm. long—is very sparsely provided with leaf-scales similar to those of the flowering shoots. The leaves themselves, crowded at the end of the stem, are sessile, oblancoelate, very obtuse, callous-toothletted at the margin, scabridulous-puberulous on the upper face and grey
Aspilia polycephala, sp. nov. Herba erecta, ramosa, foliosa, caulifoliis pilis hispidis patulis copiose onustis, foliis sessilibus subsessilibusve lineari-lanceolatis raro lanceolatis obtusis basi angustatis, capitulis parvis breviter pedunculatis pauciflosculosis ad apicem ramulorum brevium in glomerulos paucicephalos a folis ultimis involucratis congestis, involucri angustae campanulares 2-serialis phyllis exterioribus oblongis obtusis sursum membranaceis hispidis quam interiora oblonga vel anguste oblongo-ovata obtusa vel obtusissima omnino vel fere omnino cartilaginea et puberula vel apice hispidula paullo longioribus, ligulis 5 ex involucro eminentibus rotundato-obcordatis albis, acheniis oblongo-turbinatis appresse sericeo-pilosis, pappo cupulari fimbriato additis setis dubius brevibus inter se inequilibris.

Hab. Fort Portal, Toro; Bagshaue, 993.

Planta saltam semimetralis. Caulis robustus, desorum alte sulcatus nee non glabrescens, solum versus 0·7 crn. diam. Folia modice 3·5-5·0 cm. long. raro 6-0 cm.), 0·6-1·4 cm. lat. (rarius adusque 2·0 vel etiam 2·5 cm.), in sicco viridia, integra vel obscure denticulata, margine ciliata, firme membranacea. Glomeruli circa 3-4-cephali, summum 2·0 cm. diam. Pedunculi circa 0·2 cm. long. Capitula circa 1·0 cm. long. Involucri phylla exteriora 0·75 cm., interiora 0·6 cm. long. Receptaculi paleae 0·8 cm. long. Ligula 0·6-0·15 cm., 5-nervose, nervulis laxe reticulatis percursae. Disci corollarum tubus 0·4 cm. long., dimidio inf. attenuatus, 0·02 cm. diam. superne 0·1 cm. diam. vel paululum ultra. Achenia fusca, 0·45 cm. long.; pappo cupula 0·05 cm., arista 0·1-0·15 cm. long.

Differs from A. helianthoides Oliv. & Hiern, which also has white ligules, in the narrower sessile or subsessile leaves, the congested heads, somewhat different involucres, only five ray-florets, &c.

Aspilia Eylesii, sp. n. Caulibus et rhizomate robusto erectis sparsim ramosis graciliibus seco-guidis, foliis sessilibus lanceolatis vel lanceolato-ovatis utrinque obtusis basi trinervibus margine inaequaliter dentatis vel crenulato-denticulatis firme membranaceis utrinque seco-guidis, capitulis submediocribus terminalibus solitariis vel binis pedunculis seco-guidiscis folia magnopere superantibus fultis, involucri abbreviati 2-serialis phyllis ovato-oblongis acutiusculis appresse scaberrimis inferne cartilagineis superne membranaceis, receptaculi paleis apice subito acutatis, ligulis circa 12 involucrum paullo excedentibus, pappo brevissimo lacerato-eiliatedo exaristato.

Hab. Sebakwe; F. Eyles, 161.

Planta summum 30 cm. alt. Folia 3·5-5·0 cm. long., 1·6-2·0 cm. lat.; petioli lati, seco-guidrimi, 0·2-0·3 cm. long. Pedunculi
5·0-8·0 cm. long., erecti. Capitula circa 2·0 cm. diam. Involucri phylla 0·5 × 0·2 cm. Receptaei paleae 0·6 cm. long., dorso marginique ciliolate. Ligule vivide aurantiaceae, obovato-oblongae, 2-3-dentatae, 0·8 cm. long. Disci corollae complures, vix 0·5 cm. long. Acaenii valde immatura 0·15 cm. long., glabra.

Near A. zombensis Baker, which has similar foliage, but involucres of longer and relatively narrower leaves, different ligules, &c.

Berkheya Adlami Hook. fil. in Bot. Mag. sub t. 7514.

Hab. Sebakwe, in open moist vlei; F. Eyles, 118.

New to Rhodesia, the type having been raised from seeds sent from Johannesburg. There is in the British Museum a specimen from Balawayo of what is evidently this species (Rand, 149), but in so early a state that no attempt was made to determine it. An intermediate home for the plant is Pietersburg, Transvaal, where it occurs in grassy plains, according to the ticket accompanying a specimen kindly communicated to the Museum recently by Dr. Bolus (herb. no. 11096).

**Campanulaceæ.**


Fort Portal, Toro, at 5000 ft.; Bagshawe, 987.

This plant was also collected by Mr. Scott Elliott (no. 7594) on Ruwenzori, at 5800 ft.

**Cyphia mazoensis**, sp. nov. Caule e tubere ovoideo enato volubili gracili inferne squamis parvulis sparsis exemptis nudo superne bene folioso glabro, foliis lanceolatis apice mucronatis basi in petiolum brevem sed distinctum breviter angustatis margine serrulatibus membranaceis glabris, floribus in racemo terminali elongato volubili laxifloro dispositis, bracteis anguste linearibus pedicellos subaequantibus, calycis subhemisphaericis puberuli lobis quam corolla moltro brevioribus inter se aliquanto inaequalibus linearibus vel angusti-linearis-pothulatis obtusiusculis, corollae extus puberulis petalis ima basi connatis inferne liberis superne connatis lobis oblongis obtusius antici quam reliqui paullo longioribus, filamentis petalis brevissime adnatis, ovario semisupero, stylo crassiusculo inferne dilatato.

Hab. Mazoe, alt. 4700-4900 ft.; F. Eyles, 231.

Tuber 3·0 × 1·5 cm. Caulis basis squamuligera circa 7·0 cm. long.; squamule 0·1-0·2 cm. long. Folia modice 6·0-7·0 cm. long., 1·5-2·0 cm. lat., in sicco brunnescentes, subus pallentia, serraturis apice callosis; petioli circa 0·5 cm. long. Racemus circa 10 cm. long. Bracteae ± 0·4 cm., pedicelli 0·5-0·6 cm. long. Flores rubro-punicei. Calyces tubus 0·2 × 0·22 cm.; lobi 0·4-0·5 cm. long. Corollae "tubus" 0·7 cm. long., basi 0·33 cm. superne 0·25 cm. diam.; limbi lobi antici 0·7 cm., postici 0·6 cm. long., omnes 0·2 cm. lat. Filamenta 0·85 cm., anthera 0·175 cm., stylus 0·3 cm., stigma 0·12 cm. long.

In the flower this is much like *C. glandulifera* Hochst., but the foliage is entirely different.
Under the above number is sent a second specimen with fibrous root, somewhat longer and narrower leaves, and flowers a little smaller. As there seems no essential difference between the two specimens, this is probably a first year's plant.

**Plumbaginaceae.**

Near mouth of Mpanga, Toro; Bagshawe, 1187.

**Sapotaceae.**

*Sideroxylon* (§ *Eusideroxylon*) *oblancoelatum*, sp. nov.  
Arbuscule ramulis sat validis crebro foliosis cito glabris, folis oblancoelatis obtusissimis basi in petiolum distinctum gradatim extenuatis pag. sup. glabris languide nitidulis altrinsecus minute albidë furfuraceo-pubescentibus costis secundariis pluribus neemon tenuibus, floribus sepiissime axillaribus fasciculatis, pedicellis quam calyx brevioribus appresse sericeo-pubescentibus, calycis appresse sericeo-pubescentis lobis inferne connatis ovatis obtusis, corollë tubo quam lobi ovato-oblongi obtusi paullo breviori, filamentis corollë faucebus insertis filiformibus antheras oblongo-cordatas apiëe obtasas paullo excedentibus, staminodii 5 parvulis lanceolatiis acuminatis, ovario ovoideo-oblongo 5-loculo appresse villosulo in stylum brevem erassum villosulum exeunte, bacca —.

Hab. Durro Forest, Toro; Bagshawe, 1087.

Folia sepiissime 100-170 × 3.5-4.5 cm.; costë secundarie utrinsecus circa 20, patulæ, juxta marginem areatae, pag. sup. impressæ, pag. inf. parum eminentes; costulæ difficile aspectabiles; petioli 0.8-2.0 cm. long. Pedicelli circa 0.15 cm. long. Flores viridescentes. Calyx hunnecatus campanularis, in toto 0.25 cm. long.; lobi 0.2 cm. long. Corollæ tubus 0.15 cm. long.; lobi 0.2 × 0.14 cm. Filamenta 0.2 cm long, vel paululumultra; antheræ 0.15 cm. long. Staminodia circa 0.065 cm. long. Ovarium 0.225 cm., stylus 0.2 cm. long.

Distinguished by the oblancoelate leaves with their peculiar clothing beneath, the obtuse anthers, small acuminate staminodes, &c.

**Ebenaceae.**

*Euclea Eylesii* Hiern, sp. nov.  
Frutex pumilus plurimum glaber dioicus, ramulis gracilibus pallide viridibus subglanscentibus minute glanduliferis foliosis, folis linearibus apicis acutis vel subobtusis apiculatis basim versus angustatis subsessilibus vel breviter petiolantibus rectis vel subfalcatis sepiissime oppositis nonnuquam suboppositis alternisve patulis integris coriaceis glabris glandulis sessilibus parvis minio-rubris utrinque aspersis 3-5 cm. longis 2-4 mm. latis; floribus femineis tetrameris 3 mm. longis 2.5 mm. latis in cymlis axillaribus sepe oppositi plerunque trifloris ± 6 mm. longis bracteolatis aggregatis, pedunculo communi 8-5 mm. longo, pedicellis 1-2 mm. longis lateralibus patulis, bracteolis subulatis circiter 1-5-2 mm. longis caducis, calyce sub-hemisphaerico breviter lobato pallide viridi coriaceo glabro extus minute glandulifero 1 mm. longo 1-5 mm. lato lobi subobtusis vel
subapiculatis, corolla campanulata vel pouliformi ochroleuca
2.5 mm. longa 2.5 mm. lata glabra vel setulis paucis extra ducta
profunde quadrifida segmentis obovato-rotundis sinistrose (ut
desuper visis) contortis 2 mm. longis 2 mm. latis, staminodis 0,
pistillo 2 mm. longo, ovario ovoideo-globoso minute glanduloso-
tomentello cum simul setis erectis crassis albidis hispido 1 mm.
longo 1 mm. lato 4-loculo, stylis 2 erectis contiguis glabris carnosis
apice lobulatis 1 mm. longis, stigmatibus marginalibus, ovulis
solitariis.

Hab. Sebakwe, Mashonaland; F. Eyles, 44.
The male plant and the fruits of the female plant are at present
unknown.
The species in general appearance resembles E. linearis Zeyh.,
but it is readily distinguished from it by the deeper lobing of the
corolla.—W. P. H.

Toro, forest near mouth of Mpanga; Bagshawe, 1172.
I can see no difference between this and the recently published
E. latidens Stapf.

OLEACEÆ.

Jasminum abyssinicum DC. Prod. viii. 311.
Hoima Road, Entebbe; Bagshawe, 806.
Specimens belonging to two distinct species have been included
under this name. The two are easily distinguishable by the
corollas, which, in the one case (Abyssinia, Salt), are a full inch in
length, while in the other (Schimper, 169 and 915; Volkens, 770,
and others) they reach only half-an-inch or very little more.

J. abyssinicum R. Br. in Salt, Abyssinia App. lxiii. is a nomen
 nudum. The type specimen, which is in the National Herbarium,
seems to Mr. Britten and myself not different from J. mauritianum
Bojer, already known from various parts of the Nile land botanical
province of Africa. Since no description of the true J. abyssinicum
was issued previously to the Prodromus citation given above, that
name must stand upon the authority of A. P. de Candolle.

Schrebera mazoensis, sp. nov. Arbor ramosa ramiulis ultimis
pedunculis pedicellis calycibusque dense lutescenti-griseo-pubescent-
tibus, foliis imparipinnatis bifugis foliolis parvulis obovati-obovati
obtusissimis basi cuneatim angustatissimis utrinque puberulis
membranaeeo-coriaceis rhachi angustissimae alatae puberula in nodis
griseo-pubescentes, floribus in cymis brevibus semel vel bis tricho-
tomis ramulos coronantibus folia aquantibus vel superantibus
digestis, pedicellis calyce multo brevioribus, bracteis parvulis ob-
longis obtusis dense pubescentibus, calyce parvo turbinato-cam-
panulato breviter necnon inaequaliter dentato, corollae tubo cylindrico
glabro calycem 4-plo excedente lobis tubum semiaquantibus late
obovatis apice retusis margine apicem versus crenulatis intus prope
fauce fusceobellatis, capsula ——

Hab. Mazoe; F. Eyles, 202.
“Tree 20-40 ft.” sec. cl. detectorcm. Foliorum rhachis 1.0-
3.5 cm. long., pars proximalis basi leviter dilatata ibique circa
0·15 cm. lat., alibi 0·1 cm. vel minus; foliola modice 3·0-3·5 cm. long., sub apice ± 1·5 cm. lat., exstant minora equidem 2·0 x 0·8 cm.; costa secundaria utrinque circa 6, costulae prominulae, eleganter reticulatae. Cymæ 3·0-4·0 cm. diam. Flores albi vel dilute puniciei. Calycis tubus 0·25 cm. long., 0·28 cm. lat. Corollæ tubus 1·0 cm. long., humectatus basi 0·22 cm. faucibus 0·35 cm. lat.; lobi 0·5-0·6 cm. long. Antheræ subincunæae. Ovarium apice puberulum; stylus glaber, sursum dilatatus, 1·15 cm. long.

Known from its allies among other points by the small leaflets with only the slightest trace of a wing to the rhachis of the leaf, and the extremely small calyces.

**Apocynæ.**


Forest near mouth of Mpanga, Toro; *Bagshawe,* 1184.

Flowers yellow in bud, white when open, fragrant. Fruit light green with golden spots.

**Pleiocarpa Bagshawei**, sp. nov. Frutex scandens, glaber, foliis oppositis vel 3-4-nis lanceolato-oblongis apice cuspisatis ipso obtusis basi in petiolum brevem breviter angustatis papyraceis costis secundariis utrinque plurimis patentibus pag. sup. olivacea facile pag. inf. dilute viridi difficiliter aspectabilibus, cymis axilariis sessilibus paucifloris, calycis lobis ovato-oblongis obtusis vel leviter emarginatis, corollæ tubo quam calyx fere 4-plo longiore faucibus parum dilatato limbi lobis obovatis obtusissimis tubum vix semi-aquantiis, filamentis paullo infra faucis insertis antheris oblongis loculis basi obtusis, ovario ovoideo glabro e carpellis 2 inter se liberis sistentes, ovulis quое in loculo 2.

Hab. Durro Forest, Toro; *Bagshawe,* 1086.

Foliorum limbus margin levanter revolutus, 10·0-12·0 cm. long., 3·5-4·0 cm. lat.; costa centralis fac. sup. impressa fac. inf. valde eminens; petioli 0·5-1·0 cm. long., crassissculi, supra canaliculati. Cymæ circa 1·5 cm. diam. Flores albi. Calyx totus 0·25 cm. long.; lobi 0·17 × 0·12 cm., crassissculi. Corolla tota 1·3 cm. long.; tubus intus sursum pilosis, 0·9 cm. long., medio 0·125 cm. superne 0·175 cm. lat.; lobi 0·4 cm. long., 0·3 cm. lat. Ovarium 0·12 cm. long. Stylus glaber, 0·3 cm., stigma 0·06 cm. long.

According to Dr. Stapf's clavis (Fl. Trop. Afr. iv. sect. i. 97), this must be inserted next to *P. bicarpellata* Stapf, but the leaves of Dr. Bagshawe's plant are somewhat different in shape, and often ternate or quaternate, the calyx-lobes are larger and broader, the corolla-tube broader and the lobes also broader and shorter. It might easily be mistaken at a first view for *P. Welwitschii* Stapf, a species which, however, on account of its short corollas with small lobes, is placed in another part of the genus.


Hab. Mpanga Forest, Toro; *Bagshawe,* 999.

Dr. Stapf himself kindly named for me this recently published species. The type specimen was found in Western Ankole.

*Alabastra diversa*
Conopharyngia Holstii Stapf in Fl. Trop. Afr. iv. sect. i. 146.
Toro, in swampy ground near Isunga; Bagshawe, 1079.
A tree with white flowers.
The upper of the two pairs of leaves on the specimen are those of typical C. Holstii; the lower pair are larger and broader, and approach in this character C. pachysiphon Stapf. With all the material now to hand there seems good reason to unite these two into one, of which C. Holstii is the eastern and C. pachysiphon the western form. It is not without interest to note that the Uganda specimens, intermediate as they are in locality, are also intermediate between the extreme forms.
Hab. Mpanga Forest, Toro; Bagshawe, 1011.

Asclepiadeae.
Mpanga River, Toro; Bagshawe, 1060.
The type specimen was gathered by Dr. Bagshawe at Entebbe.
Raphionacme Bagshawei, sp. nov. Summum spathulamea caule et candida longe tuberoso crasso erecto gracili primo minute pubescente deininde glabro, foliiis subsessilibus oblongis obtusis basi breviter angustatis utrinsecus in nervis puberulis margine albo-ciliolatis, cymis axillaribus sessilibus laxis paucifloris, pedicellis Flores excedentibus gracilibus ut calyx et corolla griseo-puberulis, calycis lobis abbreviatis lanceolatis acutis, corollae mediocris tubo medio levissime dilatato calyci longiore limbi lobis oblongis obtusis max patentibus demum recurvis, corone phyllis quadratis apice cuspidulatis inde in appendicem filiformem elongatum exuentibus, filamentis corone phyllis insertis appendicem antheris magnis con-niventibus late ovatis obtusis, stigmate incrassato late breviterque conoideo, folliculo —

Hab. Unyoro, above Kibero on Lake Albert; Bagshawe, 910.
Caudex summum 18-0 cm. long., hujus pars infera 10-0 cm. metiens in tuber circa 1-5 cm. diam. dilatata. Folia 2-0-3-0 cm. long., 0-5-0-7 cm. raro 1-0 cm. lat., in sicco olivacea, pag. sup. microscopice lepidota. Pedicelli sub floribus profecto evolutis seppissime 1-0-2-5 cm. long. Flores albi viola tincti. Calyx 0-2 cm. long. Corollae tubus 0-3 cm. long., 0-25 cm. diam.; lobi aegre 1-0 cm. long. Corone phylilarum pars quadrata 0-15 cm. long., cuspis 0-08 cm., appendix filiformis 0-7 cm. Filamenta partis quadratae apici inserta, 0-2 cm. long.; antherae 0-15 cm. long. et lat. Styli basis nuda attenuata, 0-3 cm. long., gynostegium 0-25 cm.

Mr. N. E. Brown, who kindly looked at this rather remarkable plant for me, considers it to be nearest R. splendens Schlechter, although the differences between the two are many and considerable. The most noteworthy feature about R. Bagshawei is that the filaments are attached to the coronal leaves for some little distance, so that they do not leave them till quite at the top of their quadrate lower portion, instead of arising from the tube of the corolla or from the base of the coronal leaf.
Ceropogia albertina, sp. nov. Plantas glabra caule volubili
in crescendo laxe foliata, foliis breviperiatis late ovatis basi cordatis
apice brevissimo ovoidalatis; crassiusculis saltem in suo margine
leviter undulatis, cymis axillarisibus pedunculatis paniculato-
(circa 5) floribus, pedunculis crassiusculis folia aquanilis vel
subaquantium, floribus medioirobis petaloilatis glabris fusco-
rubris, calycis alae
partiti lobis lanceolatis acuminatis, corolla prope basim curvas
sursum intundubilis ad ½ lobata subo medio paulo constricto
invis pilosula lobis linear-lanceolatis apice connatis, corona phyllis
exterioribus inferne connatis obovatis et phylla interiora anguste
ligulata et elongata gynostegium superanilis, pollinis subsphero-

A. demestica Schlecht. in Jour. Bot. 1895, 284.


Wiss. 1894, 64.


North of Kafu River, Uganda, and East Toro: Baghahme, 961
and 1105.
roideis interne marginatis caudiculis brevibus latis glandula dola-
briformi pollinis breviore, stigmate plano.
Hab. Butiaba Plain, west shore of Lake Albert, alt. 2200 ft.;
Bagshawe, 848.
Folia circa 2·0 × 0·15 cm., glandulis pellucidis cereberrimis
donata, costæ secundariae utrinque 4, tenuissime ut costulae venustæ
reticulatae sub lente valde perspicue; petioli 0·5 cm. long., erassi-
useali. Pedunculi 1·5–2·0 cm. long., pedicelli 0·5–0·7 cm. Calycis
lobi 0·25 cm. long.; glandulae interstitiales deltoidæ, integrae vel
2·3-lobulate, 0·05 cm. long. Corolla tota humectata 2·3 cm. (sica
equidem 2·0 cm.), lobi 0·75 cm. long.; tubus inferne et superne
0·5 cm. diam., medio 0·4 cm. Coróne exterioris pars connata
0·1 cm. long., ejus lobi 0·12 cm.; phylla interiora 0·13 cm. long.
Pollinia 0·03 long. Folliculi —.
A very well-marked species, in habit somewhat like C. distincta
N.E. Br., but with much smaller leaves and quite different corollas.

LOGANIACEÆ.

Strychnos (§ Intermedæ) myrcioides, sp. nov. Frutex
ecirrhosus inermis crebro ramosus glaber ramulis subintrinsicatis
græcilibus ad nodos aliquanto tumidis bene foliosis, foliis parvis
oblongis vel oblongo-oblancoelatis obtusis apice ipso mucerolutulis-
basi in petiolum brevem cuneatim coartatis coriaceis in siccō
utrinque sat petelo viridibus fac. sup. nitidulis basi (costa inframar-
ginali paullo minus perspicua parum arcuata neglecta) 3-nervibus
costis reliquis secundariis utrinque 7–12 sappissime ad angulum
fere rectum costae centrali applicitis costitis costulisque (his laxe
reticulatis) utrinsecus eminentibus, floribus in cymis axillarisbus
(raro terminalibus) brevibus a basi furcatis corymbo-paniculatis
haud congestis quam folia brevioribus minute pubescentibus dis-
positis, pedicellis subnullis, bracteis parvalvibus lanceolatis acutis,
floribus 5-meris, calycis lobis quam corolla tubus paullo brevioribus
rotundato-ovatis obtusissimis margine ciliolatis, corolle ad ½ divise
tubo cylindrico intus faucibus pilosis lobis triangulari-lanceolatis
obtuse acutis, ovario septo fere evanido-loculari, bacca cruda parva
subspatheroidea paeusperma.
Hab. Butiaba Plain, east shore of Lake Albert; Bagshawe, 841.
Foliorum limbus 2·0 (raro 1·5)–4·0 × 1·0–2·0 cm.; petioli circa
0·2 cm. long., subtus tumidi et albi. Cymæ summum 1·0 × 1·5 cm.
Bractæ ± 0·1 cm. long. Flores galbani. Calyx 0·15 cm. long.,
fere 0·2 cm. lat. Corolla tota 0·4 cm. long.; tubus 0·2 cm. long.
et totidem lat.; lobi 0·2 × 0·075–0·1 cm. Filamenta 0·035 cm.
long.; anthæræ subexsertæ, 0·06 cm. long. Ovarium ovoideum,
ægere 0·1 cm. long. Bacca sica 0·8 × 0·7 cm., glabra, subnitida,
in siccō minute rugulata.
The inframarginal pair of nerves are often almost or quite as
strongly pronounced as the other basal pair. They run straight
for a short distance—less than a centimetre—then they repeatedly
arch, running all the while almost upon the edge of the leaf. Not
far from the leaf's apex they become indistinguishable. The small
branches they receive, all the way up, from the other pair are numerous and very prominent.

In foliage this is much like *S. Atherstonei* Harv., but the leaves are usually somewhat larger and more conspicuously nerved; also the inframarginal nerves are much stronger. The flowers of *S. Atherstonei*, however, are quite different.

(To be continued.)

---

**SOME SPANISH AND BALEARIC PLANTS.**

**By Cedric Bucknall, Mus. Bac. Oxon.**

The following is a list of the more noteworthy plants collected by Mr. J. W. White and myself in the Balearic Islands, between April 23rd and May 5th, 1903, and between Aug. 3rd and 17th, 1904; and in Spain, by myself, between April 13th and 28th, 1904, and between Aug. 24th and Sept. 6th, 1905.

On these occasions we gathered a large proportion of the endemic Balearic plants, besides a considerable number of those common to the Mediterranean region. On our return from Majorca to Barcelona in August, 1904, we spent a short time on Montserrat, which I had also visited in the preceding spring, on each occasion finding some of the rarer plants of that beautiful and interesting mountain. We are much indebted to the late Señor J. J. Rodriguez, of Mahon, who has contributed so much to our knowledge of Minorcan plants, and has discovered so many rare endemic species, for introducing us to several gentlemen of that town who are interested in botany, amongst them to Señor A. Pons, without whose kind assistance, on both our visits, we should have been unable, in the short time at our disposal, to reach the stations of several of the rarer and more inaccessible plants.

Our thanks are also due to Mr. Clarence Bicknell, of Bordighera, for his kind and valuable assistance in planning our tours, and for the loan of books and maps.

To avoid repetition I give a list of the localities visited. In Minorca: The neighbourhood of Mahon and Villacarlos, the Cala Mesquita, the Albufera, the Isla Colom, the Barrancos of Algendar and la Val. In Majorca: Porto Pi and Torre den Pau, near Palma; Soller Port, Conma de Mameliouada, Barranco de Soller, the Val de Ternellas and Arient near Pollenza, the Monastery of Lluch, and the mountain route through the Gorg Blau to Soller, and Miramar. In Spain I visited Pozuelo, near Madrid; Guadalajara, Aranjuez, Alicante, Elche, the coast near Valencia and the valley of the Turia, El Desierto de las Palmas and Benicasim, near Castellon; Oropesa, Tarragona, Barcelona, and Montserrat.

The species which I believe to be unrecorded for the Balearic Islands are distinguished by an asterisk, and those which are peculiar to those islands, or to the Iberian Peninsula, by the sign †;
in the case of plants which are also found in other parts of the Mediterranean region, the names of the countries or islands are added in brackets.

Ranunculus macrophyllus Desf. Near the Barranco de Algendar. A fine plant with large handsome flowers. According to Nyman it ranks as a subspecies of R. palustris L. The Sicilian plant (R. heucherifolius Presl) has smaller flowers and is less hairy. (Spain.)

†Helleborus lividus Ait. Comuna de Mameliouda. Very different in appearance from the Corsican plant, H. corsicus W.

Delphinium pictum Willd. (D. Requieni DC.). Hillside on the way from Pollenca to Ariant. (Iles d'Hyères, &c.)

Paonia corallina Retz, var. †Cambessedesii Willk. Barranco de Algendar.

†Malcomia patula DC. Pozuelo. The plants from this locality were found along the course of a small stream which flows from Pozuelo to the river Manzanares.

†Brassica balearica Pers. On rocks near the Col de Lofra, above the Barranco de Soller.—†B. larigata Lag. Pozuelo.

†Diplotaxis virgata Cav. Bank of the Tagus near Aranjuez.

†Alyssum granatense Boiss. & Reut. Low hills near the Manzanares, Madrid.

Carrichtera Vella DC. Cultivated land, Porto Pi, Mr. J. W. White. (Sicily, Greece, &c.)

†Tropstrum Líneanum Boiss. & Reut. Between Palador and Palma, J. W. W. (France, Spain.)

†Iberis subvelutina DC. Dry hills, Aranjuez.

†Lepidium sublatum L. Aranjuez.—†L. Carrerasii Rodr. Mahon.


†Viola Jaubertia Mar. & Vig. On rocks in the Gorg Blau. A remarkable species, with thick leathery leaves like those of the ivy. —V. stolonifera Rodr. Barranco de Algendar. Allied to V. odorata, but larger in all its parts, and with very long stolons.—†V. Wilkommii R. On rocks, Montserrat.

†Frankenia Reuteri Boiss. Aranjuez.

†Silene velentina Pourr. (S. mollissima S. & S.) Gorg Blau. (Corsica.)

†Gypsophila Struthium L. Aranjuez. Very abundant along the side of the railway.

†Dianthus Broteri Boiss. Rocky hills, Alicante.

†Cerastium dichotomum L. Cultivated land between Pozuelo and Madrid.

Spergularia campestre Willk. Villacarlos and Mahon. (Spain, Greece.)

†Malva minoricensis Rodr. (Lavatera minoricensis Camb.). Cala Mesquita.

†Hypericum Cambessedesii Coss. On the dry bed of the Torrente Malluch, Lluch, where it follows the course of the stream for many


† *Khamnus balearicus* Camb. Val de Ternellas.—† *R. lycioides* L. Cabo de Salou, near Tarragona.

† *Retama sphærocarpa* Boiss. Between Pozuelo and Madrid.

† *Ononis hispanica* L. fils. Rocky hills, Alicante.—*O. crispa* L. Near Mahon. (Spain.)

† *Lotus tetrphyllus* L. fils. Barranco de Algendar.

† *Hippocrepis balearica* Jacq. Miramar.

† *Astragalus chloroceanus* Boiss. & Reut. Road to Kals, Tarragona.

† *A. Poterium* Vahl. Near Mahon, Val de Ternellas.

*Vicia lanceformis* Lange, Fl. Hisp. No. 3605. Val de Ternellas, April, 1903. The only stem which was gathered is 4 decm. long, with leaves 7-5 cm. long, all having five pairs of narrowly linear-lanceolate leaflets attaining 3-5 cm. in length, which are gradually attenuated to an acute point without the slightest tendency to become truncate or retuse; stipules semisagittate, without teeth; pods 3-5 cm. long, with a few scattered hairs. Lange's plant differs in the lower leaves having one pair of leaflets and the upper ones four pairs; in the stipules having two teeth at the base, and in the substance of the leaves being "almost pellucid." It appears to be a little known plant, marked as a doubtful species by Willkomm, and united by Nyman to *V. augustifolia*, from which it differs in the long, equally attenuated leaflets, and in the calyx-teeth exceeding the tube.—† *V. bifoliata* Rodr. Cala Mesquita.

*Rubus casius* L. In the hedge of a lane leading to a hamlet between Soller and the port, May, 1903.

*Podagrica Colocynthis* L. On the sea-coast, Benicasim. (Granada, Murcia, Greece.)

*Paronychia serpy/ligofolia* DC. Montserrat. (France, N. Italy.)

*Mesembryanethemum crystal/ium* L. Cala Figuera, Mahon.

(Spain, Italy, &c.)—*M. nodiflorum* L. Cala Figuera; Mahon. (France, Spain, &c.)

† *Saxifraga catalaunica* Boiss. & Reut. Montserrat.

† *Guillonea scabra* Coss. Near the Monastery, El Desierto de las Palmas.

† *Pastinaca lucida* L. (Camb.). Couma de Mameliouda, Barranco la Val. "Species pulehra, spectabilis, egregia." (Nyman.) The Corsican plant is *P. latifolia* DC.

*Kundmannia sieula* DC. Brignolia pastinacea L. Bert. Miramar. (Bœotia, Corsica, Sicily, &c.)

*Bu/obocastanum incrasatum* Lge. Near Palma, J. W. W. (Bœotia.)

† *Pimpinella Bicknelli* Briquet. Arient, near Pollenca. We were guided to the only known station of this distinct and interesting species by Raphael Muraghés, of Pollenca, who assured us that we were the only botanists who had visited the spot since its discovery by Mr. Clarence Bicknell.
†Bupleurum Barelloii Coss. On a bank near the top of the Barranco de Soller.—†B. angulosum L. (B. pyrenaum Gou.) Above the Monastery, Montserrat. †B. fruticosum L. and the fine †B. fruticosum L. are also abundant on this mountain.

Monteiera Pericylmenum var. †hispanica Boiss. & Reut. Pozuelo.

Rubia peregrina var. †balearica Willk. Val de Ternellas.

†Galium fruticosum Cav. Montserrat.

Centranthus orbiculatus Dufr. Barranco de Soller. A very distinct-looking plant, but united to C. 'alcitrapa by Nyman.

†Cephalaria balearica Coss. Barranco de Soller.

†Senecio Rodrigaei Willk. Cala Mesquita.

Artemisia herba-alba Asso. Aranjuez. (France.)

†Heuchera alpina Camb. Books at the Col de Lofra, above the Barranco de Soller.

Bellium bellidioides L. On the coast near Mahon. (Corsica, Sardinia.)

†Pulicaria hispanica Boiss. Pozuelo.—P. dysenterica var. hispanica Willk. (P. uliginosa Stev. ?) Pozuelo. (Greece, Turkey, &c.)

†Centauria dracunculiolia Dufr. Marshy ground near the sea, Valencia.


†Hieracium Lychnitis Sch. Montserrat.


†Crepis montana Willk. Val den March, near Pollenca.

Zollkofeia resedifolia Coss. Alicante. (Sicily.)

Campanula speciosa Pourr. Montserrat. (France.)

Ambrosia maritima L. "Huerta de Valencia," Italy, Greece.)


†Digitalis dubia Rodr. Val de Ternellas.

†Antirrhinum Barrelieri Bor. El Desierto de las Palmas, Castellon.

†Linaria filifolia Lag. Pozuelo.

Sibthorpië africana L'Hér. Barranco de Algendar. (Crete, &c.)

†Odontites longiflora Vahl. Low hills, Aranjuez.

†Ceratoclyx macrolepis Coss. Cabo de Salon, Tarragona.


Lavandula dentata L. Belver, Palma. (Spain, Sicily ?)

†Sentellaria Vigneixii Mar. (S. balearica Barc.) Couma de Mameliouda, Soller.

†Micromeria marifolia Benth. On rocks, El Desierto de las Palmas.—M. filiformis Benth. Val de Ternellas, Barranco de
Soller. (Corsica.) — †M. Rodriguezi F. & J. Barranco de Algendarr.
†Lysimachia minoricensis Rodr. Barranco la Val. The only known locality.
†Anagallis linifolia L. Pozuelo.
†Cyclamen balearicum Willk. Abundant in many localities.
Staticia serotina Rehb. (S. Limonium var. macroclada Boiss.) Benicasim. (France, Italy.) — S. ovalifolia Poir. Coast between Mahon and Villacarlos. In the palm-groves at Elche, near Alicante. There are specimens of the Mahon plant in the herbaria at Kew and South Kensington, collected by Porta and Rigo, named S. lychnidiifolia Gir., but they differ greatly from that species as described, and from specimens gathered at Gruissan, France, in company with Mr. C. E. Salmon, and so named by him. The Mahon plant attains 4 decm. in height, and has broadly rhomboid-ovate leaves rather suddenly contracted into a winged petiole, 5 cm. long, and an open panicle with long branches and short spikes. The Elche plant attains 6 decm. or more, with leaves of the same general outline, but much longer in proportion to the breadth, reaching 12 cm. long. In other respects the two plants are so similar that I have little hesitation in naming them both as above.
†Atriplex glauca L. (Obione glauca Moy.) On the seashore, Alicante.
Emex spinosa Camp. Cultivated ground, Palma. (Calabria, Greece, &c.)
†Runex papilaris Boiss. & Reut. Pozuelo.
†Daphne vellaeoides Rodr. Isla Colom, Minorca.
Buxus balearica Lam. Barranco de Soller. (Granada, Sardinia.)


† Euphorbia polygalafolia Boiss. & Reut. Roadside on the way to Kals from Tarragona.—† E. flavopurpurea Willk. El Fuente den Simon, Mahon. — † E. medicaginis Boiss. Abundant in cultivated ground and on the roadside between Palma and Soller.—† E. imbricata Vahl. var. β. angustifolia Willk. Illus. ii. t. clxvi. f. ii. Roadside near Pollenca. Soller Port. Abundant in cultivated ground at Lluch.—† E. imbricata Vahl. var. γ. parvifolia Willk. l. c., f. iii. Cala Mesquita. These two varieties with var. a. latifolia Willk. and E. Pithyusa L. constitute a group of forms differing greatly in habit, but closely related in structure. In all the forms the involucral glands are semilunate, with almost obsolete cusp; the seeds are faintly rugose, mottled, and, like the surface of the entire plant, are minutely papillose from the projection of the cells of the epidermis. On the upper surface of the leaves the papille are hemispherical, and on the under surface and the younger parts of the stem they are elongated to two or three times their diameter, and are cylindrical and obtuse, giving a glaucous, minutely shagreened appearance to the plant. The leaves are coriaceous and rigid, with a strong tendency to become involute, but differ much in form and size, and in the character of the margin, which varies from entire to erose or strongly dentate. The forms may be arranged as follows:—

A. Plant erect, attaining 30-40 cm., with long branches and loosely imbricated leaves:—1. Leaves obcuneate oblong, 25-30 mm. × 10-12 mm., closely or obsoletely serrate in the upper half = E. imbricata var. a. latifolia Willk. 2. Leaves lanceolate or obovate-lanceolate, closely serrulate or subentire in the upper half, 12-20 mm. × 3-5 mm. = var. β. angustifolia Willk.

B. Plant erect or decumbent, 10-30 cm., with short crowded branches and densely imbricated leaves:—1. Stem and branches, erect, stout; leaves lanceolate, acute, entire, 15 mm. × 4-5 mm. = E. Pithyusa L. 2. Stem decumbent or ascending, slender, much branched from the base; leaves obovate-oblong or obcuneate, obtuse or truncate, mucronate, strongly serrate-dentate at the apex = var. γ. parvifolia Willk.

A plant gathered by Mr. Clarence Bicknell as E. Pithyusa on the coast at Caleatoggio, Corsica, has elliptic, acuminate, erose-dentate, flat leaves, 15 mm. × 7 mm., which are of a thinner texture, and show the veins; it would be better placed near E. imbricata var. latifolia, as in E. Pithyusa the leaves appear to be always entire, with involute margins. A specimen of E. Pithyusa var. procera G. & G. (E. bonifacensis Req.) in the herbarium of Mr. J. W. White, from Bonifacio, Sardinia, has acute entire leaves, 21 mm. × 5 mm., and resembles E. imbricata var. lanceolata. Grenier and Godron’s description of this variety is: “Upper cauline leaves oval

* In E. niceensis also the leaves are papillose, but the papille are conical and acute, and give the plant a softer, more velvety appearance.

† The descriptions and measurement of the leaves are partly taken from Willkom. Illus. ii, p. 129.
or lanceolate; plant higher, with stronger and straighter stems." Lastly, specimens of *E. Pithyusa*, gathered by Mr. J. W. White and myself on the coast at S. Maxime, near Fréjus, and at Port Vendres, have several stout decumbent or ascending stems from the same root, which bear umbels of stout branches with densely imbricate, acute, entire leaves, 15 mm. × 4.5 mm. Several weak plants of this which were gathered in April might be easily taken for *E. imbricata* var. *parvifolia.*—*E. Chamaesyce* L. Lluch. (France, Spain, &c.)—*E. prostrata* Ait. (*E. perforata* Guss.). Between paving-stones in the streets of Villacarlos, where it was pointed out to us by Señor J. Andreu Gahona. It is recorded as *E. Chamaesyce* L. by Rodriguez in the still unpublished *Florula de Menorca*, but the transversely sulcate seeds and the connate stipules clearly distinguish it from that species. It has been found in Sicily and Portugal, but has not, I believe, been hitherto identified in the Balearics. It is a native of tropical and subtropical America.

*Urtica pilulifera* var. *ballearica* L. Barranco de Algendar. (Sicily, Greece.)

*Triglochium palustre* L. In marshy ground near the sea, Valencia. Rare in the south of Spain.

*Leucojum Hernandezii* Camb. The Albufera, Minorca, Soller Port, Majorca. (Sardinia.)

*Smilax aspera* var. *ballearica* Willk. Val de Ternellas.

*Asparagus horridus* L. (*A. stipularis* Forsk.) Barranco la Val. (Spain, Sicily, &c.)—*A. albus* L. Soller, Porto Pi. (Spain, Sicily, &c.)

*Dracunculus crinitus* Schott. (*Arum muscivorum* L. fil.) Isla Colom, Minorca, where this strange-looking plant with its large lurid flowers is a troublesome weed.

†*Carex rorulenta* Porta. On rocks and under walls in the Coma de Mameliouda, Soller. Allied to *C. Halleriana* Asso, but very distinct in its widely creeping stems, slender habit, and in the under side of the leaves being sprinkled with "crystalline globules like dew." Porta describes the style as "bifidus," but Herr Kükenthal, to whom I submitted specimens, says this "ist wohl Fiction," as it has the usual three stigmas. The Coma de Mameliouda is probably a new station for this rare little sedge, as it does not appear to have been noticed since Porta discovered it on the Puig Mayor, Majorca.

*Heteropogon glaber* P. On the coast at Benicasim, Castellon. (France, Italy, &c.)

*Echinochloa colonum* P. B. Sandy seashore, Valencia. (South Italy, Sicily.)

*Arundo Plinii* Turr. On the bank of the Turia at the new waterworks near Valencia, where it grew with *Erianthus Ravenna*, a large form of *Phragmites communis*, and fine clumps of *Arundo Donax*. (South France, Italy, &c.)

*Sporobolus pingens* Kunth. On the coast near the Barranco la Val. This occurs near Palma, but has not, I believe, been recorded for Minorca. (South France, Spain, Italy.)
NOTES FROM CORNWALL.

By W. Botting Hemsley, F.R.S.

The records of the colonization of *Cotoneaster microphylla* Wall. in various localities (see Journ. Bot. 1905, 244, 274) reminded me that in 1904 I found it at Fowey, growing over the rocks in the excavated road between Fowey and Menabilly, and near the former place. It was in fruit, and I brought away only a small specimen to verify the species.

*Veronica augustifolia* A. Rich., a native of New Zealand, I also found established on one of the abutments of the quaint old bridge of Lostwithiel. It brought to mind the fact that some six hundred species of aliens, largely British, have spread over New Zealand against this one that I lighted on in Cornwall. I do not mean by this that no other New Zealand plant has been found wild in this country; indeed, I remember having seen *Phormium tenax* outside of cultivation somewhere in West Cornwall.

I do not know whether anybody has examined the wild cabbage—I use the term generically here—that grows on the cliffs below the road leading from Fowey to Readymoney, and reported upon it. I had long been familiar with the appearance of the cabbage on Dover and Walmer cliffs, though I had not critically examined it, but it looks like a true cabbage as distinguished from a kale. The Fowey plant struck me as being quite different, and more like a kale, but I could not get specimens from the old plants, as they were on, to me, inaccessible parts of the cliff. I had this cabbage under observation for a month in 1904, and in 1905 I landed at Fowey for a few hours, partly to look at it again. As near as I could judge, looking down upon the plants, the largest were six to eight feet high, with stems six to eight inches thick near the base, much branched above, and bearing a heavy crop of pods. The leaves were long, curled, and pinnatifid, not round as in the Dover cabbage, and the flowers smaller. With regard to the size of the flower, there is a specimen in H. C. Watson’s herbarium at Kew, from the cliffs west of Walmer, communicated by Miss Harvey, having petals an inch and a quarter long and half an inch wide; but this is doubtless an unusually luxuriant specimen.

The Fowey cabbage is not only perennial, but shrubby, I should say, the same stems flowering year after year. I think I am right in stating that the plants I saw in flower and fruit in 1905 were the same that I saw in flower in 1904. However, some local botanist may be able to give more exact information on this point, which is one of considerable interest. My impression is that some of the plants of the Fowey cabbage may be five or ten years old, or they may be even older.

Near Bodinnick, on the steep left bank of the Fowey, there is very luxuriant vegetation, due no doubt to the superficial springs which keep the banks and flats more or less saturated. Taking the road to the left of the landing-place from the ferry, there are some
open level spots on the otherwise steep banks, and there, in a sort of wild garden, I met with clumps of *Conium maculatum* between nine and ten feet high, with relatively thick stems. In the same place were foxgloves and *Scrophularia aquatica* upwards of seven feet high, and other plants of unusual vigour, including the colonized *Erythraea grandiflora* (syn. *O. Lamarkiana*).

**A NEW LIMONIA FROM UGANDA.**

**By Edmund G. Baker, F.L.S.**

**Limonia** (*Citropsis*) **ugandensis**, sp. nov. Frutex spinescens, spinis rectis patentibus quam rhachios parte posteriori brevioribus; foliis sepissime quinque-foliolatis imparipinnatis bifugis cum impari sessili ambitu subsimilibus iis *L. Preussii* Engler sed minoribus rhachi latissime alata ad nodos articulata et haud alata, foliolis elliptico-oblongis vel elliptico-obovatis coriaceis margine undulatis vel obsolete crenato-serratis nervis lateralibus supra inconspicuis subtus subprominentibus haud procul a margine conjunctis apice acutis utrinque attenuatis; floribus axillaribus infractis brevi circ. 6-flori; calycis lobis 4 brevibus margine anteriori minutissime serrulato paullo inaequilongis; petalis 4 albis punctatis valde imbricatis concavis rotundatis crassiusculis; staminibus 8 in seriebus 2 instructis petalis brevioribus; filamentis crassi antheris fere equilongis; ovario 4-loculari, stigmatum crasso, stylo subnullo, ovulis in quoque loculo solitariis.

Ab *L. Schweinfurthii* Engler (mili solummodo ex descriptione cognita) hac differt foliis quinque-foliolatis nec trifoliolatis ab *L. Preussii* Engler foliis minoribus et stylo subnullo ab *L. gabunensi* Engler petalis latioribus et foliis haud apice longe attenuatis.


Spines 1-5-2-0 cm. long. Leaflets 7-0-11-0 cm. long, 3-5-4-7 cm. broad. Lowest internode of the rachis 4-5-6-0 cm. long, upper internode 3-0-3-5 cm. long. Pedicels rather thick, 2-0-3-0 mm. long. Calyx lobes 1-0-2-0 mm. long. Petals 6-0-8-0 mm. long. Filaments of longer stamens + 2-0 mm. long. Anthers 2-0-2-5 mm. long.

It differs from both the species figured in Dr. De Wildeman’s *Flore du bas et du moyen Congo* by the leaflets not being so attenuate at the apex.

This is the “*Citropsis* sp. nov. “ of Mr. Dawe’s *Uganda list* (p. 39) from South Buddu. It has lime-like fruits ± 2 cm. in diameter.
FREDERICK JUSTEN.

(with portrait.)

Although not strictly speaking a botanist, the late Frederick Justen was so well known to botanists and took so active and intelligent an interest in botanical literature that some notice of him may fitly appear in these pages; he was moreover a familiar figure at the meetings of the Linnean Society, of which he became a Fellow in 1886. Justen, who was born at Bonn, Feb. 29, 1832, came to England in 1851 and entered the firm of Dulau & Co., of which he ultimately became the sole proprietor. To this firm was added in 1863 the natural history business carried on at 45 Frith Street, Soho, by William Pamplin, who retired in that year and of whom an account will be found in this Journal for 1899. When the natural history collections of the British Museum were transferred from Bloomsbury to South Kensington, the formation of the new library was entrusted to Justen; in this his interest was by no means confined to the commercial aspect, and he was wont to regard with pride the fine collection of books in the Department of Botany, to which he made numerous donations—the last being the magnificent Codex of Dioscorides printed in facsimile and issued at Leyden in 1905; he was also much interested in the collection of drawings in the Department, to which he gave various additions.

Justen's principal service to botany, however, was the part he took in securing for the National Herbarium the splendid set of Welwitsch's Angolan plants, which ranks among the most valuable of its contents. In 1873, Welwitsch by his will, of which Messrs. Carruthers and Justen were appointed executors, directed that the study-set of these plants should be offered to the British Museum for purchase. The Portuguse Government, however, claimed the whole of the collections; the executors resisted this demand, and, at great pecuniary risk to themselves personally, defended a suit in Chancery. After nearly two years a compromise was arrived at, when the Portuguese Government agreed to give to the Museum the next best set after the study-set, which was sent to Lisbon, with a copy of all Welwitsch's notes and descriptions. This was duly carried out; the collection in the National Herbarium now represents Welwitsch's work more fully than that at Lisbon, as the latter has been in part distributed to other herbaria.

A man of much shrewdness, possessed of a fund of general information and a considerable knowledge of art and music, Justen was an interesting talker, and a good example of the type of man who, while thoroughly capable in business, was not absorbed by it to the exclusion of wider interests.

For the accompanying excellent portrait we are indebted to his friend and neighbour Mr. Cribb, who is to be congratulated on a successful snapshot, as Justen had an objection to being photographed.
NEW AND RARE BRITISH HEPATICE.

BY SYMEES M. MACVICAR.

Riccia Huebeneriana Lindeb. var. pseudo-Frostii Schiffn. in Osterr. bot. Zeit. lv. 8 (1905). Mr. W. E. Nicholson recently sent me a Riccia gathered by him at Horsted Keynes, Sussex, 22nd September, 1906, the habitat being on the mud of a large pond. The violet colour of some of the fronds had suggested to him that the plant was rather R. Huebeneriana than R. crystallina, to which he had previously referred it. On examination I found the plant to be nearer R. Huebeneriana than any other species known to me, but, as it differed somewhat from my continental specimens in being less dichotomously branched, fronds rather larger and more frequently green, I sent part of the specimen to M. Crozals. This specialist in the genus confirmed the plant as R. Huebeneriana. Mr. Nicholson afterwards sent a specimen to Prof. Schiffner, who replied that it was R. Hubeneriana var. pseudo-Frostii. In the Fragmenta Schiffner mentions that there are two chief forms of R. Huebeneriana:—1. The typical plant, as described and figured by Lindenberg in Monogr. Ricci. This form has regularly dichotomous branches with spreading segments. 2. The form to which he gives the name var. pseudo-Frostii. The latter has a quite different habit, forming close rosettes with parallel segments lying near one another, and being about twice as large; also being yellow-green, with the borders sometimes rather reddish in colour. Schiffner states that in the meantime he cannot decide with certainty whether this var. pseudo-Frostii ought to be considered as a species or not, as he had not fresh material of typical R. Huebeneriana for comparison. It appears from the note to Mr. Nicholson that he has now come to the conclusion that it is worthy of specific rank, but it has not been so published.

The only other European species having large air-cavities which the plant under consideration can be confused with is R. crystallina. The latter is green or yellow-green in all its stages, never becoming tinged with violet; fronds flat, larger and broader, obuneate, in section of nearly the same diameter throughout, the dorsal and ventral surfaces being almost parallel; spores 70-82 μ. The former has the fronds more or less violet except in shade, narrower, and channelled towards the ends of the segments; in section is nearly quadrate, and shows a distinct furrow; spores 56-78 μ. In this species also the capsule ruptures through the ventral surface of the frond.

Mr. Nicholson first gathered this interesting addition to our flora in Crowborough, in Sussex, September, 1904, where he found it again this year, as well as in the locality at Horsted Keynes.

Lophozia Badensis (Gottsche) Schiffn. Jungermannia badensis Gottsche in Gott. et Rabh. Hep. eur. exs. no. 93 (1859). This species has been much confused with Lophozia turbinata (Radde) Steph., and to a less extent with small forms of Lophozia Muelleri. Schiffner has recently gone fully into the question of the confusion.

Comparative descriptions of the two species are given in Lindb. & Arnell's Muse. Asiat. bor, p. 46. I find the following points the most useful in distinguishing between them:—In L. turbinata the leaves, except generally in the male plant, have a narrow base, even in the broad-leaved forms. This is very marked in the sterile stems, where the leaves become obovate or nearly elliptical. They are also not decurrent at the antical base. The leaf-cells are larger, without thickenings at the angles. The stems are usually concolorous, with comparatively few rhizoids, and the leaves are generally more remote, and lie flat. In L. badensis the leaves have a broad base, even on the smallest sterile stems, the leaves being there quadrate. The antical base is decurrent, and the cells smaller and slightly thickened at the angles. The stem has copious rhizoids, which are fuscous coloured, as is the postical side of the stem.

L. turbinata is a western and Mediterranean species, while L. badensis is widely spread throughout Europe.

Lophozia badensis differs from small forms of L. Muelleri chiefly in the larger leaf-cells, which are only slightly thickened at the angles, and by the absence of under leaves, although a small nearly obsolete under leaf may rarely occur. The stems also are usually more translucent, and the male bracts differ to some extent. Under the name Jungermannia acuta Lindenzb. both L. turbinata and L. badensis, as well as L. Muelleri, have been included by many authors. As to British plants, Mr. Pearson gives J. bantriensis var. acuta (Lindenzb.), which he distinguishes from the var. Muelleri. Schöffner, in the paper above referred to (p. 390), footnote, in referring to Mr. Pearson's plant, says:—"The plant described on p. 316 as Jg. bantriensis var. acuta, and figured on plate 135, is quite certainly (compare the cell structure) only a rather small form of Lophozia Mülleri (not L. badensis!)." The figure of the cell structure, drawn from a plant of Carrington's, gathered at Dunkeld, as well as the description of the cell structure in the letterpress, no doubt excludes L. badensis, but some of the figures in the plate have been drawn from Gott. & Rabb. Hep. eur. exs. no. 643, which Schöffner allows to be L. badensis, while others have been drawn from Spruce's Castle Howard plant, which is without doubt L. badensis. Mr. M. B. Slater kindly gave me a specimen of this gathering of Spruce's, the locality being "New River Bridge, Castle Howard."
I find this plant to be _L. badensis_. Spruce had named it _J. turbinata_, then corrected it to _J. acuta_. As showing the difficulty of this group, I find that a plant, also given to me by Mr. Slater, from the Pyrenees, named _J. acuta_ by Spruce, is a small form of _J. Muelleri_. It has numerous well-developed under leaves, and thickened angles to the leaf-cells. The other localities which Mr. Pearson gives for the var. _acuta_ are—near Buxton, Derbyshire, _J. Whitehead_; and Ashwood Dale, near Buxton, _G. A. Hoit_. I have not seen these specimens. Prof. Barker kindly sent me the only packet of _J. acuta_ in Whitehead's herbarium; it is from Sands, Southport, May, 1868, _G. F. Hunt_. There are only a few stems, insufficient to be certain of, but they seem rather more like _L. badensis_ than _L. Muelleri_. Canon Lett, in _Brit. Hep._, follows Mr. Pearson. He does not give any new localities. In my _Census of Scottish Hepaticæ_ (Ann. Scot. Nat. Hist. p. 48, 1904) I have given _L. Muelleri_ var. _acuta_ for Elginshire. More recent examination shows this plant to be _L. Muelleri_ var. _pumila_ Nees.

It had been known for some time that _J. acuta_ of Lindenberg was a mixed species. Lindberg, in _Musc. Asia bor._ p. 46, mentioned that the name could not stand, and Schifffner has gone exhaustively into the subject in his paper, which the student must consult. It is there clearly shown that no definite plant can be assigned to that name.

I omitted to give the reference of _Jungermannia bantriensis_ var. _acuta_ (Lindemb.), which Lindberg has in _Hepat. in Hib. lecta._ 1875, p. 528. The locality where he found the plant is Connor Hill, co. Kerry. I have not seen a specimen.

**Prionolobus striatulus** (C. Jens.) Schifff.  _Cephaloziæ striatula_ C. Jensen in Revue Bryol. p. 25 (1904). I found this addition to our flora on Lousie Wood Law, Elvanfoot, Lanarkshire, alt. 1900 ft., June 6th, 1906. This hill belongs to the Lowther range of the Southern Uplands, and like most of them has a broad round summit. It is one of those having a layer of peat over the upper part, on which is found the _Vaccinium Myrtillus_, _Emetrum_, and _Polytrichum_ association, and it is in this association that the _Prionolobus_ occurs, creeping over the decaying parts of very compact tufts of _Sphagnum_. The Elvanfoot plant had abundance of perianths. It agrees with specimens given me by Herr Persson from the original localities in Sweden, and with the description and figures in _Revue Bryologique_. It cannot very well be confused with any other of our species except _Cephaloziæ elachista_, but the latter is readily distinguished by its larger thin-walled leaf-cells.

The _Prionolobus_ has been found in Sweden, Denmark, and France. Prof. Douin, who has found it in the latter country, states, in his recently published _Muscinées d'Eure-et-Loir_, p. 257, that this is the species from the Swiss Jura which Boulay has given in _Musc. de la France_, ii. _Hépatiques_, p. 69, as _Cephaloziæ elachista_, and that the latter, as far as he knows, has not yet been found in France. _C. elachista_ has lately been found in Sussex by Mr. Nicholson. It had previously been recorded as a Britannic plant only from Ireland.
CEPHALOZIELLA INTEGRERRIMA (Lindb.) Warnst. Cephalozia integerrima Lindb. in Meddel. Soc. pro Fauna et Fl. fenn. 1876. Mr. Nicholson sent me from Sussex two specimens of an hepatic, mentioning at the same time that they rather reminded him of a specimen of C. Brynhnii received from M. Douin. The labels were: "Damp sandy hedge-bank, Slugwash Lane, Wivelsfield, September, 1906," and "Damp sandy ground under heather, St. John's Common, Crowborough, 7th October, 1906," both plants having been gathered by himself. The specimen from the latter locality was in the best condition, though mixed with C. byssacea (Roth.) Warnst. On examining these plants I found that without doubt they belonged to an unrecorded British species, and that they were either C. Brynhnii Kaal. or C. integerrima Lindb. On comparing a specimen of the former from Smestad, near Christiania, Sept. 27th, 1895, leg. Kaalaas with specimens of the latter from near Söder telge, Södermanland, June 20th, 1903, and Sept. 10th, 1903, both leg. J. Persson, it struck me that all these plants belonged to one species, and further examination confirmed this opinion. Mr. Nicholson has since told me that a suspicion of the identity of these two species had crossed his mind independently, and that had it not been that the name Brynhnii was uppermost in his mind from his recent correspondence with M. Douin, he would probably have suggested that the plants which he was sending me were integerrima.

Herr Kaalaas, in describing C. Brynhnii in De Dist. Hep. in Norreg. p. 158, 1893, gives the differences between it and C. integerrima in the former having acute leaf-lobes, and in the structure of the perichaetium. As to the leaf-lobes, I cannot find that there is any constant difference. C. Brynhnii has frequently rather obtuse lobes, and C. integerrima has them often rather acute. The leaf-cells do not show any difference. With regard to the more important mark—the structure of the innermost involucral bracts—although Herr Kaalaas' plant has sometimes more acutely lobed bracts than any I have found in C. integerrima, there are on the other hand many of the bracts which are indistinguishable from those of the latter plant.

M. Douin, in his Muscinees d'Eure-et-Loir, p. 262, 1906, describes and figures a Cephalozilla under the name C. piriflora, nov. sp. In a note he mentions the points in which it differs from C. Brynhnii, but the specimen given to him as the latter species was probably a mixture, as the acute and strongly dentate lobes of the involucral bracts which he gives is not applicable to C. Brynhnii. In the Addenda, p. 354, he quotes a remark from Prof. Schiffner: "Your Ceph. piriflora is quite certainly identical with C. Brynhnii Kaal!" M. Douin kindly sent me a specimen from Montigny-le-Chartif, Eure-et-Loir, April 16th, 1906. The lobes of the involucral bracts are very obtuse in this plant; the leaves are also rather obtuse. In fact, it more resembles my specimens of C. integerrima than that of C. Brynhnii.

The highly connate, very obtuse bracts and bracteole of C. integerrima will at once distinguish it from any other of our described species. Mr. Nicholson is to be congratulated on the discovery of such a distinct addition to our flora.
MR. J. G. BAKER.

The Naturalist is publishing an interesting series of biographical sketches entitled "Prominent Yorkshire Workers." The subject of the January biography is Mr. John Gilbert Baker, of whom Mr. T. Sheppard gives a sympathetic account, accompanied by an excellent portrait which the kindness of the editors and publishers of the Naturalist allows us to reproduce. Our readers may like to contrast it with that reproduced in this Journal for 1893, p. 244, from the portrait by Mr. J. W. Forster.

John Gilbert Baker
Aug. 4 1906
BIBLIOGRAPHICAL NOTES.

XLI.—The "Illustrations of Australian Plants."

My attention has been called to a notice by Mr. J. H. Maiden (Journ. Proc. Roy. Soc. N. S. Wales, xxxix. 84-89) of the Illustrations of Australian Plants which perhaps calls for some comment. Mr. Maiden speaks appreciatively of the importance of the work and kindly of my share in its publication, and not unreasonably takes exception to certain proposed changes of nomenclature, some of which would not have been suggested had the decisions of the Vienna Congress been arrived at at the time the Illustrations was issued.

I think, however, that some of Mr. Maiden's remarks show a somewhat imperfect appreciation of the facts of the case. For example, he says:

"That the copper plates of the present work should have remained in the British Museum unpublished for nearly 130 years is a remarkable occurrence, and shows how leisurely the progress of British science can be. While grateful for its belated appearance it seems difficult to believe that this most regrettable delay has been unavoidable."

Mr. Maiden does not seem to have realized that, as I have explained in the introduction to the work (reproduced in this Journal for 1905, pp. 284-290) the preparation of the plates was a private undertaking on the part of Banks, who spent upon them large sums of money. "British science" officially was in no way responsible for the delay during Banks's life-time, and when the plates became the property of the British Museum, no condition as to publication was attached to their acquisition. The plates only came into the possession of the British Museum in 1820, so that the period named by Mr. Maiden must be reduced by at least fifty years. Mr. Carruthers, during his keepership of the Department of Botany, more than once urged upon the Trustees the desirability of publishing the plates, but financial considerations prevented the undertaking until 1900. And, although I am probably the last person to depreciate the value of a work in which I have taken the greatest interest, it seems to me that on many grounds it may be doubted whether the actual scientific value of the book, apart from its historical interest, is equivalent to the expense necessary to its production; and this reason has so far weighed with the Trustees that the remainder of the plates of the plants of Cook's Voyage will not be proceeded with.

Mr. Maiden ends his notice with the following paragraph:

"In conclusion, the publication of these fine folio volumes simply whets the appetites of Australians for more. We yearn for the publication of Solander's and Brown's manuscripts, and trust that they will not be kept back from any considerations of nomenclature of species. Such a reason, if advanced, seems to us inadequate in the case of priceless historical documents of the deepest
interest to Australians. We would have liked our fathers to have had the privilege of seeing them; shall the privilege be denied to the living and only be bestowed on a generation yet to be born? With all respect to the eminent specialists forming the scientific staff of the British Museum, we feel sure that these manuscripts must contain observations which can only be fully interpreted and appreciated by Australians.

It would seem that our Australian friends have an exaggerated estimate of the MSS. in the possession of the Museum, both as to their value and extent; the note as to Solander's supposed Journal (see Journ. Bot. 1906, p. 71) illustrates what I mean. So far as Solander's MSS. are concerned, they consist solely of descriptions of plants in terms as shown by those already published—the greater number—largely obsolete, and it is difficult to see who would benefit by their publication. It is a straining of language to call these technical descriptions "priceless historical documents," and I am at a loss to understand what Mr. Maiden means by the suggestion that "any considerations of nomenclature of species" could be "advanced" as a reason for "keeping them back." With regard to Robert Brown's MSS. again, it seems doubtful whether at the present time there would be adequate gain in publishing descriptions a hundred years old of plants most if not all of which must be familiar to botanists. It would certainly be undesirable to print the large number of unpublished names which occur in both Solander's and Brown's MSS., and I am sorry to see that Mr. Maiden defends the practice. When distributing Brown's herbarium we were most careful not to send out any unpublished names, and the same plan was adopted with the set of Banks and Solander plants sent to Sydney.

I am the more surprised that Mr. Maiden should refer again to the supposed "keeping back" of the Brown MSS., because in this Journal for 1908 (p. 252) I dealt with the similar complaint contained in his Revision of Eucalyptus (part i. p. 20) where he assumes the "suppression of these descriptions," and expresses a doubt "whether this suppression eventually met with the acquiescence of Robert Brown himself, or whether he was controlled in this respect by superior authority." I am unable even to guess at what Mr. Maiden intends to suggest by his references to "suppression" and to Brown's being "controlled by superior authority"; but there is, as I said before, absolutely no ground for supposing that anyone but Brown himself was responsible for the non-publication of his MSS.

The value and bearing of the Solander and Brown MSS. can only be fully appreciated if they are correlated with the specimens to which they refer, and this can only be done at the National Herbarium. Would it not be possible for some competent Australian botanist to come over and see for himself what material exists, and how it can best be employed? It must, I think, rest with the Colony to decide whether "the privilege [shall] be denied to the living and only bestowed on a generation yet to be born."

* Proc. Linn. Soc. N. S. Wales, xxvii. 709.

Digitized by Microsoft®
It is certain, too, that more might be done by correspondence than is done at present, and we at the National Herbarium are, as I think Mr. Maiden knows, always ready and willing to do our best to help him and his fellow-workers. For example, Mr. Maiden in his Flora of Norfolk Island (Proc. Linn. Soc. N. S. W. xxviii. 692-785) gives an account of Ferdinand Bauer (p. 778) entirely derived from the account by Lhotsky in Lond. Journ. Bot. ii. 106-113 (1843). Mr. Maiden makes no reference to the large collection of his drawings of Australian plants presented by the Admiralty to the British Museum in that year, and says that he does not know what became of Francis Bauer's collections. Yet a reference to so easily accessible a work as the Biographical Index of British Botanists would have shown him that drawings of both workers are in the Department of Botany, and a letter would at once have secured further information about these. Under Streblorrhiza (l. c. 703) Mr. Maiden says that Bauer's drawing is "at the British Museum or Vienna"—it is not at the Museum—showing that he knew of the Museum collection, although he does not mention it when speaking of the artist; nor does he say, although this, too, he might readily have ascertained, that the drawings of plants and animals purchased by Robert Brown now form part of the British Museum collections. A list of Ferdinand Bauer's Australian drawings at the Museum will be published shortly in this Journal.

But, although the Brown and Solander descriptions can scarcely be regarded as "historical documents of the deepest interest to Australians," there are other manuscripts in the Department of Botany which fairly deserve to be so considered. Thus we have accounts by George Caley of various journeys undertaken by him in 1801-6, with descriptions of plants of "the Colony" (New South Wales) and letters to Banks. We have also the Journal of Allan Cunningham for 1817-1821, with lists of plants obtained, and notes on plants collected on the banks of Brisbane River in the winter and spring of 1829 and in Norfolk Island in the winter of 1830; this Journal was extensively used by Robert Heward in his biography of Cunningham in Hooker's Journal of Botany iv. 231-320 and London Journal of Botany i. 107-128, 263-292: with the same Journal is a copy of the list of plants collected by Charles Fraser for Earl Bathurst in 1817. The reference to the volumes of drawings by Thomas Watling (Journ. Bot. 1902, 302) has doubtless been noted by Australian naturalists. A volume of MS. reports on Norfolk Island for 1840-43, given to Robert Brown by Captain Alexander Maconochie, Lieutenant-Governor of the island, is also in the Department of Botany.

It may perhaps be possible for Mr. Maiden to arrange with his Government for a transcription of these MSS. or some of them. I am quite at one with him in thinking that the observations they contain "can only be fully interpreted and appreciated by Australians"; and I am sure that the British Museum authorities will give every facility for their consultation or transcription.

James Britten.
SHORT NOTES.

ERYTHREA CAPITATA Willd. ON THE MAINLAND OF HANTS.—Ever since the discovery of this interesting Centaury in the Isle of Wight by the late Mr. Frederick Townsend, I have been annually searching for it in the more southerly parts of the contiguous Hampshire mainland, with no success till last July, when I found, in a locality so restricted that it is more prudent, at present at all events, not to expatiate upon it in detail, a dozen or more fine plants. Though recognizable almost at a glance by the stamens proceeding from the base of the corolla-tube, I thought it well to call in the expert opinion of the Rev. Edward F. Linton, who confirms my views, and informs me that it has been found to occur, as an extreme rarity, in Dorset. It has previously been recorded from Cornwall in the west to Sussex in the east, and will probably now be discovered in intermediate spots, but the greatest care must be exercised, as *E. Centanriium* L. seems protean in form, and a dwarf, broad-leaved state of this species is common along the coast and very deceptive. I am hoping, this ensuing summer, to make more extended observations, and expect to be able to record *E. capitata* Willd. eventually as quite plentiful, if local, in this new habitat.—J. COSMO MELVILL.


CYSTOPTERIS FRAGILIS IN SUFFOLK (p. 33).—Moore gives D. Stock as the authority for this plant at Bugay. In a parcel now in my possession, which formerly belonged to the late Ellen Wright, of Buxton, Norfolk, is a specimen of *C. fragilis* labelled:—"On the garden wall of Lord Manners, Yoxford Grove, Suffolk; found by a botanist, Sept., 1840."—ALICE M. GELDART.
Orobanche purpurea Jacq. in Pembrokeshire.—In July last Mr. J. E. Arnett, of Tenby, kindly sent me a specimen of this plant, which he had gathered near the town the day before. It is, I believe, an addition to the flora of the county.—Richard F. Townendrow.

Berks and Hants Rubi.—I devoted a good deal of attention last summer to the bramble-flora of the gravel-capped commons surrounding Newbury, where Rubus is strongly represented by an interesting series of forms. At Greenham this is especially the case, but here frequent furze-fires have a disfiguring effect on the landscape, and must check considerably the luxuriance of the bushes. The following notes are the results of my investigations, and are mostly additional to the records in Mr. Druce's account of Berks Rubi in his flora of the county. An asterisk denotes a new county record:—Rubus nitidus Wh. & N. Greenham Common.—R. carpinifolius Wh. & N. Chapel Row, Bucklebury.—R. rhombifolius Weihe. Greenham Common; one large bush near the vicarage. —*R. hirtifolius Muell. & Wirtg. var. mollissimus Rogers. Greenham Common, in two spots. —R. radula Weihe var. echinatoides. Abundant on Greenham Common, especially near Berry's Bank.—R. echinatus Lindl. Near Donnington Castle.—R. Lejunei Weihe & Nees var. ericetorum Lefev. Thicket in Hamstead Park.—R. palillus Wh. & N. Suelsmore and Greenham Commons.—R. foliorum Wh. & N. Crookham Common.—R. rosaceus Wh. & N. var. infecundus Rogers. Lane near Hamstead, Marshall.—R. Kochleri. A distinct-looking bramble—which Mr. Rogers says is very like the Staffordshire plant referred to in Handbook Brit. Rubi, p. 184, as R. distinctus— grows in a lane at Wash Common.—R. Marshalli Focke & Rogers. Crookham Common.—*Var. semiglaber Rogers. Greenham Common, but with the leaves untypical.—The following are additional Hants records:—*R. Rogersii Linton. Damp copse near Newtown, North Hants; new to Hants mainland.—R. mucronatus Blox. var. nudicaulis Rogers. Otterburne Common.—R. rudis Wh. & N. Near Sydmonton, North Hants.—My thanks are due to Mr. Rogers, who, as usual, has assisted me with difficult plants.—A. Bruce Jackson.

Cardigan Plants.—The following plants, not recorded for this county, were met with during a visit to Aberystwyth, from June 7th to 23rd, 1906:—Ranunculus Ficaria, Brassica rapa var. Briggii, Trigonella purpurascens, Pyrus Aria, P. Malus, Sedum acre, Epilobium obscurum, Galium Mollugo, Tanacetum vulgare, Carduus nutans, Crepis taraxacifolia, Leontodon hirtus, Tragopogon pratense var. minus, Myosotis versicolor, Thymus Chamadrys (aggregate only in Top. Bot.), Polygonum amphibium var. terrestr, Hippophae rhamnoides (probably planted), Populus tremula, Orchis maculata, Luzula campestris, Tri- setum pratense, Festuca rigida, F. uniglumis, F. scirroides. The following varieties of species already recorded were observed:—Lathyrus montanus var. tenuifolius, Aira caryophyllea var. aggregata, Bromus mollis var. glabratius, Lastrea Filix-mas var. paleacea. Poten- tiilla reptans x silvestris was gathered, and Trifolium hybridum and Petasites fragrans were noted.—Richard F. Townendrow.
NOTICES OF BOOKS.


Dr. Glück's second contribution to our knowledge of the biology and morphology of water- and marsh-plants comprises the results of his study of the Central European species of Utricularia, of winter buds in a number of genera of water-plants and of points in the biology of Ceratophyllum. His study of Utricularia confirms the view taken by Goebel—to whom the author dedicates his book—as to the morphology of the vegetative organs. That is to say, shoot and leaf are here not contrasting morphological ideas; no limit can be set between them—shoot, leaf, and pitcher arise one from the other, or may be changed one to the other. Comparative systematic study, history of development and abnormal formation, all confirm this view.

In the course of his work Dr. Glück has made a detailed study of one and the same species from different localities, with special attention to differences in situation, such as deep and shallow water or land; and gives in a tabular form the relative length of shoot, relative size of leaf and other details in the forms from the various localities. The water-shoots are best developed in the deep-water forms, while those from shallow water are intermediate between the deep-water and the land form. A systematic arrangement is given of the six Central European species, based on presence or absence of rhizoids on the base of the inflorescence, and presence or absence of aerial shoots; and diagnoses of the vegetative organs are included for each species.

The author has also made a detailed examination of the structure, germination and functions of the buds which serve as resting- or winter-buds, and for means of vegetative propagation in a large series of water-plants, including Elodea, Stratiotes, Hydrilla, Myriophyllum, Utricularia, Potamogeton, and Hydrocharis. These are grouped according to the morphological character of the scales by which the bud is protected, which represent the whole leaf-blade of a foliage-leaf as in the first five genera mentioned, or the leaf-base only as in Aldrovanda and Caldesia, or an axillary stipule as in Potamogeton, or a pair of stipules as in Hydrocharis. Finally, a point of interest is described in the biology of Ceratophyllum. Contrary to the general view that this is a free-swimming plant, the author finds that it is in the first instance anchored to the substratum by peculiar rhizoids, which also take up nourishment. These rhizoids are metamorphosed shoots. The value of the work is enhanced by the excellent drawings, both in the text and in the large double plates at the end of the volume.

A. B. R.

Journal of Botany.—Vol. 45. [Feb. 1907.]

In this well-printed volume of more than two thousand pages Mr. Cheeseman has given a complete compendium and account of the flora of New Zealand, so far as phanerogams, ferns, and fern-allies are concerned. It is, as he reminds us, forty-two years since Sir Joseph Hooker published the first part of his Handbook, and since then considerably over a thousand species have been added to the flora. It was hoped that Mr. Thomas Kirk, who had for many years been preparing a hand-book, would have carried his work to completion, but at his death barely two-fifths of this were ready for the press; and his Students' Flora of New Zealand, issued by the Government towards the end of 1897 and noticed in this Journal for 1898, included only the Polypetake and part of the Monopetake.

It was fortunate for the Colony that it had at its disposal, in the person of Mr. T. F. Cheeseman, a botanist competent to take Kirk's place and to carry out the work which he had undertaken. Mr. Cheeseman's researches into the flora began in 1870, and have been carried on continuously up to the present time; and his published papers have given ample evidence of his capability for the task he has now completed. He has wisely confined it to indigeneous plants, thus departing from the plan of Kirk, who included descriptions of the very numerous more or less naturalized introductions, of which a list is here given in the Appendix. The descriptions, which are evidently drawn up from personal observation, strike us as extremely good—of sufficient length to be of service to the intelligent observer, couched in well-chosen terms, and accompanied by a full and careful synonymy so far as it concerns the literature of New Zealand botany. I am glad to see that the practice of Kirk in printing the until then unpublished names in the transcript of Solander's MS. Flora supplied by the Trustees of the British Museum has not been followed; it is to be regretted that they should have so far got into print. A considerable number of the Banks and Solander names had however been cited by Sir Joseph Hooker in his Flora of New Zealand, with references to the Banksian figures and MSS.; these are entirely omitted from the Index Kewensis, which is the more remarkable in that they appear not only in the body of the Flora, but also in the index thereto.

The notes upon various critical species show a wide acquaintance with plants, as well as with botanical literature; and a number of new species are described. I note that Tropis opaca of Banks and Solander, a plant referred to Paratrophis heterophylla as a variety by Kirk in this Journal for 1897 (p. 222), is raised to the rank of a species under the name P. Banksii; the oldest specific name should however have been preserved. It is of course only in the field that the real value of a book of this kind can be properly estimated, but there is reason to believe Mr. Cheeseman's Manual will stand this test. Since the book came to hand, I have been engaged in writing up the collections of Banks and Solander in
connection with their MSS. and the drawings made by Sidney Parkinson during their voyage, elaborated by F. P. Nodder, and in part engraved. In the course of this I have had occasion to use Mr. Cheeseman’s book, and am struck with its scholarly character—a character too often conspicuously wanting in recent colonial work. So far as I can judge, botany has gained rather than lost by the undertaking having come into Mr. Cheeseman’s hands. I hope to publish later some notes resulting from an examination of the Banksian material, with a complete enumeration of the drawings.

The Manual is prefaced by a very interesting and well-executed history of botanical discovery in New Zealand, in which brief accounts are given of the various investigations from the time of Cook’s first visit to the present. In connection with the collections made by Banks and Solander during Cook’s visit, it may perhaps be well to say here that it has been decided by the Trustees of the British Museum not to proceed with the publication of the plates and MSS. connected with these. In the Appendix, besides the list of introduced plants already mentioned, are a synoptical key to the orders; a long list of Maori plant-names compiled from various sources; a useful glossary; and a number of additions and corrections.

James Britten.

BOOK-NOTES, NEWS, &c.

At the meeting of the Linnean Society on Dec. 6th, 1906, a paper by Prof. A. J. Ewart, F.L.S., on “The Physiology of the Museum Beetle, Anthrenus museorum (Linu.) Fabr.” was read. The mischief wrought by this species in the National Herbarium at Melbourne is great, and is only kept in check by systematic use of a chamber impregnated by the vapour of carbon-bisulphide, in which the plants are placed for several days at a time. The use of corrosive sublimate is not advisable owing to the grave danger to health in a dust-forming atmosphere. The most remarkable feature of the larvae is their power of feeding on dry material, with less than 9 per cent. of water; and yet these larvae exhibit the usual amount in their structure, averaging 70 per cent. The author suggests that the water may be chemically derived from decomposition of the carbohydrate food they consume. Bacteria are present in abundance in the alimentary canals of these grubs, and oxidize the carbon of the food where no transpiration of water is possible.

At the meeting of the same Society on Dec. 20th, Mr. N. E. Brown exhibited a photograph and dried specimens of Fockea capensis Endl., a plant of considerable interest on account of its great rarity and its apparently great longevity. It was originally described and figured by N. J. Jacquin, a hundred years ago, in his Fragmenta Botanica, p. 31, t. 31, f. 5, as Cynanchum crispum, from a plant which had been introduced from South Africa, and cultivated in the Imperial Garden at Schönbrunn. In 1838 Endlicher,
in his *Iconographia Generum Plantarum*, refigure the plant, and
generically separated it from *Cynanchum* on account of its remark-
able structure. This self-same individual (from which both the
above-mentioned figures were made) has been in cultivation at
Schönbrunn from Jacquin's time until now, and is the only example
of the species known, since Dr. A. Zahlbruckner states that all
attempts to propagate it have failed, and no collector appears to
have refound it, the only dried specimen in existence, so far as
known, being the one exhibited. The living plant was exhibited at
the Botanical Congress held at Vienna in 1905, and in the Report
of that Congress, p. 77, is a note concerning it, where it is stated
that the age of the plant is probably about one hundred and fifty
years. But when Jacquin described the plant one hundred years
ago he stated that the tuber was about 1 ft. long and 6 in. thick;
at the present time, from calculations I have made from the photo-
graph of the plant by comparing the length of the largest leaves
on the dried specimen with those of the photograph, I find that the
tuber is about $7\frac{1}{3}$ in. thick, and stands about $12\frac{1}{2}$ in. above the
ground. As this small increase in size during one hundred years
has been obtained under the conditions of cultivation, where the
plant would obtain more moisture, and be likely to grow more
rapidly than in the very dry climate of its natural habitat, it would
appear conclusive that its growth is extremely slow, and that the
actual age of the individual in question is probably much more
than one hundred and fifty years. Burchell, in a note with a
dried specimen of the very closely allied *F. glabra* Decne., states
that the tuber is sometimes as much as 2 ft. in diameter, and, if as
slow-growing as *F. capensis*, this would imply that the plant must
attain an age of several centuries. None of the species of *Fockea*
appears to be common, and, as the tubers are eaten by the natives,
and do not appear to produce fruit freely, it is possible that they
may be approaching extinction. Two other interesting plants—
*Babiana spathacea* Ker, and *Eriophyra* *Oculus-catii* Less.—were
exhibited further to illustrate how very rare or very local some of
the South African plants are, since neither of these two has been
collected by any botanical traveller since Thunberg found them in
1774, until these specimens were gathered. The *Babiana* was
originally described as *Gladiolus spathaceus* Linn. f. Suppl. p. 96,
from a specimen collected by Thunberg. The *Eriophyra* was
originally described as *Gnaphalium Oculus-catii* Linn. f. Suppl.
364, from a specimen collected by Sparrman; a specimen of it in
Thunberg's herbarium, upon which Lessing founded the genus
*Eriophyra*, is figured by Harvey in his *Thesaurus Capensis*, vol. ii.
p. 30, t. 149.

At the same meeting Dr. A. B. Rendle presented a report on the
botanical collections made by Dr. W. A. Cunnington in Lakes
Nyasa, Tanganyika, and the Victoria Nyanza, 1904–5. Dr. Cunn-
ington spent about three weeks on and about Lake Nyasa, nearly
nine months at Lake Tanganyika, and less than a fortnight on the
West of the Victoria Nyanza. His object was to make as complete
a collection as possible of the plants and animals, especially from
Lake Tanganyika, with a view to solving the "Tanganyika problem"—whether the fauna and flora of this lake indicate a former marine connection. As illustrated by a good series of specimens laid on the table, the flowering plants, fern allies, and Characeae, numbering about forty-five species, were for the most part well-known and widely-distributed forms, such as Najas marina, species of Potamogeton, Pistia Stratiotes, Ceratophyllum demersum, Myriophyllum spicatum, Jussiaea repens, Trapa natans, and Chara zeylanica, with others restricted to Tropical or Subtropical Africa, such as Ottelia, Bootia scabra, and species of Utricularia. In no case was there any suggestion of marine conditions, either past or present, in the representatives of the flora. The plankton and fresh-water algae, of which an account was given by Mr. G. S. West, yielded remarkably rich results; due partly, no doubt, to the paucity of our previous knowledge of the microscopic flora of these lakes, especially in the case of Tanganyika. Mr. West's list contains about 400 species, a large proportion of which are new, including one new genus of Palmellacea. A few species from Tanganyika showed a striking affinity with marine forms, indicating that at some period the water of this lake had a considerable degree of salinity. But, as Dr. Cunnington explained, this did not involve a previous marine connection, but might be explained by an increase in saline matter in the water due to the damming of the outlet from the lake. This damming was perhaps a periodical occurrence, since Stanley, thirty years ago, described the lake as with no outlet; while a few years later Mr. Hore, visiting the same spot as Stanley, found the water rushing through the present outlet towards the Congo.

At the meeting of the Linnean Society on Jan. 17, Mr. William Henry Pearson was elected an Associate of the Society. This was the first election under the new bye-laws, which, as is often the case, prove to have been so drawn up as to present difficulties in working which had to be overcome. There were five candidates for election, two of whom were specially recommended by the Council. This proceeding seems to us objectionable on several grounds; it did not, however, affect the result, as the Fellows exercised their right and elected a candidate not officially recommended. Mr. Pearson has for many years been a contributor to these pages, and we congratulate him on his election.

Attention should have been called earlier to the sketch of "Crabbe as a Botanist," read by Mr. James Groves at the Crabbe Commemoration at Aldeburgh in 1905, and published in the Proceedings of the Suffolk Institute of Archaeology and Natural History, vol. xii. part 2. Mr. Groves publishes interesting letters from the poet regarding Trifolium suffocatum, of which he was, though not the first discoverer, one of the earliest observers in Britain, and of which his drawing and specimens, sent to Banks, are in the National Herbarium. In one of the letters Crabbe announces his intention of publishing "a short history of all the Trifolia which I have cultivated with so much care for three or four years past,"
and in another gives an interesting sketch of the beach vegetation at Aldeburgh, and speaks of publishing an account of *Trifolium suffocatum* "and a narration of the progressive vegetation of the spot it grows on." Mr. Groves suggests that this may have formed a part of the "Essay" or "Treatise" on botany which Crabbe wrote but afterwards destroyed, in which case "the book might have formed a pioneer essay in plant ecology."

Miss Rachel F. Thompson, who died at Southport on Dec. 9 in her fiftieth year, was associated with Mr. F. J. Hanbury in his work on the *Hieracium*, and drew up the account of this difficult group (of which she had an intimate knowledge) for Messrs. Groves' edition of Babington's *Manual*. She also greatly helped Mr. Hanbury in the mounting and arrangement of the Boswell Herbarium, and in the preparation of the ninth edition of the *London Catalogue*. Rachel Thompson, who was born at York, was a grand-daughter of John Tatham, of Settle, from whose herbarium and memoranda she and her sister extracted a number of records for Mr. Arnold Lees's *Flora of West Yorkshire*; others will be found in a paper by Mr. Whitwell in the *Naturalist* for 1893, pp. 25-40.

Dr. Staff publishes in the *Kew Bulletin* No. 8 (1906) an exhaustive and interesting paper dealing with the history and botany of "The Oil-grasses of India and Ceylon"—various species of *Cymbopogon* and one each of *Vetiveria* and *Andropogon*, with a plate of *Cymbopogon citratus*. Referring to Hermann's specimen of *C. Nardus* preserved in his herbarium in the Department of Botany, Dr. Staff says "there is attached to [it] the note—in whose hand I do not know—'Calamus odoratus officinarum.'" The name in question is in Linnaeus's hand, as are most of those in Hermann's herbarium, which, as is generally known, contains the types of Linnaeus's *Flora Zeylanica*.

The ninth number of the *Kew Bulletin* for 1906 brings to a close the volume for 1906. This volume, of more than 400 pages, is in itself a tribute to the energy and capability of the new Director of Kew Gardens. The eccentricities of the *Bulletin*, culminating in the production of volumes consisting almost wholly of appendices—the issue for 1904 contains 16 pages!—and the irregularity of its appearance, had made it a journal pour vire. It has now become an important publication and bids fair to take a prominent place among botanical periodicals. Being subsidized by the Government, it can be issued at nominal cost—the last number, of over 50 pages, costs only fourpence. This contains descriptions of numerous new species both of flowering plants and algae, which have been elaborated in connection with the work of the herbarium; papers of economic importance; and biographical information—the last including a lengthy biography of the late G. C. Churchill. The index for the year completes the volume.

There is, we think, still room for improvement in one or two small but not unimportant details. The difficulties which, under the late directorate, prevented the signing of contributions have
been overcome, but we think it is to be regretted that in some cases authors should be represented by initials only. Just now folk can easily ascertain by inquiry who are represented, say, by "W. J. B." and "J. M. H."; but in fifty years' time this will not be so simple a matter. The names of authors are not indexed, and we think that the practice—which we believe was initiated in this Journal, at any rate for this country—of indicating in some special way names published for the first time, is generally recognized as convenient. There is surely no reason why the space at the head of each page should not be utilized for indicating what is below, in accordance with general practice.

Mr. E. M. Holmes's collection of Marine Algae, the outcome of thirty years' work, has been presented to the University of Birmingham through the generosity of Mr. W. A. Cadbury. The foreign algae have been selected as far as possible from published fasciculi, and from authentic specimens received from leading algologists, including Perceval Wright (Harvey's species), Agardh. Bornet, Kjellman, Hauck, Reinke, Farlow, Reinbold, Foslie, and many others; as well as a number of types of Japanese and South African algae. It is almost unique in the fact that, wherever possible, specimens have been carefully remounted to show modes of branching, and a separate sheet has been kept for each variety of a species, and for each form of fruit. The British collection was originally formed with the view of publishing a new edition of the Algae of English Botany, but the project fell through. Many Scandinavian species which at the time of Harvey's classical Phycologia Britannica were not known as British, were found on the coasts of Scotland and the North of England, and many French species in the south and south-west of England, through the researches of Mr. Holmes, aided by coadjutors, especially Mr. G. W. Traill of Edinburgh and Mr. E. A. L. Batters at Berwick, Mr. G. Brebner, Mrs. D. Robertson of Cumbrae, and by Mr. R. V. Tellam and H. Goode in Devon and Cornwall. The result of their work was the publication of eleven fasciculi, each containing twenty new British species. In "The Revised List of British Marine Algae," published in this Journal for 1902, nearly seven hundred and fifty species are enumerated as against four hundred species known at the time of the publication of Harvey's Phycologia Britannica. Two of the rarest of these, Ectocarpus acanthophorus and E. Reinboldii, were discovered by Mrs. Holmes, and have not as yet been found by any one else. The collection also contains the fasciculi of Crouan of the Algae of Finisterre, which it is believed is found in no other collection in this country. Mr. Holmes's collection of British mosses, largely representing Devon and Cornwall species, was presented to Cambridge University some years ago, by Mr. Thomas Walker, B.A. (Camb.) of Tunbridge Wells, and Mr. Holmes's large collection of British lichens—remarkable for the number of beautifully fruited specimens of rare species, and for the fact that none of the specimens were pressed, but mounted in boxes—was acquired last year by the University College, Nottingham. It contains the majority of British species, including Larbalestier's
fasciculi and many of the rarities found by the late Rev. J. M. Crombie.

The very useful *Flore descriptive et illustrée de la France*, by the Abbé Coste, to which reference has from time to time been made in these pages, has been brought to a conclusion by the issue of part 7 of the third volume. This contains additions and corrections and a complete index to the whole work. The number of plants considered as entitled to specific rank is 4354; each description is accompanied by a small but excellent figure.

Vol. xxii. of the Journal of the College of Science of the University of Tokyo is devoted to an *Enumeratio Plantarum in Insula Formosa sponte crescentium* by J. Matsumura and B. Hayata, of the Botanical Institute of the College. The volume, which is extremely well but somewhat extravagantly printed and extends to over seven hundred pages, gives a very full bibliography for each species with synonymy and distribution, descriptions of new species and varieties with seventeen excellent plates by Hayata, and a map of the island showing the routes taken by the various travellers on whose collections the book is based.

This is how botany is popularized by the *Daily Mail*;—"Insect Drunkards.—Insects have their own public-houses, and get intoxicated just like human beings, was the charge made yesterday by Professor Bottomley, who lectured on botany at the University of London, South Kensington. The leading public-house in the insect world, according to Professor Bottomley, is the wild arum. It looks like a large lily, and its big, dark shaft extending upwards is the sign that attracts the insects. They climb down into the nectar pit beneath the flower's bags of pollen, and there the orgy commences."

The Trustees of the British Museum will publish immediately a *List of British Seed-Plants and Ferns* drawn up by Dr. Rendle and Mr. Britten. The nomenclature will be in accordance with the Rules adopted at the Vienna Congress, of which a translation was issued as a supplement to last year's *Journal*. The Rules necessitate a few new combinations, on which we hope to publish some notes in our next issue. For the convenience of non-subscribers and others, the Rules have been issued separately as a shilling pamphlet, which may be obtained from Messrs. West, Newman & Co.

The last part (vol. ix. pt. 1, December) of the *Icones Plantarum*—which is now edited by Lieut.-Col. Prain, as is also the *Botanical Magazine*—contains much of interest. Mr. Hemsley distinguishes *Aleurites Fordii* from *A. cordata*, with which it has hitherto been confounded, and establishes the new genera *Indokingia* and *Geopanax* (Araliaceae) and *Neoeschimpera* (Rubiaceae, Psychotriaceae) on plants from the Seychelles, and *Sinoewartsonia* (Hamamelidaceae) from China. Mr. Hemsley also revises *Corylopsis*, with descriptions of two new species. Dr. Stapf revises *Durandea*, under which are twelve species, six of which are new, and establishes a new genus, *Elaphorbia*, for *Euphorbia drupifera* Thonn.
A. *Sphacelochytrium delicatulum* Broth.
B. *Callymenia Larteriae* Holmes.
A NEW SPECIES OF SPLACHNOBRYUM, WITH NOTES ON THE PERISTOME.

By H. N. Dixon, M.A., F.L.S.

(Plate 484 A.)

In the winter of 1904 Mr. G. Webster sent me for identification a small moss gathered in October of that year in brickwork in a stove or warm forcing-house containing orchids at Baldersby Park, Yorkshire, which upon examination was evidently a Splachnobryum. This genus, as is well known, consists entirely of tropical and sub-tropical species, only occurring in temperate regions as an alien, introduced with stove plants, as was the case with the moss gathered in the Botanic Gardens, Glasnevin, Dublin, and referred by Braithwaite (Journ. Bot. 1872) to S. Wrightii C. M., a West Indian species; and more recently with a plant gathered in stoves at Cherbourg by Corbière, and described as a new species, S. Corbieri Ren. & Card. (Bull. Soc. Roy. Bot. Belgique, xli. p. 311, 1902-3).

The genus Splachnobryum, founded by Carl Müller in 1869, is a well-defined one; twenty species were given in the Genera Musc. Frond. of that author in 1901, a number already increased by three in 1902, when the genus was described by Brotherus (Engler & Prantl, Pflanzenfamilien, Musci, p. 420). Since that time several fresh species have been described, including S. Gehesbii Fleisch., S. rostratum Broth. & Paris, and S. Corbieri referred to above. Comparison with the descriptions and specimens in my possession, and with the collections at Kew and the British Museum (the latter including the types of most of Bescherelle's species) failed to identify the Baldersby plant, and I therefore sent it to Dr. Brotherus, who kindly gave me his opinion that it was an undescribed species. I quote from his letter:—"Diese, wie es mir scheint, neue Art ist mit S. Wrightii und S. Baileyi verwandt, weicht aber von den erwähnten Arten durch weicheren, dunkelgrünen Blättern, kürzere und dünnere Seta, durch kleinere, kürzere Kapsel und längerem Deckel ab. . . Ich schlage Ihnen den Namen S. delicatulum vor und hoffe dass Sie gelegentlich diese neue Art beschreiben wollen."

Later on in the winter Mr. Webster paid another visit to the spot, but found the plant had almost or quite disappeared. It, however, reappeared the following autumn, and, curiously enough, in October of that year he found the same plant in an orchid-house at Harrogate. In this case the plants were mostly male, and no fruit was present. The orchids in this house were at the time mostly South American species, but this can scarcely be taken as any guide to the origin of the moss, which is doubtless an annual species, and may have occurred in the stoves from year to year for some time past.

The publication of the species has been somewhat delayed for the following reason. When I came to examine the structure of...
the peristome for the purpose of drawing up a diagnosis, a somewhat striking peculiarity presented itself, differing from anything I could find in descriptions of the peristome in Splachnobryum. It became desirable to compare this structure in other species, but mature capsules in this genus are extremely difficult to obtain, and it was only after considerable delay, and after, I fear, taxing the kindness of numerous correspondents, that I was able to obtain suitable material for comparison; and even now I am quite unable to say whether the particular structure in question is peculiar to the plant under consideration, or whether it may be shared by some other species of the genus. In any case, however, it has been so far undescribed, and is of sufficient interest to call for notice; but involving as it does the somewhat complicated and not generally understood composition of the peristome-teeth in Splachnobryum, it is necessary to enter into some detail.

The general structure of the teeth in Splachnobryum has been described by Philibert (Rev. Bry. 1890, p. 9) in the course of his admirable series of "Etudes sur le Péristome." The description rests upon S. Boivini C. M., the only species of which he was able to obtain specimens showing this structure.

The peristome in S. Boivini consists of sixteen narrow teeth, always inserted (a character constant in the genus) at a considerable distance below the mouth of the capsule, and so short as to protrude but little above it. The portion visible above the orifice consists of sixteen narrow, papillose teeth, each with a median line from top to bottom, and resembling closely the less highly developed peristome of many of the Pottioid mosses. The lower concealed part of the teeth, however, which is frequently fully equal in length to the exserted portion, is considerably more complex. A longitudinal section of the capsule, or a transverse section just below the orifice, shows three concentric layers of cells; the outer, forming the capsule-wall, consists of cells considerably elongated in the radial direction, with the outer walls strongly incrassate, and coloured a deep reddish brown, the inner walls being much thinner and paler. Within this row is a ring (as seen in transverse section) of thirty-two cells, much narrower in the radial direction. This ring represents the layer of cells from the innermost walls of which, in the normal peristome of the Diplolepidea, the dorsal plates of the outer teeth are derived, the outer and lateral walls of each cell and a part at least of the upper and lower walls being absorbed, while the inner wall is thickened and remains to form the outer (dorsal) plates; each adjoining pair of the thirty-two cells goes to form one of the sixteen teeth, which appears therefore divided down the middle by a fine median, often zigzag line. In the case of S. Boivini, however, while the inner walls are more or less thickened, the remaining walls of these cells do not (in the part of the peristome below the orifice) become absorbed and disappear, but remain; they are not, however, thickened or highly coloured.

The cells of the third ring or layer are (in S. Boivini) slightly longer in their radial diameter than in the preceding layer; their walls also persist in their entirety, and thus form a series of closed
chambers between the dorsal plates of the teeth and the inner or ventral plates; it is this innermost series of plates, formed of the inner walls of this third series of cells highly thickened and deeply coloured, which, being continued upwards above the mouth of the capsule, form the only visible part of the peristome when viewed from without. The number of cells in this third layer is considerably greater than the thirty-two of the second, there being two or three of these cells to each of the sixteen teeth. The persistent radial and horizontal dividing walls of these enclosed cells, between the outer and inner plates of the peristome, show, when a tooth is carefully examined from its outer surface, a series of fine vertical and horizontal lines exactly as are seen in the teeth of the peristome in Splachnum. On account of this structure (homologous with the peculiar structure of the teeth in Ptychostomum), and the Diplolepideous nature of the lower portion of the teeth, Philibert, I think rightly, retains the genus Splachnobryum among the Splachinaceae.

With this description of the peristome in S. Boivini, I have been able to compare in detail the structure in two species, both in Herb. Mus. Brit.; the one is S. Sprucei C. M. (no. 209 b, Musci Amazonici et Andini, = Weisia splachnifolia in Mitten, Musci Anstr. Americani, p. 141); the other is labelled " Splachnobryum ? n. sp., Dominica, Elliott, 238." The peristomes in these two plants agree closely with one another, and appear to be nearly identical, as far as one can judge, with that of S. Boivini as described by Philibert. The inner wall of the second layer of cells forming the dorsal plates of the teeth is probably more thickened and more deeply coloured than in that species, where Philibert describes it as "faiblement colorée." I failed also to observe the median vertical line dividing each tooth in the exerted portion. But the general structure and the relationships of the several layers of cells are the same.

The peristome in the Baldersby plant, however, differs in some respects markedly from the peristome as typified in the three species above described. The outer of the three layers of cells—that forming the capsule-wall—is very similar, except that the inner walls, as well as the outer, are somewhat incrassate and coloured; the second layer of thirty-two cells in circumference is also very similar, only having the walls frequently somewhat more thickened than in those species. It is the third or innermost layer which shows a marked difference. A longitudinal section of the capsule shows the cells of this layer towards the base or insertion of the peristome to be narrow in the radial direction, as in S. Boivini; but the two upper cells, which are on a level with the orifice of the capsule, the ultimate one rising a little above it, are very considerably enlarged, the uppermost one especially, so as to appear at times almost inflated; they are thin-walled and perfectly hyaline. Moreover, instead of there being two or three cells opposed to each tooth, there is (in the ultimate row at least) a single cell only, and this being about double the width of the narrow, coloured, exerted portion of the tooth, it appears at first sight, when viewed from
without, like a wide hyaline border to the (apparent) base of the papillose, orange tooth. The outer walls of these hyaline cells not being thickened or coloured, there is therefore no dorsal layer to the peristome as in S. Boirini, the whole of the coloured portion of the teeth being derived from the innermost walls; moreover, each tooth being faced (at any rate in the upper part of the concealed portion) by only a single cell, from the inner wall of which it is derived by thickening, it is not divided by any median line, the exserted portion consisting of a narrow linear single row of plates. This constitutes a marked difference in the structure of the teeth from those of S. Boirini, S. Baileyi, and perhaps most species of the genus. The lowest portion of each tooth near its insertion is, however, usually composed of two rows of plates, passing into a single row before reaching the orifice of the capsule.

The effect of the large hyaline uppermost cells of the third layer is to constitute a form of pre-peristome, consisting of a hyaline ring of cells usually just appearing above the rim of the capsule, and resembling at first sight a ring of persistent annular cells, from which, however, they differ in the apex of each (dorsal view) being truncate, instead of rounded, and of course their origin is entirely different. They may, I think, fairly be described as a pre-peristome, being very nearly homologous with that structure as it appears in certain species of Orthotrichum; the principal difference being that there it is formed from the thickened and coloured portion of the outer walls only of a layer of cells, while here it is formed from the whole of the cell, the walls being unthickened and uncoloured.

The following is a diagnosis of the species:—

**Splachnobryum delicatum** Broth. *in litt.*, sp. nov. Dioicum. Pusillum. Caulis tenellus, 3-8 mm. altus, simplex vel parce ramosus, densiusculae foliosus. Folia mollia, patentia, apice sepius leniter patulo-recurvo, concavi- uscula, ovata vel oblongo-subspathulata, apice rotundato obtusa, 0.6-1 mm. longa, margine plus minus reflexo, nonnumquam plano, integro vel apice tantum vix crenulato, nervo tenui sub apice evanido sepe rubello, rete valde laxo, parietibus tenuibus, chlorophilloso, cellulis pro more magnis, irregulariter hexagono-rhomboides, elongatis, 40-65 μ longis × 12-16 μ latis, basin versus hyalinis, elongato-rectangularibus, magnis, prope apicem solum breviusculis, ad marginem superiorem seriebus singulis sub-quadratis. Fl. ♂ terminales, nonnumquam laterales, gemmiformes, antheridiis pro more magnis, conspicuis. Fl. ♀ terminales, sepe quidem et laterales (plerunque archeogoniis nudis singulis in foliorum axillis per totum caulem instructis). Setae e vaginula elongata tenuissi, 2.5-3 mm. longa, rubra; theca angusta cylindrica minutæ, 0.5 mm. longa, operculo conico-rostellato; peristomii dentes longe sub ore rubro oriundi, angusti, lineares, nec linea media divisi, papillosi, aurantiaci, inter se raro cohaerentes. Ante unumqueque dentem ad inferiorum partem singulæ cellularum series, quam ultima magna hyalina supra thecae os paullo exserta, *preperistomium sistentes*, inveniuntur. Spore 12-16 μ, laeves.

Differs from S. Baileyi Broth. in the softer leaves, longer, laxer areolation, rostellate lid, &c.; from S. Wrightii C. M. in the small size, much shorter seta, smaller capsule, narrow-linear teeth, and other points; from most of the allied species in the longer, laxer areolation, as well as in the small capsule with rostellate lid. From all species, so far as hitherto described, in the hyaline pre-peristome. The Glasnevin plant, of which I have not seen a fruiting specimen, resembles it in the leaf form and areolation, but the leaf-margin appears to be plane, and if it is identical with S. Wrightii, the fruiting characters would clearly separate it.

Since writing the above, I learn from Mr. Webster that he has found a few barren stems of the Splachnobryum in one of the orchid houses in the gardens at York in a position where many hundreds of thousands of Cattleyas have been grown during the past twenty-five years, and where no East Indian species have been cultivated in his recollection. As the plant was associated in its other stations with Cattleyas, the presumption appears to be that it has been introduced with orchids of this genus, and that its derivation is therefore in all probability from the tropical regions of the western hemisphere.

I have to acknowledge gratefully the assistance I have received from Mr. A. Gepp in preparing this description. I may mention that I am sending specimens of the type of S. delicatulum to the herbaria at the British Museum and Kew.

EXPLANATION OF PLATE 484 A.—Splachnobryum delicatulum Broth., sp. nov. 1, 2. Leaves, × 25; 3, Cells in upper part of leaf, × 125; 4, Portion of peristome, viewed from without, × 125; 5, Longitudinal radial section of capsule-wall and peristome, × 125.

CALLYMENIA LARTERIÆ, n. sp.

By E. M. Holmes, F.L.S.

(Plate 484 b.)

Callymenia reniformis J. Ag. is a variable species, of which Agardh distinguished three varieties:—

1. Var. cuneata, illustrated in Kützing. Tab. Phyc. xvii. t. 78, under the name of Euhymenia divisa, and in Zanardini, Icon. Phyc. Med. Adriat. tab. 93, figs. 4-5, under the name of var. Ferrarii. Kützing's figure shows a short stalk, rapidly widening out into a frond divided into broad wedge-shaped segments with entire margins, reminding one of a large frond of Dilsea edulis split up by fissures. Zanardini's figure shows a very short stalk widening out

Digitized by Microsoft®
at the distance of half an inch into a frond about two and a half or more inches wide, and then dividing up in a palmate manner into broad wedge-shaped segments, irregularly lacerate-dentate at the margins. I have not seen this form in Britain, although it is recorded by Mr. Batters in his Revised List of British Marine Algae (1902) for Falmouth and Orkney.

2. Var. undulata J. Ag. Agardh does not refer to any illustration of this plant, but his description of its extremely short stem and undulated entire or slightly lobed frond will readily distinguish it when met with. This plant is not unfrequent in South Devon in deep water. It differs also from the typical C. reniformis in its brighter colour and slightly thinner consistence.

3. Var. Ferrarii J. Ag. Unfortunately Zanardini has adopted this name for a different variety. The illustrations which Agardh cites for his plant—viz. Kützing (Tab. Phyc. xvii. tab. 79) and Turner (Hist. Tur. no. 118, fig. 9)—show a nearly sessile obovate frond with numerous proliferations of the same shape.

Of these three forms, the var. undulata is so distinct in habit that it might well be regarded as a distinct species, but I have never met with it with cystocarpic fruit.

During the last twelve months I have received from Miss C. E. Larter, of Combe Martin, North Devon, who has recently taken up the study of marine algae, a series of specimens so different from all of the three above varieties, that the plant seems deserving of a distinct name. The characters it possesses are constant during the year, since I have received each month specimens with cystocarpic fruit, and presenting the same habit and mode of growth. I therefore propose to characterize it as a distinct species as follows:—

Callymenia Larteriæ, n. sp. Fronde gelatino-membranacea fusco-purpurea, a disco radicali in laminam anguste cuneatam, irregulariter fission, expansa; proliferationibus numerosis elliptico-ovatis vel oblongis, margine aut raro superficie excrecentibus. Cystocarpius numerosus, utrinque prominulius irregulariter sparseis.

The colour of the frond is of a duller colour than that of the typical form of R. reniformis, or of its var. undulata, having more of a brownish red tint. In none of the specimens that I have seen do the proliferations attain the size of the original frond. The plant bears cystocarps throughout the year, scattered over the whole frond, except on the young proliferations. I have seen this plant only from Combe Martin and Torquay.

Explanations of Plate 484. — Callymenia Larteriæ Holmes, sp. nov. 1, Plant, nat. size; 2, Transverse section of thallus, × 180; 3, Section of cystocarp, × 80.
ALABASTRA DIVERSA. — PART XIV.

By Spencer le M. Moore, B.Sc., F.L.S.

NEW OR LITTLE-KNOWN AFRICAN GAMOPELATEÆ.

(Concluded from p. 53.)

GENTIANÆ.

In swampy ground near the Kafu River, Uganda; Bagshawe, 960.
Fort Portal, Toro, at edge of swamp; Bagshawe, 979.

BORRAGINEÆ.

Cordia rubra Hochst. ex A. Rich. Tent. Fl. Abyss. ii. 82.
Above Butiaba, Unyoro; Bagshawe, 865.
Masinde, Unyoro; Bagshawe, 877.

Ehretia angolensis, Bak. in Kew Bull. 1894, 29.
Fort Portal, Toro; Bagshawe, 976.

SOLANACEÆ.

Toro, near Mpanga River; Bagshawe, 1120.
Native name "njagi." Fruit eaten.
Kitagueta, Toro; Bagshawe, 1122.
Cultivated as a vegetable (the fruit). Native name "njagi."
The single specimen is unarmed, but Mr. C. H. Wright, who
kindly examined it, agreed with me as to the determination.

SCROPHULARINEÆ.

Dielis ovata Benth. in Comp. Bot. Mag. ii. 23.
Mpanga Forest, Toro; Bagshawe, 1012.
Sutera micrantha Hiern in Fl. Cap. iv. sect. 2, 263.
Bulawayo; Eyles, 1077.

Matopo Hills; Eyles, 1166.
Flowers white.
Near Masinde, Unyoro; Bagshawe, 878.

Lindernia Gossweileri, sp. nov. Annua caule ascendente
basi ramosa aliter simplici anguste linearibus, foliis sparsis omnibus oppositis parvis sessilibus ovatis basi late amplexicaulis margine distanter serrato-dentatis 5-nervibus firme membranaceis, floribus axiliis superioribus solet simum ortis, pedunculis calyce brevioribus, calyce fere adusque basin partito lobis anguste linearibus acuminatis margine ciliolatis, corollæ tubo calyce æquilongo
cylindrico labio postico obovato integro quam anticum paullulum breviore antici lobis late obovatis obtusissimis margine crisper undulatis, staminibus posticis breviter exertis anticorum appen-
dice brevi sursum inflexo antheris per paria approximatis loculis haud apice confluentibus.

Hab. Angola, Malange, near Capopa; Gossweiler, 1086.
Planta saltem 25 cm. alt.; internodia 3-0-5'-0 cm. long. Folia 0-7-1-0 cm. × 0-4-0-9 cm.; subtus pallidióra; costa x. pag. inf. eminentes. Pedunculi 0-2-0-6 cm. long. Flores aurei. Calyx totus vix 0-9 cm. long.; lobi sursum patuli 0-75 cm. long., anticus modo 0-45 cm. Corollæ tubus 0-85 cm. long., 0-22 cm. diam.; labium posticum 0-4 × 0-35 cm.; antici lobi 0-45 × 0-35 cm. Anthere subequales, 0-08-0-1 cm. long. Ovarium oblongo-
ovoideum, glabrum, 0-25 cm. long.; stylus (stigmate inclus) 0-7 cm. long., glaber.

Very close to L. Whytei Skan, but a weaker growing plant and almost entirely glabrous. The chief differences are to be found in the more deeply divided nearly glabrous (not pubescent) calyces, and in the somewhat smaller golden (not purple) corollas with smaller and slightly different lobes. This is the plant alluded to by Mr. Skan (op. cit.) under L. Whytei.


In marshy ground. Matopo Hills; *Fyles*, 1038.

There is some doubt about this determination. The specimens differ from the type in being smaller and weaker plants with smaller leaves (usually about 0-2 cm. long) and a somewhat shorter and broader calyx, and a slighter smaller corolla. *I. Muddii* was described from Transvaal material.

Valley of the Kafu, Uganda; *Bagshawe*, 819.


Near the Mpanga River, Kitakwenda; *Bagshawe*, 1052.

*Harveya obtusifolia* Vatke in Brenn. Abhandl. ix. 130.
Near Katwe, Lake Albert Edward; *Bagshawe*, 1024.

**Acanthaceæ.**

**Thunbergia** (§ *Thunbergiopsis*) *microchlamys*, sp. nov.
Caule volubili gracili glabro longitrorsum striato, foliis longipetiolariis cordatis apice cuspidato-acuminatis margine undulatis basi 5-nervibus pag. sup. lâete viridibus et pilis strigosis appressis sparsissimae instructis pag. inf. pallidioribus necnon glabrerrimis, flore unico nobis obvio solitario breviter pedunculato, calyce pube-
ralo breviter 6-lobo lobis deltoideis obtusis, bracteolis paryulis ovato-oblongis acutis extus albide piloso-puberulis intus apicem versus pubescentibus trinervibus dilute viridibus, corollae tubo bracteolas magnopere excedente extus obscure puberulo juxta basin valde attenuato sursum infundibuliformi limbi lobis quam tubus multo brevioribus, antherarum loculis inaequalibus uno calcarato vel calvo altero semper calvo secons suturam barbatis connectivo pro-
ducto, ovario quadrato glabro, stigmatum magni infundibuliformis ore triangulari ad angulos laterales barbato infere ne extus pubescente.

Hab. Durro Forest, Toro; Bagshawe, 1048.

Internodia adusque 20-0 cm. long. Foliorum lamina 9-0-10-0 × 5-5-6-0 cm., tenuter membranacea, glandulis pellucidis creber-
mine instructa neeon cystolithis rotundis sparsis pag. inf. promi-
nentibus; petiolii 3-5-4-5 cm. long., complanati, basi dilatati, juxta
laminam puberuli alii glabri. Pedunculus 1-2 cm. long., com-
planatus, ipso sub flore puberulus. Bracteolae 1-2 × 0-6 cm.,
sicce vero modo 1-0 cm. long. Calyx 0-12 cm. alt. Corollae pur-
pureae tubus 3-0 cm. long., ima basi 0-4 cm. diam.; inde cito
ad 0-13 cm. attenuato, superne 0-8-1-0 cm., faucibus 1-3 cm. diam.;
limbi lobi circa 0-6-0-8 cm. long. Antherarum loculis alter
ovoeditus, 0-3 cm. long., alter oblongus, 0-28 cm. Ovarium 0-2 cm.
long., stylus 1-5 cm., stigma 0-6 cm. long., hoc inferne 0-1-0-2 cm.,
ore 0-5 cm. diam. Capsulae non suppetunt, sed semina duo dorso
reticulata, ventre alte excavata, 0-7 × 0-6 cm.

A single specimen with one flower. The flower apparently
crowns a very short lateral branch bearing a pair of small leaves,
and if this is the usual inflorescence, the plant is not a typical
member of § Thunbergiopsis. It finds its nearest affinity with T.
cordata Lindau, a species not represented in this country, which is
described as having narrower leaves on shorter stalks, longer
peduncles, somewhat larger bracteoles, blue flowers, a shorter corolla
with differently shaped tube, and anthers all with a spur at base.

Near Masinde, Unyoro; Bagshawe, 871.

A form with very short spines, probably the same as H. Lin-
dariana Burkill, if that be really a distinct species, which Mr.
Burkill himself doubts.

Brillantaisia Mahoni C. B. Cl. in Kew Bull. 1906, 251.
Toro, River Bigera and mouth of the Mpanga, at water’s edge
or in water; Bagshawe, 1191.

Very near B. nitens Lindau from the Cameroons.

Dyschoriste alba, sp. nov. Erecta, fruticulosula, ramis rigidis
elongatis sparsim ramulosis crispe pubescentibus, foliis parvis sub-
sessilibus ovato-oblongis obtusis fac. sup. præsertim secus nervos
puberulis fac. inf. pubescentibus, floribus mediocribus in cynnis
brevisibus stricte axillariis rarius ramulos perbreves terminantibus
paucifloris dispositis, calyce satis elongato pubescente vix adusque
1⁄3 in lobos linearis-setaceos basi ampliatis diviso, corolle tubo
calycem leviter excedente faucibus paullo dilatatis limbo bilabiato
labis tubun circa semiquantibus, antherarum breviter exsertarum
loculis brevissimae calcaratis, stylo piloso-puberulo capsula ——.

Hab. Mazoe; F. Eyles, 237.

Suffrutex metralis ex schedis cl. collectoris. Folia 1-5-2-5 cm.
long., 0-6-1-2 cm. lat., margine leviter undulata, firme membra-
nacea. Flores albi. Calyx totus 1-2 cm. long., 0-2-0-3 cm. diam.;
lobi inter se allquantulum inaequalis, ± 0-1 cm. long. Corollae
tubus extus pubescens, 1-3 cm. long., deorsum 0-15 cm. faucibus
A plant of familiar appearance which I have been unable to name, after examination of all the Museum and Kew material. The affinity is with *D. Fischeri* Lindau, from which it differs in habit, calyx, and much smaller white flowers. The chief points are the long, rigid, sparingly branched stems, the size and lobing of the calyces, and the dimensions of the various parts of the medium-sized white corollas.

*Chaetacanthus Persoonii* Nees in *Linnaea* xvi. 347.

Matopo Hills; *Eyles*, 1104.

A South African plant recently found by Dr. Bagshawe in the Uganda Protectorate.

This is believed to be the first record for the Southern Tropics.

*Mimulopsis Bagshawei*, sp. nov. Ramis ramulisque erectis tetragonis mox puberulis novellis pubescentibus, foliis petiolaris ovatis apice cuspidato-acuminatis basi rotundatis leviter cordatis marginie imparifer crenato-dentatis membranaceis pag. sup. scabriusculis, cymis pendunculatis terminalibus vel ex axillis summis ortis paniculatis sat laxis plurifloris minute pubescentibus, foliis floralibus vegetativa mentientibus sed plane minoribus, pedicellis calyce sepsissime brevioribus pubescentibus, bracteolis quam calyx brevioribus lanceolatis obtusis puberulis, calycebus puberulis lobis linearis lanceolatis vel lineari-oblongis obtusis pro rata abbreviatis, corolle parve tubo calycem excedente basi aliquanto constrieto superne amplificato lobis late obovatis apice retusis, staminum anticorum calcar albus leviter curvato loculum saum fere semiæquante, stigmaticus lobo postico abbreviato leviter tuberculoso, ovalis quove in loculo 4.

Hab. Growing in water at Hoima Road, Entebbe; *Bagshawe*, 801.

Planta ultra seminatem. Foliorum limbus 6.0-8.5 × 3.5-5.0 cm., utrinque cystolithis parvis perspicuis crebro indutus, pag. inf. pallidor, pag. sup. fuscescens; coste secundariae utrinque circa 8, quorum juxta 2 basi appropinquant, proximales aperte fornicatae, distales arrecto-arcuatae; petioli tennes, summum 3-0 cm. long., canaliculati, minute puberuli. Cyme axillares circa 12-0 cm., terminalis fere 20-0 cm. long. Folia floria 3-0-0.5 cm. long., juniora gradatim imminuta. Pedicelli solemniter 0.3-0.5 cm. long. Flores albi. Calyx 0.8 cm. long.; lobi 0.6-0.7 cm. × 0.175 cm. Corolle tubus 1.2 cm. long., ima basi 0.3 cm. faucibus circa 1.0 cm. lat.; lobi 0.8 × 0.6 cm. Staminum anticorum antherarum loculus calcarius in toto 0.55 cm.; locculus alter 0.3 cm.; antherae reliquae 0.28-0.3 cm. long. Ovarium oblongum, superne pubescens, vix 0.3 cm. long. Stylus 1.0 cm. long., piloso-pubescent sub apice glaber. Stigmaticus lobo antiquus 0.15 cm. long.

Among other points known from the open-cymed species of the genus hitherto described by the short and relatively broad puberulous calyx-lobes coupled with the small corollas.
Paulowilhelmiia polysperma Benth. in Hook. Niger Fl. 479.
Near Durro River, Toro; Bagshawe, 1909.
An Upper Guinea plant (Sierra Leone to Cameroons) recently found in Buddu by Mr. M. T. Dawe.

Mellera lobulata S. Moore in Journ. Bot. 1879, 225,
Waki River, Unyoro; Bagshawe, 836.
This is a Nyassaland, Mozambique, and Usambara plant, which Mr. Scott Elliot discovered growing upon the eastern side of Lake Albert Edward, and therefore somewhere in the neighbourhood of the above habitat.

Dr. Bagshawe notes that the corollas are "a washed-out blue."

Hitherto found only in the Upper and Lower Guinea Provinces (Ashante to Corisco Bay).

Barleria (§ Somalia) matopenis, sp. nov. Inermis, veri-
similiter suffruticos, ramulis gracilimis pubescentibus dein glabris
novellis griseo-tomentillis, foliis parvis manifeste petiolatis lanceo-
lato-oblongis obtusis primo griseo-tomentellis cito pag. sup. lute
virdibus glabris cystolithis sat magnis preditis pag. inf. pallidi-
oribus pubescentibus puberulisve, floribus mediocribus in axillis
summis solitariis sessilibus, bracteolis foliis consimilibus nisi minor-
ibus, calycis griseo-pubescentis lobo antico ovato-oblongo ab ½ fisso
lobulis linear-lancolatis acutis lobo posticoanticum paullo exceed-
dente lanceolato-oblongo acuto lobis lateralis minoribus lanceo-
latis longiusculae acuminatis, corollae tubo cylindrico a limbo bene
superato limbi lobis obovato-oblongis obtusissimis antico quam
reliqui breviore, antheris subexsertis staminibus 2 valde imminutis
antheris quinto vix aspectabili, ovario ovoido-oblongo sursum
breviter attenuato glabro, ovulo quvo in loculo unico addito altero
ad meram papillam redacto, capsula calycem breviter exceedente
rostrata disperma.

Hab. Matopo Hills; F. Eyles, 1165.

Foliorum lamina 2-0-3-0 cm. long., ± 1-0 cm. lat., margin
leviter undulata, basi in petiolum anguste alatum 0-6-0-8 cm. long.
desinens. Bracteola circa 1-0 cm. long. Calycis lobi posticus
1-5 cm. anticus 1-2 cm. long., hujus lobuli 0-4 cm. long.; lobi
laterales 0-9 cm. long. Corolla glabra, dilute violacea, in tot\circa
3-5 cm. long.; tubus 1-0 cm. paullulum exceedens; lobi anticus
2-0 cm., reliqui 2-3 cm. long. Filamenta 2-5 cm. staminodia
0-2 cm. long., hæ basi dilatata. Discus undulatus, circa 0-12 cm.
alt. Ovarium 0-45 cm. long.; stylus glaber, 3-4 cm. long. Capsula
1-3 cm., eje rostrum 0-6 cm. long. Semina subrotunda, araneosa,
0-55 × 0-5 cm.

Nearest B. Hochstetteri Nees. The sessile flowers, longer and
narrower acute calyx-lobes, the anticious ones not entire but bifid,
the larger corollas and glabrous capsule, are prominent points of
difference.

Durro River, Toro; Bagshawe, 1016.
A species known only from the Cameroons till Dr. Bagshawe
himself gathered it at Entebbe.
Wimi Forest, Toro; Bagshawe, 1039.
A West Coast species (Sierra Leone to Angola) which has also
been found in the south of the Congo Free State.

Waki River, Unyoro; Bagshawe, 833.
The spikes are slender and upwards of 5 cm. long, instead of
being broad and short as are those of the type specimen, otherwise
there seems little difference. Dr. Bagshawe notes the flowers as
being pink.
The specimen is midway between M. glandulosum Hochst. and
M. abbreviatum, which latter should probably now be suppressed.
The type hails from Kavirondo in British East Africa, consider-
ably to the eastward of the new locality.

Justicia betonicoides C. B. Cl. in Fl. Trop. Afr. v. 184.
Fort Portal, Toro; Bagshawe, 1017.
Here again we see a considerable extension of range, the distri-
bution of the species hitherto having been British East Africa and
Nyassaland.

J. exigua S. Moore in Journ. Bot. 1900, 204.
Toro; Bagshawe, 1108.
This species had not previously been found north of Rhodesia.

Adiantoda Engleriiana C. B. Cl. in Fl. Trop. Afr. v. 222.
River Waki, Unyoro and Wimi Forest; also forest near mouth
of Mpanga, Toro; Bagshawe, 867, 1033, 1171.
A considerable westward extension to the range of this eastern
species.

Diciptera laxata C. B. Cl. in Fl. Trop. Afr. v. 258.
Near Masinde, Unyoro; Bagshawe, 878.
Another case similar to the preceding, the plant having been
found previously only in Nyassaland and the Kavirondo district of
British East Africa.

Hypoestes toroensis, sp. nov. Herbacea ramulis e rhizo-
mate tenui crebro radicante ascendentibus foliosis puberulis deinde
glabris, foliis petiolo in angusti elliptici acuminati apice ipso
sepius obtusis tenuiter membranaceis supra pilis albis appressis
sparsim indutis et secus costam centralem minute pubescentibus
subtus piloso-puberulis vel fere omnino glabris, involucris cymii sub-
teretibus bifloris cymis in panicu latae sepe elongatae folii
intermixta dispositis, bracteolis exterioribus vix omnimodo diserei
ter se inaequalibus linear-i-lanceolatis obtusi vel obtuse acutis
sature viridibus interioribus itaque fere liberis quam exteriore
paullo minus minoribus oblongis acutis aliquanto decoloribus omnibus
puberulis et margine ciliatis, calycem quam bracteae interioribus haud
multo breviori sat alte partito lobis linearibus acutis margine cilio-
latis, corollae extus puberulae tubo involucrum circiter æquante
superne gradatim ampliato limbo tubum paullulum excedente labio
postico oblongo-ovato obtusissimo autico late oblongo 3-dentato
dentibus deltoideis inter medio quam laterales manifeste latiore sta-
minibus exertis, stylo exerto, stigmate longiusculce impariter
2-ramoso, capsula anguste oblongo-obovoida puberula, seminibus tuberculis parvis obtectis.

Hab. Wimi River, Toro; Bagshawe, 1020.

Folia modice 5-0-12-0 cm. long., 1-5-3-5 cm. lat., supra saturate altrinsecus dilute viridia ibique cystolithis linearibus crebro instructa; costae secundariae utrinque circa 6, erecto-ascendentes, vix arcuatae, petioli 1-5-3-5 cm. long., puberuli. Bracteolae exteriores ± 1-0 cm. long., pars connata 0-12 cm. long.; interiores 0-5-0-6 cm. Flores lilacini. Calyx 0-45 cm. long., tubus 0-1 cm. Corollae tubus 0-8 cm. long., ima basi 0-1 cm., infra medium 0-08 cm. superne 0-25 cm. diam.; labia 0-9 cm. long. Filamenta com-planata, glabra, 0-9 cm. long. Ovarium fere 0-3 cm. long.; stylus glaber 1-0 cm.; stigmatum ramus alter 0-1 cm. alter 0-08 cm. long. Capsula 0-8 cm. long., a medio 4-sperma. Semina 0-1 cm. diam.

Easily distinguishable from H. rosea Beauv. by the narrow leaves, the inflorescence, and the small involucres and corollas.

**Verbenaee.**


Mpanga Forest, Toro; Bagshawe, 1096.

Only a Lower Guinea plant hitherto.


This plant, with its relatively long and slender tube and exserted stamens, is certainly not a *Premna*, although it agrees with that genus in habit rather than with *Clerodendron*. The same remark, except as to the habit, refers also to *P. macrosiphon* Bak., with which *C. melanophyllum* is no doubt allied.


East Toro; Bagshawe, 1110.

Differ from the type in the short pubescence, nearly entire leaves slightly cordate at the base, and corolla of somewhat longer tube with a gradual (not abrupt) swelling at the throat. In some respects it approaches *C. Guerkei* Bak., which will probably have to be merged in *rotundifolium* when more material comes to hand. Dr. Bagshawe notes the plant as common on ant-hills. The flowers are white.


Near Hoima, Unyoro; Bagshawe, 941.

An Upper Guinea and Lower Congo plant.

*Clerodendron oreadum*, sp. nov. Scandens ramis patentissimis bene foliis subestate punctatus seminibus dein glabris eximie sulcatis, folis parvis 3-4-nis petiolaris ovato-oblongis cuspide-acuminatis basi obtusi vel subrotundis margine integris membranaceis utrinque glabris, floribus parvis in cymis terminalibus brevipedunculatis laxe paniculatis folia subquantiibus pubescentibus digestis, bracteis parvis filiformibus pubescentibus, pedicellis calycibus brevioribus, calycis parvi turbineo-campauulati pubescentis lobis anguste lineari-lanceolatis acutis, corollae extus puberules tubo calycem duplo excedente lobis brevibus oblongo-obovatis.
obtusissimis, staminum parte exserta corollae tubo æquilonga, stylo breviter exserto.

Hab. Toro, in the forest near Mpanga and on the River Bigera; Bagshaw, 1075 and 1123.

Folia modice 3·0-7·0 cm. long., 2·0-3·0 cm. lat., in sicco viridia; costâ secundarâe 2 basales valde perspicue et ita folia trinervia habeantur, costâ reliquae utrinque circa 5 alie ascendentes alie paullo minus perspicue patentissimae; petiolâ 0·5-1·2 cm. long., graciles, puberulis. Panicleâ (pedunculo 1·5-2·0 cm. long. inclusâ) 4·0-6·0 × 4·0-5·0 cm., ramuli patentes, graciles. Bracteae circa 0·2-0·3 cm. long. Flores albi. Calyx totus (humectatús) 0·3 cm., lobi 0·1 cm. long. Corollae tubus 0·65 cm. long., 0·1 cm. diam., lobii 0·2 × 0·12 cm. Anthère oblongae, 0·15 cm. long. Ovarium 0·125 cm., stylus 0·8 cm. long.

Differs from C. nuxioides (Siphonanthus nuxioides S. Moore) in the small leaves obtuse or rounded at the base, the short inflorescences, much smaller calyx and corolla, the former pubescent, &c. It is nearer still to the plant named by Baker (Fl. Trop. Afr. v. p. 290) Premna macrosiphon, but which is, I venture to think, a Clerodendron; this, however, has rusty stems, much larger leaves with rusty petioles, and larger lobes to calyx and corolla among other features.


Bulawayo, on granite formation; Eyles, 1201.

A large shrub with heliotrope flowers. On the Matopos it is a tree 7 m. high according to Miss Gibbs (l. c.).

Labiate.


Kibero, Lake Albert; Bagshaw, 906.

A British East African species.

O. shirensis Bak. in Fl. Trop. Afr. v. 368.

Sebakwe, very common; Eyles, 71.

A Nyassaland plant, first found in Rhodesia by Dr. Rand in 1898.

Æolanthus (Euæolanthus § Truncata) crenatus, sp. nov.

Caule sat elato lignoso ramoso microscopice puberulo, foliis parvis manifeste petiolatis nunc spathulato-oblongis nunc oblongo-obovatis nonnullquam late obovatis obtusissimis basi subito vel gradatiâ attenuatis margine perspicue crenatis basin versus equidem crassiusculis utrinsecus puberulis, floribus pro rata parvis sessilibus in spicastris laxe ramosis prolixis paniculatis dispositis, verticillastris 1-2-floris, bracteis parvis lanceolatis vel oblongo-lanceolatis obtusis calyce longioribus, calyce florescente angustè campanulari ore denticulato extus puberulo, calycis fructescentis parte decidue oblonga sursum paululum angustiore partem persistentem excedente, corollae extus puberulae tubo angusto sursum gradatim leviter amplificatâ limbi labiis comparet latis antico quam posticum paullo longiore.

Hab. Matopo Hills; Eyles, 1013.

Stirps saltem 35 cm. alt. Canlis 0·25 cm. diam., in sicco
brunneus. Foliorum limbus 0-6-1.0 x 0-4-0.6 cm.; petioli crassiusculi, puberuli, 0-2-0-4 cm. long. Inflorescencia 20 cm. long., 10-0 cm. diam., ejus rami rigidiusculi, patuli, multiflori, puberuli. Flores dilute punici. Bracteae circa 0-2 cm. long., puberulae, ut calyx fusco-colorate. Calyx florescens 0-125 cm. long., 0-1 cm. lat., fructescens totus circa 0-3 cm. long., basi 0-1 cm. superne 0-075 cm. lat., pars persistens vix 0-1 cm. alt. Corollae tubus 0-5 cm. long., basi 0-04 cm. superne 0-12 cm. lat.; labium anticum ovatum 0-35 cm. long., basi 0-22 cm. lat.; posticum 0-3 cm. long., 0-2 cm. lat.; lobi rotundati 0-08 cm. long. Anthereae 0-05 cm. diam. Nuculae puberulae, circa 0-075 cm. long.

In flower somewhat like A. petasatus Briq. according to the figure—I have not seen a specimen—but the calyx has distinct though very short toothlets, and is relatively longer and narrower in fruit; the corolla is broader in the lips, and the nutlets are not glabrous. In habit and leaf there is considerable difference between the two species.


"Root woody, soft, saturated with water, filling the crevice."

*Coleus* (§ *Solenostemonoides*) *toroensis*, sp. nov. Herbaeae caule ascendente inferne nudo superne paucifolioso valido puberulo dein glabro, foliis majusculis oblongo-obovatis obtusis basi in petiolum brevem alatum angustatis margine grosse crenatis tenuiter membranaceus utroque costis costulisque puberulis neglegitis fere glabris, floribus in spicastro subracemiformi-paniculato brevi terminali brunneo-pubescente quam folia breviori digestis, bracteis lanceolatis vel lanceolato-linearibus acutis margine ciliolatis pedicellos bene excedentibus, verticillastriis circa 6-floris, pedicellis quam calyx brevioribus brunneo-pubescentibus, calycis campanulati puberuli lobo postico amplo rotundato margine sparsissime ciliolato lobis reliquis inter se fere æqualibus et basi lata subulato-setaceis ciliolatis, corollae medio-cris tubo ima basi erecto inde subito ad angulum fere rectum subito curvato et max cursu adverso iterum refracto faucibus amplificatis labio antico late eymbiformi apice integro postico quam antieum breviore subæqualiter 4-lobo.

Hab. In the forest near Durro River, Toro; *Bagskaue, 1043.

Planta (ex schedis cl. detectoris) fere 3/ metralis. Foliorum limbus circa 10-0 x 5-0-6-0 cm., glandulis pellucidis microscopici copiosissime indutus; costæ secundariae utrinque circa 5, ascendentes; petioli circa 1-0 cm. long., puberuli. *Panicula* nondum perfecta evoluta modo 5-0 cm. long. Bracteae diusculæ persistentes, 0-3-0-6 cm. long. Pedicelli summum 0-2 cm. long. Flores lutei. Calyx totus 0-15 cm., long. ore fere 0-4 cm. diam.; lobe posticus 0-2 x 0-2 cm.; lobi reliqui 0-15-fere 0-2 cm. long. Corollae tubi pars basalis erecta 0-2 cm. long., 0-175 cm. lat.; pars fere horizontalis 0-2 cm. long., circa 0-1 cm. lat.; pars ampliata 0-55 cm. long. basi 0-15 cm. faucibus 0-5 cm. lat.; labium antieum ægre 1-0 cm. long.; posticum 0-7 cm. long., hujus lobi obtusissimi, 0-15-0-2 cm. long. Anthereae leviter exsertæ; filamentorum pars connata 0-45 cm.,
libera 0·6 cm. long. Stylus breviter exsertus; stigmatic lobi crassiusculi, 0·06 cm. long. De calyce fructescente sileo.

Looks much like C. decurrrens Gürke, but differs in the shortly stalked, coarsely crenate leaves, the short subracemose inflorescence, the ampler calyx with broader hind lobe and somewhat longer front and side ones, the remarkably curved tube of the corolla, the exerted stamens, and somewhat fleshy stigma-lobes.

**Coleus (§ Solenostemonomoides) polyanthus, sp. nov.** Verisimiliter herbaceus caule erecto rariramoso minute pubescente, foliis ovatis obtusis vel obtuse acutis basi in petiolum sat longum angustatis vel obtusissimis margine crenato-serratis dimidio proximali vero integris nitrobie minute pubescentibus membranaceis, spicastris terminalibus folia longa excedentibus pubescentibus et verticillaris 1-floris permultis quasipaniculatis compositis, bracteis parvulis cito deciduis lanceolatis vel lanceolato-linearibus acutis minute pubescentibus viridibus, floribus parvis breviter pedunculatis, calycis florescentis parvuli campanulati intus nudi tubo limbo aestilungo fulvo-tomentoso limbi lobis lineari-lanceolatis obtusis vel obtusiusculis anticus quam reliqui paullulum brevioribus omnibus viola tinctis extus pubescentibus intus albo-villosulis, corollae extus pubescentis tubo prope medium valde curvato deorsum tenuissimo sursum campanulato-infundibulari labio antico quam posticum cymboforme magnopere incurvum breviore et 4-lobo, filamenta ima basi connatis, nuculæ subrotundis a calyce fruct. antice maxime gibbosæ sursum gradatim attenuato occlusis.

Hab. In stony ground on the Matopo Hills, at 5000 ft.; **Eyles**, 1012.

Planta saltem 30 cm. alt. Folia 2·5–3·5 × 1·2–1·5 cm., pilis glandulosis macroscopicis creberrime donata, in sicco viridi-flavescentia; petioli ± 1·0 cm. long., basi aliquantulum diiatai, minute pubescentes. Spicastrum summum 15·0 cm. long. Bracteæ 0·2 cm. long. Calyx florescent 0·15 cm. long.; fructescens 0·3–0·4 cm. long., basi 0·2 cm. ore 0·1 cm. lat. Flores heliotropini. Corollæ tubi pars attenuata 0·3 × 0·075 cm., pars explansa basi 0·1 cm. fruticosi terre 0·4 cm. lat.; labii antici 0·35 cm. long. lobi laterales abbreviati, terminales rotundati, 0·1 cm. long.; labium posticum 0·5 cm. long. Antheræ 0·05 cm. long. Nuculæ vix 0·1 cm. diam., leves, pallidæ.

Though quite different in habit and foliage from C. nyikensis Baker from Nyassaland, there is much resemblance between the two in the inflorescence. Among other points may be mentioned the smaller flowering and longer and narrower fruiting calyx of the Rhodesian plant, and its corolla with a larger and basally much more narrow tube.

**Coleus (§ Stolenostemonomoides) matopensis, sp. nov.** Herbacea caule ascendente sparsis ramosis foliosis minute glandulosospubescentibus pilis longioribus necnon sparsioribus intermixtis in nodis barbatis, foliis longipetiolatis medioeribus late ovatis obtusis basi latissime cordatis rarius truncatis margine grosse crenato-serratis membranaceis pilis appressis longiusculis albis utrinque instructis, verticillaris circa 7-floris pedunculatis subdistantibus.
Achyrosperrnum parviflorum, sp. nov. Herbaceum caule erecto sursum ramoso subteretì primo minute fulvo-tomentello dein pubescente puberulove, foliis ovatis acuminatis a basi rotundata subito vel paullo magis gradatim in petiolum sat longum gracilem haud alatum attenuatis margine serrato-crenatis membranaceis pag. sup. preter costas puderulas necnon pilos strigosos albos sparsos et altrinsecus costas minute pubescentes glabris, spicastris brevibus oblongis terminalibus vel ramulis laterales breves coronatibus, verticillaris a me scrutatis 5-floris, bracteis late ovatis brevissime cuspidulatis apice ipso obtusiusculis minute glanduloso-pubescentibus margine ciliatis, calycy recto extus pubescente fructificante parum aucto limbo plane bilabiato labii antici lobis inter se omnino liberis quam postici majoribus omnibus anguste lanceolatis obtusiusculis, corolle parvae tubo breviter exserte superne ægre amplificato extus pubescente labio postico rotundato emarginato antici lobo inter medio late oblongo-ovovato brevissime bifido, stylo incluso, stigmatibus lobis ambobus brevissimis, nuculis puberulis harum squamellis se ipsas excedentibus spathulatis vel oblongo-ovovatis margine terminali longiusculis ciliatis.

Hab. Budongo Forest, Unyoro; Bagshawe, 927.

Foliorum limbus solemniter 6-0-9'0 cm. x 2-5-5-0 cm. (accedunt folia alia minora juvenilia ± 2-5 x 1-3 cm.), glandulis pellucidis

Journal of Botany.—Vol. 45. [March, 1907.]
copiosissime obsessus; petioli summum 2·5 cm. long., minute pubescentes. Spicastra 2·3-3·0 cm. long. Bracteae 0·5 × 0·35 cm. Flores punicei. Calyx florescens in toto 0·6 cm. long., ore 0·3 cm. diam.; hujus labium anticum vix 0·25 cm. long.; lobi inferne 0·1 cm. lat.; labium posticum 0·125 cm. long., lobi inter se æqueales, 0·1 cm. long., lobi omnes patule ciliolati. Calyx frutescens 0·8 cm. long. Corollae tubus 0·65 cm. long., imas basi 0·125 cm. sub limbo 0·2 cm. lat.; labium posticum vix 0·1 cm. long., antici lobi laterales rotundati, obtusissimi, 0·1 cm. long., intermedius 0·2 × 0·175 cm. Anthese 0·05 cm. long. Stylus 5·5 cm. long. Nuculae modo non 0·1 cm., earum squamellæ 0·125 cm. long.

Nearest A. æthiopicum Welw., an Angolan species, which has winged petioles to the leaves, larger and somewhat differently shaped bracts, larger calyces of which the two front lobes are connate nearly to the top, larger white corollas, &c.

**Leonotis longidens**, sp. nov. Herba elata caule erecto valido sparsim ramoso alte quadrisulcato minute pubescente ramulus breviore Bene foliosos dilute fulvo-tomentosæ hac atque illæ gig-nante, foliis manifeste petiolatis oblongis vel oblongo-lanceolatis obtusis basi rotundatis margine crenato-serratis firme membrana-ceis pag. sup. patule pubescentibus altrinsecus molliter aboto-tomentellis, verticillastris distantibus multifloris ex axillis foliorum summorum aliquanto angustatorum ortis, bracteis quam calyces brevioribus angustissime lineariibus apice breviter spinoso-acuminatibus pubescentibus, floribus pedicellis brevissimis insidentibus, calycis tubo superne paullo ampliato pubescente ore 8-dentato dente postico valde elongato rigido reliquis brevioribus inter se parum inaequalibus omnibus basi amplificatis apice spinosis, corollae dilute aurantiaceæ (in sicco equidem fulvo) tubo cylindrico parte exserta villosa parte inclusa fere glabra intus glabro labio postico tubum fere subæquante.

Hab. Entebbe, Uganda; Bagshawe, 829.

Herba ex schedis cl. Bagshawe "9 feet" alt. Caulis infra verticillastrum imum 0·7 cm. diam. in sicco brunnescens. Folia 3·0-6·0 cm. long., 1·5-2·5 cm. lat.; costæ secundariae utrinque 6, ascendentes, fac. inf. valde perspicœæ; petioli 0·5-2·0 cm. long., fulvo-tomentellis. Verticillastri corollis exemptis 5·0-6·0 cm. diam. Bracteæ circa 1·0-1·5 cm. long. Pedicelli 0·1-0·2 cm. long., pubescentes. Calyx totus 2·6 cm. long., tubus 1·6 cm. long., juxta basin 0·2 cm. superne 0·5 cm. diam., hujus nervi deorum ægri aspectabiles sursum eminentes; dens posticus 1·0 cm. long., basi 0·2 cm. lat.; dentes reliqui 0·25-0·4 cm. long., omnes pubescentes. Calyx frutescens paullo auctus, e. g. totus 3·0 cm. long., tubus 1·75 cm. et dens posticus 1·25 cm. long. Corollae tubus 2·0 cm. long., 0·3 cm. diam.; labium posticum 1·5 cm. long.; anticum 0·7 cm. long., fere glabrum.

A species easily recognized by the pale orange flowers, together with the very long and prominent persistent tooth of the calyx. The affinity seems to be with *L. mollissima* Gürke.
NOTES ON THE "LIST OF BRITISH SEED-PLANTS."


The following notes have been drawn up to explain the more important alterations in nomenclature which have been made in the List of British Seed-Plants and Ferns just published by the Trustees of the British Museum. The general plan and scope of the List is explained in the preface thereto, to which these notes are supplementary. As stated in the preface the alterations are mainly due to the adoption of the earliest specific name, in accordance with the International Rules of Botanical Nomenclature adopted by the Botanical Congress at Vienna in 1905, and to a careful investigation of the literature of the subject. This has led us to restore certain genera which do not appear in the list of "nomina rejicienda" appended to the Rules, and which therefore by the law of priority must stand. Our investigations have incidentally shown that the work of some of the earlier British botanists—e.g. Hill, Miller, and S. F. Gray—has been inadequately appreciated by continental workers. We have occasionally corrected the authority on which a genus or species stands in British books.

The number prefixed to each genus is that which it bears in the List.

4. Adonis annua L. Sp. Pl. 547 (1753); Mill. Dict. ed. 8, n. I (1768). This name must stand for autumnalis L. (Sp. Pl. ed. 2, 771, 1762) and authors. A. annua L. originally included two species which Linnaeus in his second edition distinguished by the names astivalis and autumnalis. Annua must be retained for one of the two, and Miller was the first to restrict it to this plant.

6. Ranunculus divaricatus Schrank, Baiersche Flora, ii. 104 (1789). A large consensus of European botanists, including Ascherson (Flor. Brandenburg, 12), Grenier & Godron (Flor. France, i. 25), Neilreich (Fl. Nieder-Osterr. 683), and Koch (Synops. i. 12) agree that this is identical with the later R. circinatus Sibth. Fl. Oxon, 175 (1794).

12. Delphinium Ajacis L. Sp. Pl. 531 (1753). We see no reason for dissociating the British plant from that of the Hortus Clif- fortainus, cited by Linnaeus for this species, and now in the Department of Botany. The name is attributed to various authors in the British floras.

24. Fumaria Bastardi Boreau in Duchartre, Rev. Bot. ii. 359 (1846-7). The identity of this with F. confusa Jord. (in Cat. Dijon, 1848) is asserted by Boreau (Flor. Centre France, ii. 34, 1847), who had seen an authentic specimen of Jordan's plant; it is also recognized by Mr. Pugsley (Journ. Bot. 1902, 180).

27. Radicula Nasturtium-aquaticum comb. nov. Linnaeus (Sp. Pl. 657) described this as "Sisymbrium Nasturtium v: m." We have
restored the earliest trivial, and, in accordance with Art. 26 of the Vienna Code, have transcribed the symbol.


28. Barbaraeaa lyrata Aschers. Fl. Brandenb. i. 35 (1864). The synonymy is as follows:—

E. lyratum Gilib. Fl. Lit. ii. 59 (1782).

Rule 55 of the Vienna Code forbids the repetition of the generic name as a trivial.

B. verna Aschers. op. cit. 36. The synonymy is as follows:—

Erysimum verna Miller, Gard. Dict. ed. 8, no. 3 (1768).


34. Alliaria alliacea comb. nov. :—

E. alliaceum Salisb. Prodr. 270 (1796).

Alliaria officinalis Andrzej. in Bieb. Fl. Taur.-Cauc. iii. 445 (1819).

45. Teesdalea Br. We restore Brown's original spelling.


57. Viola sylvestris Lamarck, Fl. France, ii. 680 (1778). This is synonymous with V. canina L., but is restricted by Reichenbach (Fl. Germ. Excurs. 707, 1882) to the plant otherwise known as V. sylvatica Fries.

62. Silene latifolia comb. nov.

C. latifolius Mill. Dict. ed. 8, no. 2 (1768).

Behen vulgaris Moench, Method. 709 (1794).


The earliest unoccupied trivial, as the synonymy shows, is latifolius, Behen being already used by Linnaeus for another species of Silene. Miller's description and his specimens in the National Herbarium leave no doubt as to the identity of his plant. S. latifolia Poir. is an obscure plant which has been referred to S. italicä Pers.


70. Stellaria neglecta Weihe in Bluff & Fingerhuth Comp.
Fl. Germ. i. 560 (1825). We follow the authors who combine S. umbrosa Opiz (Seznám, 93, 1852) with this.

71. Myosoton Moench, Method. 225 (1794) antedates Malachia Fries Fl. Halland. 77 (1817)—a name usually printed Malachium.


89. Oxalis corniculata L. and O. stricta L. Following Dr. B. L. Robinson (Journ. Bot. 1906, 386), the usual application of these names is transposed.


113. Arthrolobiun pinatun comb. nov. The earliest name for this species is Scoparius pinnata Mill. Dict. ed. 8, no. 5 (1768). Miller refers to Morison's Plant. Hist. ii. 127, and there seems no doubt that Morison's plant is the one generally known as A. ebracteatum.


P. sterilis Garcke, Fl. Deutschl. ed. 4, 112 (1858) = Fragaria sterilis L. Sp. Pl. 495 (1753), and thus displaces P. Fragariastrum Ehrh.

129. Rosa hibernica Templeton in Trans. Dubl. Soc. iii. 164 (1804) is generally regarded as a hybrid, and is therefore omitted.

142. Sedum purpureum Tausch in Flora xvii. 515 (1834) = S. Fabaria Koch, Syn. Fl. Germ. i. 258 (1836).

145. Saxifraga rosacea Moench, Metthiod. 106 (1794). Generally cited as S. decipiens Ehrh., which, however, was published without description and is cited by Moench as a synonym of his plant.


160. Carum majus comb. nov. The first description of this as distinct from Bunium Bulbocastanum L. is by Gouan (Illustr. 10, 1773) as Bunium majus. Stokes (in With. Arrang. ed. 2, i. 277) says Gouan's is an improper name, as the synonym quoted by him is E. Bulbocastanum L.; but his description is correct.


179. Torilis Anthriscus Bernhardi, Syst. Verz. Erfurt. 167 (1800). This plant is cited by Babington as of Gaertner, but T. Anthriscus Gaertn. is a synonym of Chaerophyllum Anthriscus Lam.
T. arvensis Link, Enum. i. 265 (1821) = Cauca/is arvensis Hudson, Fl. Angl. 98 (1762); T. infesta Sprengel, Pl. Umbell. Prodr. 24 (1813), Scandix infesta L. Syst. ed. 12 (1767).

198. Kentranthus Necker. We have restored the original spelling.


211. Linosyris vulgaris DC. Prodr. v. 352 (1836). This is quoted in the Index Kewensis as of "Cass. ex Less. Syn. Comp. 195" (1832), but the name in Lessing stands as a synonym of Crinitaria Linosyris, and by Art. 37 of the Vienna Code a name quoted in synonymy is not effective publication.

212. Inula vulgaris Trevisan, Fl. Eugan. 29 (1842). The synonymy is as follows:

- C. vulgaris Lam. Fl. France, ii. 79 (1778).
- Inula Conyza DC. Prodr. v. 464 (1836).
- The Linnean trivial cannot be retained for this plant, as there is an I. squarrosa L., Sp. Pl. ed. 2, 1240 (1763).


P. dysenterica S. F. Gray, Nat. Arr. ii. 463 (1821). This species is generally attributed to Gaertner, Fruct. ii. 462 (1791), but Gaertner does not make the combination; he merely cites Inula dysenterica as belonging to his genus.

216. Antennaria margaritacea Dr. ex Less. Syn. Comp. 354 (1832). This is generally cited as of Brown in Trans. Linn. Soc. xii. 123 (1817), but Brown does not there make the combination.


230. Arctium Lappa L. Sp. Pl. 816 (1753). We consider that the Linnean name should be retained for A. majus Bernhardt, Syst. Verz. Erf. 154 (1800).


236*. Helmintia. This is the spelling given by Jussieu when instituting the genus (Gen. Pl. 170, 1789).

241. Crepis capillaris Wallroth, Fl. Hercyn. 287 (1840). There seems no reason for doubting that this is a synonym of Lapsana capillaris L. Sp. Pl. 812, which Linneus later (Sp. Pl. ed. 2, 1134) called Crepis virgens. Wallroth’s name has been very generally lost sight of; we regard it as a small form of C. poly-
morphea Wallr. l. c., which is generally accepted as a synonym of C. virens.

247. Legousia. This genus must be retained on grounds of priority; it was published by Durande, Fl. Bourgogne, i. 87 (1782). Specularia A. DC. dates from 1830 (Monogr. Campan. 344).

248. Wahlenbergia Schrad. (1814) is retained instead of Cerberina Delile (1813) in accordance with the Vienna Code.


255. Daboecia cantabrica comb. nov. This was first described as Vaccinium cantabricum Hudson, Fl. Angl. 143 (1762).


276. Centaurion Adans. Fam. ii. 502 (1763). There seems no reason for rejecting this name. Adanson gives a diagnosis, and cites Gentiana Centaurium L.


313. Lasiopera. This genus, established by Hoffmansegg and Link (Fl. Portug. i. 298, 1809), included four species, three of which are referred to other genera; we retain the name for the remaining species. Lasiopera antedates Eufragia Griseb. Spicil. Fl. Rumel. ii. 13 (1844).


329. Lamium moluccellifolium Fries, Nov. Fl. Suec. 72 (1819), antedates L. intermedium Fries, which he substituted for it later in the same work, p. 105 (1828).


S. occidentalis Lloyd, Fl. Loire-Inf. 212 (1844).


348. Salicornia europaea L. Sp. Pl. 3 (1753). S. europaea L. included two plants named herbacea and fruticosa. These are raised to specific rank in Sp. Pl. ed. 2, 5, where the name europaea disappears. We have retained it for the former plant.

355. Polygonum maculatum Babington, Man. ed. 7, 301 (1874). This is generally cited as of Trimen and Dyer (Journ. Bot. ix. 36, 1871), but occurs there only as a subspecies of P. lapathifolium L.

P. Roberti Loiseleur, Nouv. Not. 17 (1827). We follow Nyman (Consp. Fl. Europ. 638) in restoring this name as the earliest for the species.

363. Callitriche palustris L. Sp. Pl. 969 (1753). We have retained Linnaeus's name for the first part of his original species, which is cited for O. verna in Fl. Suec. ed. 2, 2 (1755).

378. Juniperus sibirica Burgsdorf, Anleit. ii. 124 (1878). This is an earlier name for J. nana of Willdenow, who cites it as a synonym. It has until recently been overlooked, but Prof. Sargent (Silva N. Amer. x. 76, 1896) and Koch (Dendrologie, ii. pl. 2, 116, 1873) accept it.


386. Potamogeton compressus L. Sp. Pl. 127 (1753). We follow Ascherson & Graebner (Syu. Mitteleur. Fl. i. 389, 1897) in taking this name for P. zosteriformis Schum.

P. longifolius Babington was based on a single plant of very doubtful affinity; see Journ. Bot. 1894, 204. It is therefore excluded.

404. Habenaria montana Durand & Schinz, Consp. Fl. Afr. v. 82, 1892. We have retained the earliest specific name; the species was first described as Orchis montana Schmidt, Fl. Boém. i. 35 (1793).

405. Ophrys. We agree with authors in regarding O. insectifera L. Sp. Pl. 948 (1753) as including what is generally known as the insectiferous group, and as therefore untenable for any segregate. The first author to differentiate was Hudson (Fl. Angl. 340 (1762)) who separated O. muscifera, and O. apifera with a "var. β." In his second edition (p. 392, 1778) he raised this variety to specific rank as O. aranijera; but Miller (Gard. Dict. ed. 8, n. 8 (1768)) had already named this O. sphegodes. The English description of "the eighth sort" in this edition refers to n. 7—the Bee
Orchis—as is shown by reference to the previous edition in which that plant is numbered 8. *Arachnites* was used by Linnaeus as a varietal name including the Bee and Spider series of *O. insectifera*, and it was employed specifically by Lamarck (Fl. France, iii. 515 (1778)) in the same sense, and not in the restricted sense in which it is used by Smith and English botanists. Miller, l. c., restricted this to the "Common Humble Bee Orchis," which Hudson had already named *O. apifera*. In any case, however, this is anticipated by *Orchis fuciflora* Crantz (Stirp. Austr. 483 (1769)) whose description and citations leave no doubt as to his meaning. The synonymy of our British species of *Ophrys* is as follows:

*Ophrys muscifera* Hudson, Fl. Anglica, 340 (1762).

*O. insectifera* Mill. Dict. ed. 8, n. 6 (1768).

*Ophrys fuciflora* Reichenb. i. c. Fl. Germ. xiii. 85 t. 109 (1851).

*Orchis fuciflora* Crantz, Stirp. Austr. 483 (1769).


*O. Adrianhus* Mill. Dict. ed. 8, n. 7 (1768).

*Ophrys sphegodes* Mill. Dict. ed. 8, n. 8 (1768).


407. Goodyera Br. The earlier name *Peramium* Salisb. is not available, as Salisbury did not characterize the genus.

411. Epipactis and 412. Cephalanthera. Linnaeus, Sp. Pl. 949 (1753), includes under *Serapias* *Helleborine* the species of *Epipactis and Cephalanthera*. In ed. 2 (p. 1844, 1763) he restricts *Helleborine* to the species known as *Epipactis latifolia* in a broad sense, for which we have retained the original name, following Crantz, Stirp. Austr. ed. 2, 467 (1769). In the same work (p. 1346) Linnaeus separates as *S. longifolia* the white-flowered species of *Cephalanthera and Epipactis palustris*. In Syst. Nat. xii. 593 (1767) he retains *S. longifolia* for *Epipactis palustris*, as is evident from the description and the references to Scopoli, Fl. Carn. 256 (an excellent description), &c.; we therefore, following Allioni, Fl. Pedemont. ii. 152 (1785), retain the name for *E. palustris*. At the same time Linnaeus separates the white-flowered Cephalantheras as *Serapias grandiflora*. Scopoli, Fl. Carniolica, ed. ii. 203 (1772) restricts *S. grandiflora* (= *Epipactis alba* Crantz, *Cephalanthera palent* Auct.), and separates (p. 202) as *S. longifolia* the *C. ensifolia* Auct.

414. Corallorrhiza Neottia Scopoli (*Neotia*), Fl. Carn. ed. 2,

422. *Crocus officinalis* Hudson, Fl. Angl. ed. 2, 13 (1778). *C. vernus* Miller, Gard. Dict. ed. 8, no. 3 (1768), is the yellow-flowered *C. aureus* which is figured as *vernus* in Bot. Mag. t. 45 (1758). Hence another name must be found for *C. vernus* Allioni (Fl. Pedem. i. 84, 1785) and Auct. *C. sativus* L. Sp. Pl. 36, included two varieties, *officinalis* and *vernus*. Hudson changed the name to *C. officinalis* with varieties *sativus* and *sylvestris*. *C. sativus* is by common consent restricted to the Saffron Crocus, hence *C. officinalis* remains for the plant indicated by Linnaeus as var. *vernus* and by Hudson as var. *sylvestris*.


441. *Simethis planifolia* Grenier & Godron, Fl. France, iii. 222 (1855) = *Anthericum planifolium* L. Mant. 224 (1771). *Pubiliaria* Raf., the earlier name for the genus, is excluded by the Code.


455. *Scirpus nanus* Sprengel, Pugill. 4 (1813). There seems no reason to doubt the identity of this with the later *S. parvulus* Roem. & Schult. Syst. ii. 124 (1817). *S. nanus* Poir. (1804) is referred to *Fimbrystylis argentea* Vahl.

S. *filiformis* Savi, Fl. Pisan. i. 46 (1798). This name antedates *S. vernus* Vahl, Enum. ii. 245 (1806) and *S. Savi* Seb. & Maur. Fl. Rom. Prodr. 22 (1808). *S. filiformis* Lam. Illustr. i. 138 has been referred to *Eleocharis tenuis* Schult.


C. *Caryophyllea* Latourrette, Chlor. Lugd. 27 (1785). We
follow Ascherson and Graebner in retaining this name for *C. paeonii* Jacq. Fl. Austr. v. 23 (1778), non Schreb. Spicil. 63 (1771); *C. verna* Chaix in Vill. Pl. Dauph. ii. 312 (1786).

C. *helodes* Link in Schrad. Journ. Bot. ii. 309 (1799). Notwithstanding the character "spicie mascula 1–3 terminales," the evidence of contemporary and later botanists points to the identity of this with *C. lavigata* Sm. in Trans. Linn. Soc. v. 272 (1800), though Smith himself nowhere cites it as a synonym. Kunth, however (Enum. ii. 493), cites it as a synonym of *C. lavigata*, "C. helodes Link (fide Smith)." Ascherson and Graebner, Syn. Mitteleurop. Fl. ii. 182, also regard the names as synonymous.

460. *Digitaria linearis* Crépin, Fl. Belg. ed. 2, 335 (1866) = *Panicum lineare* Klocker, Fl. Siles. i. 95 (1787)—the earliest specific name for *D. humifusa* Pers. Syn. i. 85 (1805).


491. *Poa*. In view of the close relation of *Poa minor* Gaud. (*P. flexuosa* Sm.) and *P. laxa* Haenke to *P. alpina* L. we have retained only the last-named; *P. Parnelli* Bab. and *P. Balfouri* Parn. are similarly related to *P. nemoralis* L.

493. *Sclerochloa festuciformis* comb. nov. = *Glyceria festuciformis* Heynh. ex Reichenb. Fl. Excurs. i. 45 (1830) (*Poa festuciformis* Host, Gram. Austr. iii. 12 (1805)). This plant was not previously included under *Sclerochloa*.

S. *rupestris* comb. nov. The earliest name for this species seems to be *Poa rupestris* With. Arr. ed. 8, ii. 146, t. 26 (an excellent figure) (1796), which almost certainly antedates *Poa procumbens* Curtis, Fl. Lond. fasc. vi. t. 11, the date of which is unknown, but probably later, as Withering, who cites plates from other numbers in the same fascicle, does not refer to this.

498. *Festuca fasciculata* Forskål, Fl. Ægypt.-Arab. 22 (1775). There seems no doubt that this is identical with *F. uniglumis* Sol. in Ait. Hort. Kew. i. 108 (1789). *Stipa membranacea* L. Sp. Pl. 560 (1753), which has been suggested as a synonym, is altogether doubtful; for full discussion of the question see Duval-Jouve in Rev. Sci. Nat. Sér. 2, ii. 32-5 (1880).

*F. bromoides* L. Sp. Pl. 75 (1753). We restore this name for
F. sciuroides Roth, Catalect. Bot. i. 11 (1800); Linnaeus’s references to Ray and Plukenet indicate the plant in question.

502. TRITICUM BIFLORUM Brignoli, Fasc. Pl. Forojul. 18 (1810). We follow Mitten, who first described Don’s plant (Hook. Lond. Journ. Bot. vii. 533 (1848)), in referring it to this species. We have compared a specimen from Don with plants from Brignoli’s classic locality.


H. nodosum L. Sp. Pl. ed. 2, 126 (1762). Ray’s plant cited by Linnaeus was evidently a monstrousity, but the identity of H. nodosum with H. pratense Huds. Fl. Angl. ed. 2, 56 (1778), is established by the Linnean Herbarium.

516. Polyopodium Molle Allioni, Fl. Pedem. ii. 287 (1785), is an earlier name for P. alpestre Hoppe ex Sprengel, Syst. iv. 2, 320 (1827).

517. Woodsia Alpina S. F. Gray, Nat. Arr. ii. 17 (1821) :

Woodsia hyperborea Br. in Trans. Linn. Soc. xi. 173 (1813).

518. Lastrea Montana T. Moore, Handb. Brit. Ferns, ed. 2, 100 (1853) :
   Polypodium montanum Vogler, Dissert. (1781).
   P. oreopteris Ehrhart, Beitr. v. 44 (1789).
   L. aristata comb. nov. The earliest name for L. dilatata Presl, Tent. 77 (1836) is Polypodium aristatum Villars, Hist. Pl. Dauph. iii. 846 (1789).

529. Hymenophyllum Peltatum Desvaux, Prodr. 333 (1827). This is the earliest trivial for H. Wilsoni Hook. Brit. Fl. 446 (1830), which was first described as Trichomanes peltatum Poiret, Encycl. viii. 76 (1808), and for which Hooker himself (Sp. Fil. i. 96 (1846)) cites it as a synonym.

HIERACIUM NOTES.

By Rev. Augustin Ley, M.A.

The detection in Britain of more than one well-marked form of this genus hitherto undescribed may perhaps legitimately be used as an opportunity of describing a few Scandinavian forms also recently detected in this country. In compiling this paper, the writer wishes to acknowledge continual help and kind encouragement received from Rev. W. R. Linton, M.A., without which it would have been impossible for him to have undertaken it.

Records, unless otherwise stated, are on the authority of the writer.
Group Oreadea.

HIERACIUM BRITANNICUM F. J. Hanb. var. nov. ovale. Differs from the type in having the leaves less firm in texture, large, regularly oval from a truncate or shortly cuneate base, obtuse, their margin shallowly and evenly repand-dentate. The leaf-hair is partly setose, and the receptacle exhibits a few cilia on the margins of the dentate pits.

Brecon: Craig Cille, first in 1894; Cefn Coed, H. J. Riddelsdell! in both instances on limestone. West Yorkshire: Moughton Scaurs, Ingleborough, 1901; Smearsett Scaurs, Settle, 1901.

Group Sub-vulgata.

H. ciliatum Almq. var. nov. venosum. Differs from the cognate variety repandum Ley by the root-leaves being larger, deep green, broadly ovate-acute, from a truncate or subcordate often coarsely dentate base, with the veins strongly impressed; by the ligules being densely and longly ciliate-tipped; and by the receptacle-teeth bearing cilia. Stalked glands are occasionally present on the petioles.

West Brecon: abundant on Craig-y-Nos Ridge, at about 1700 ft. (limestone). First noticed in 1899; cultivated since that date.

H. serratifrons Almq. var. nov. Cinderella. Aspect and height of var. lepistoides K. Johanns., which it closely resembles in its root-leaves. The following characters separate it from that plant:—Stem-leaf well developed, ovate-lanceolate, often deeply toothed at the truncate base. Peduncles long; phyllaries long, narrowly subulate, senescent, very glandular; floccose on the surface, and very floccose-edged. Heads narrow, light grey to brown, never black; small, normally cuneate-based. Ligule rather densely ciliate-tipped. Style livescent.

Banks and woods; June.


Group Eu-vulgata.

In this section several forms described by Scandinavian botanists having been recently recognized as British, it becomes desirable, before giving a short description of these, to insert in this paper a part of the scheme in which they are placed by Aman. H. Dahlstedt:—
A. Hairs more abundant than, or equalling glands. Phyllaries + floccose, especially on their margins.

I. Glands + dense.
   (a) Hairs fairly dense, phyllaries fairly floccose.
      1. *H. acroleucum* Stenst.
      2. *H. vulgarum* Fr.
   (b) Phyllaries + densely glandular, floccose, with hairs scattered to dense.

II. Glands scattered or few.

B. Hairs fewer than the glands, or in some cases 0. Phyllaries floccose-margined.
   5. *H. conspersum* Dahlst.
   7. *H. irritatum* Fr.
      [H. sciaphilum Uechtr.]

C. Phyllaries floccose or rarely floccose-margined, densely glandular.

I. Styles dull.
   (a) Leaves slightly hairy.
   (b) Leaves more or less densely pilose.

II. Styles yellow.
   11. *H. diaphanum* Fr. var. *glaucovirens* Dahlst.

*H. pinnatifidum* Lönnr. Dahlst. C. ii. (1892) No. 86. *H. vulgarum* Fr. var. *nemorosum* Lindeb. fasc. ii. No. 74. Stem tall, flexuose, violascent and pilose below, slightly pilose and with stellate pubescence above. Root-leaves 3-4, the outer withering early, oval, with short teeth or sub-entire, inner oval-oblong to lanceolate, innermost acute, with many short teeth or pinnate-dentate. Stem-leaves distant, the lower often large, ovate-lanceolate to lanceolate, long-pointed, pinnatifid-dentate especially at the base, often laciniate or many of the leaves slightly dentate, all violascent beneath, pilose, and with stellate pubescence. Panicle ample, lower branches remote upper approximate, long, exceeding acladium. Peduncles white-floccose with many dusky hairs and few scattered glands. Involucre somewhat slender, rounded at base. Phyllaries linear-lanceolate, inner green-margined, with long naked points, slightly floccose at base, with fairly numerous black glands and somewhat fewer hairs. Styles yellowish or dingy.


Var. *vicarium* Lönnr. Dahlst. C. ii. (1892), No. 87. Differs from the type by a more rigid habit, shorter leaves with fewer and
more regular teeth, rather broader phyllaries with more numerous
and more robust glands.

Herefordshire: Lyonshall, 1891; Pembridge, 1902. Carnarvon: near Bangor, 1891.


Near Coniston, Lake Lancashire, 1905, W. R. Linton!

H. scanicum Dahlst. Bidrag. iii. (under H. pinnatifidum Lénnr.), 89; Exsicc. ii. Nos. 73, 74, and 75. "Very near H. irriguum Fr., from which it differs (as described loc. cit.) in the long white hairs of the stem, the broader oval sub-entire or less toothed leaves, the rather thicker heads, narrower phyllaries, and styles more nearly pure yellow. It can scarcely be held as anything more than a slight variety of H. irriguum Fr."—W. R. Linton.

Distribution general. North Devon, North Hants, Surrey, West Gloucester, Monmouth, Hereford, Glamorgan, Breeon, Radnor, Denbigh, Merioneth, Carnarvon, Derby, Stafford, West Yorks.

H. anfractus Fr. subsp. caccumatum Dahlst. Bidrag iii. 151; C. xv. (1903), Nos. 57, 58. Stem tall robust softly pilose below, sparingly flocculose. Leaves dull green; basal oval to oval-elliptic with broad sharp teeth, inner ovate-elliptic to ovate-lanceolate, subulate-dentate or serrate, rapidly or gradually narrowing to long petioles. Stem-leaves 4-6, decreasing, lower petioled, ovate, ovate- lanceolate or lanceolate, subulate-dentate or serrate-dentate, pilose below, margin ciliate. Panicle contracted, with distant lower and approximate upper branches, all erect-patent. Peduncles short floccose, with slender scattered glands under the head. Heads rather broad, darkish green, truncate below. Phyllaries rather narrow linear-lanceolate subacute, sparingly flocculose especially on the margin, with rather numerous blackish slender glands. Ligules glabrous, styles dull.

British plants attributed to this species are abundant and generally distributed; a great deal of the material usually placed under H. sciaphiitum Uechtr. being now placed under H. caccumatum Dahlst. It must, however, be said that most of the English plants differ from Scandinavian types in having greyer heads, with much more numerous glands, and senescent phyllaries. The panicle also is often wide-spread; but this is the case in some Scandinavian examples of H. caccumatum. Plants very close to the foreign type occur near Bangor, Carnarvon (1899, 1904); also in Brecon and Hereford.

H. sciaphiitum Uechtr. differs from H. caccumatum Dahlst. in
its contracted panicle, often bracteolate peduncles, and always ciliate ligules. It is possible that the bulk of our British plants may stand between *H. cacuminatum* and *H. sciaphilum*.

**Vat. babareæfolium** (Lönnr.) Dahlst. Bidrag iii. 152, C. xii. (1900), No. 82; Essicc. ii. No. 71, iv. No. 88. Differs from the type by its stem-leaves being narrower, lanceolate, ± sharply longly and unequally pinnatifid-dentate at base; by its broader floccose phyllaries, with shorter stouter glands.

West Gloucester, 1905; exactly corresponding with the Scandinavian type! Hereford. Brecon, W. R. Linton, 1902! Glamorgan, Riddelsdell, 1901! Derby, W. R. Linton, 1893!

*H. ornatum* Dahlst. Bidrag iii. 167; Essicc. ii. No. 81; Herb. Hier. Scand. ii. Nos. 69, 70. Stem 15–30 inches high, thick hairy floccose above. Leaves ± dark-spotted; root-leaves oval-oblong to broadly lanceolate, much toothed with the teeth sharp, hairy on both sides, shaggy beneath and on the narrowly winged petioles. Stem-leaves 3–5, ovate-lanceolate to broadly lanceolate, sharply and unequally serrate-dentate below, often subulate-dentate above, acute, hairy. Peduncles white tomentose, glandular; panicle often umbellate-branched, with arcuate branches exceeding the acladium. Heads dark, rather elongate; phyllaries rather broad, obtuse except the innermost, very floccose-edged, senescent, with numerous long and short glands; style very dark.


**"HUCKLEBERRY" AS AN ENGLISH PLANT-NAME.**

In the article on the Botany of Buckinghamshire which recently appeared in the "Victoria" history of the county, I used the above name to designate *Vaccinium Myrtillus*, as it is one which I have heard used in that county for half a century. The employment of the word as an English plant-name having been challenged, it may be well to give reasons to support its use in the above work. In *The New English Dictionary* Dr. Murray gives no British reference for the word, but cites several from North American sources, the earliest being that from D. Denton's *Description of New York* (1670)—"The Fruits natural to the Island are Mulberries, Posimons, Grapes great and small, Huckleberries." In 1751 J. Bartram, the correspondent of Dillenius, writes (Obs. Trav. Pennsylv. p. 13): "The land hereabouts is middling white oak and huckleberry land."

Hitherto—with the exception of Prior, who is not a reliable authority (*Popular Names of British Plants*, ed. 3, p. 128), who says: "Hurtle-berry, Huckleberry, corruption of Whortle-berry, itself a corruption of Myrtle-berry"—no other author has used the name for our British plant.

The area where the name Huckleberry is used to designate *Vaccinium Myrtillus* is that portion of heathy country which is
situated on the Lower Greensand formation near Woburn, which extends into the counties of Beds and Bucks. My recollections go back to the early fifties, when I used to visit some relations I had in that neighbourhood, and one of my earliest memories is hearing of the adders which used to be such a source of apprehension to those going huckleberrying in Woburn woods, as related to me by my grandmother as one of the events of her early childhood. This carries back the use of the name for at least a century. Gipsies used to bring the berries round to the neighbouring villages for sale under the name of huckleberries. I have also heard my relative the late Mr. Smith, of Woolston, the well-known writer to The Times in the fifties on agricultural matters, refer nearly fifty years ago to the huckleberries in Brickhill woods. Living people in the neighbourhood who are now over eighty years of age tell me that they have never heard any other name. Miss Flora Russell wrote to her cousin the Rev. Henry Russell, who knows the district intimately, and he replied, "Yes, huckleberries was always the local name of bilberries in the Woburn district. Emigrants went from there to America and settled in Massachusetts, where there is now a flourishing little town called Woburn, much frequented by wealthy Bostonians." The Duke of Bedford also kindly had inquiries made, and Mr. R. E. Prothero wrote in reply: "As to the local use of the word 'Huckleberry' for the fruit generally known as Whortleberry, I thought the best plan would be to have the applications for leave to pick them analysed. The result is that, out of one hundred and ten applications, one hundred and nine were for leave to pick 'huckleberries,' and the one applicant who used the word 'Whortleberry' was not a native of the district. Two old women, (seventy-five and seventy-three) have also been asked as to the use of the word, and both reply that they have never known the fruit called by any other name than 'Huckleberry.' It may be of interest to you to be reminded that Bedfordshire contributed largely to the number of early settlers in the United States; Washingtons came from the Northants border, and the stars and stripes are the arms of their ancestors. Emerson's family came from Odell, and in the State of Massachusetts there is a Woburn—also a Bedford and a New Bedford—place-names given by the early settlers." In answer to my inquiry Mr. A. H. Linscott, the Mayor of Woburn, Mass., U.S.A., writes: "Huckleberries are very common in this locality. They have always been found here, and grow in great abundance. The bushes are low and spreading, the berries very dark." I therefore venture to contend that "Huckleberry" is a genuine British name for V. Myrtillus; that it has for a very lengthy period been used over a small area of the Midlands to distinguish it; and that, instead of being an American corruption of the word whortleberry, it was conveyed by the early English settlers to America, and transferred by them to other species having a superficial resemblance. Naturally, as the settlers spread over the country, the name became a generic one. Religious difficulties led to a large migration from Bucks and Beds, historically a home of the Puritans; Penn—a well-known Buckinghamshire name.
—founded Pennsylvania. The distribution of V. Myrtillus in the Midlands is very restricted. We have no definite record of the species in Northants; it is absent from Cambridge and Hunts; in North Oxfordshire a small heathy tract on the glacial drift is said to have yielded a plant or two; and there are only two other localities on the Chilterns in the south of the county, where it is very scarce. In North Berkshire, Bagley Wood is the only locality; with the exception of the Brickhill district there are no other localities in North Bucks. The Brickhill and Woburn area is therefore practically an outlier, and shut off from the other English localities by considerable distances, which may have restricted the use of the common name. It may be borne in mind that the word "huckle" is widely spread in the Upper Thames and Ouse district for a joint. The "huckle-bone" of a sheep is or was often kept in the pocket as a prophylactic for rheumatism. This name is cited in Wright's English Dialect Dictionary, iii. 264, in the same sense, and "huckle-back" is used for a bent back. I venture to ask if the jointed appearance of the stems may not have suggested the name, rather than the corruption from whorts or whortleberry.

G. Claridge Druce.

When I called Mr. Druce's attention to his unfamiliar use of Huckleberry, I had no expectation of eliciting so interesting a note as the above. Instances of a name confined to a limited area are not unknown, but in the present instance the matter is complicated by its general use in the United States. It may be hoped that some American botanist will throw further light on the matter, and it would be of interest to find some derivation of the word more probable than that suggested by Mr. Druce, which I do not think can be maintained. The name does not appear in our Dictionary of English Plant-Names, nor in the numerous MS. additions thereto.

James Britten.

NOTES ON SOME TROPICAL AFRICAN RUBIACEÆ.

By Spencer Le M. Moore, B.Sc., F.L.S.

In the lately issued part of Engler's Botanische Jahrbücher (vol. xxxix. pp. 516–571) appears a memoir by Dr. K. Krause, wherein are described a number of Rubiaceæ from Tropical Africa. Dr. Krause's descriptions are in every way admirable, and he bids fair worthily to fill the void left by the premature decease of Dr. Karl Schumann, an author among whose numerous contributions to systematic botany those on Rubiaceæ are by no means the least important. Dr. Krause, however, has had the misfortune—one to which all are liable now that bibliography has become so extensive—of overlooking work already published, namely, mine on Mr. T. Kässner's plants in this Journal for 1905 (pp. 249–251 and 350–3), and also the memoir in the Journal of the Linnean Society, vol. xxxvii. pp. 298 sqq. This necessitates alteration in a few of his names; while directing attention to this, the opportunity is taken.
of noticing a few oversights which have crept into the memoir in question. The citations are given in order.

Oldenlandia pedunculata K. Schum. & K. Krause has already been described as O. prolifipes S. Moore (l. c., p. 351).

O. Kaessneri K. Schum. & K. Krause. The locality for this is Sultan Hamoud (not "Hamoud," as printed), and the number is given as 665. The only specimen of the genus from this place is referred by me (l. c. p. 350) to O. Wiedemannii K. Schum., ex descriptione, and as this specimen answers to Dr. Krause's description, and its number is 653, it is clear that there is an error in the citation of the number. I have examined the plant again, and still find it to agree with the description, though, as Dr. Krause has access to the type, he is better able to elucidate the point than I am. Perhaps he will kindly look into the matter again. In any event the name O. Kaessneri has already been used for Küssner 957 (l. c., p. 249).


Pentanisia crassifolia K. Krause. This I cannot think distinct from P. sericocarpa S. Moore. Dr. Krause gives as the points of difference between the two, the form, size, and texture of the leaves, and the length of the flowers. But the lower leaves of the single specimen of P. sericocarpa are almost exactly, judging from the description, as those of P. crassifolia, only a little smaller, while the upper ones are narrower indeed, though almost as long (the longest, I find, measure 3·5 cm.). As regards the texture of the leaf, that I unfortunately did not record; the leaves are distinctly fleshy. Then P. crassifolia is said to have corollas with a tube 1·0-1·3 cm. long., and my measurement for P. sericocarpa is 1·0 cm. Lastly, the lobes of the corolla of my species are 4·5 mm. in length, while those of Dr. Krause's are only 2·0-2·5 mm.; but it should be remembered that my measurement was taken from corollas expanded after thorough soaking; and, moreover, I find that in the dry state the lobes of corollas just opening measure only 2·5 mm. Both specimens were found at Salisbury, Rhodesia, by Dr. Rand and Professor Engler respectively.

Electronia microterantha K. Schum. & K. Krause has already been described under the name of Canthium pseudoverticillatum (l. c. p. 352). It is founded on Küssner 388.


Coffea Engleri K. Krause. A figure is given of this; it is undoubtedly Tricalysia jasminijlora Benth. & Hook. f. Miss Gibbs, who found the plant in the same place, viz. the Matopos, where it is abundant, drew my attention to this oversight. I believe there is no Coffea native to the Matopos; at least Miss Gibbs, who botanized there with such success in 1905, did not come across one.

Pavetta lasiorhachis K. Schum. & K. Krause (Zenker 2259 and
3017) does not belong to *Pavetta*, as there are several ovules in each cell of the ovary. It is a species of *Tarenna* (or, as Dr. Krause, following Schumann, would call it, of *Chomelia*), and is very close to, and possibly identical with, *Zenker* 1343, distributed as *Chomelia conferta* var. *macrantha* K. Schum.

*Psychotria albidocalyx* K. Schum. var. *augustifolia* K. Schum. & K. Krause. This is founded on *Kässner* 307, and, as it agrees with a specimen at Kew sent from Berlin as *P. amboniana* K. Schum., was so named by me (l. c. p. 358). As regards *Kässner* 185, also referred my name (l. c.) to *P. amboniana*, I have since recorded my belief (in manuscript) that this specimen may belong to *P. albidocalyx* K. Schum., as it is similar to Kew specimens thus named.

[To the above note it may be added that in his interesting account of the plants of the Transvaal and Rhodesia observed during the journey of the British Association in 1905 (Sitz. K. Preuss. Akad. Wissensch., l. i. 866–906) Prof. Engler makes no reference to any of the species described by Mr. Moore in several papers in this Journal during the last five years, and especially in the paper on Mr. Eyles's Rhodesian plants (Journ. Bot. 1905, 44–54). It is of course possible that Dr. Engler may have met with none of the numerous novelties described by Mr. Moore, but this seems hardly probable in view of the fact that the new species described by Mr. E. G. Baker in our pages from the same collections are frequently referred to. In view of future publication of plants from the same region, it seems desirable to call attention to these papers, especially as it is evident from Mr. Moore's remarks printed above that the danger lest work should be overlooked is by no means an imaginary one.

It is to be regretted that the Vienna Congress, when dealing with the question of quoting authorities for names, did not point out the desirability of something like uniformity in citation. It might be thought that such a recommendation was unnecessary, and that at least the same writer in the same paper (or at any rate in the same paragraph) would quote the same author in the same way, and would refrain from citing two authors in a precisely similar manner. That such an anticipation would not be justified is shown by Prof. Engler's paper. On p. 892, in the space of fifteen lines, he quotes Mr. E. G. Baker in four different ways: *Ekebergia arborea* "Baker," *Lessertia stipulata* "G. Baker," *Dolichos Welwitschii* var. *Randii* "G. Bak.," and *Triumfetta Mastersii* "Bak. f." Only the last of these can be correct; the more usual forms are "E. G. Baker" and "Baker f.," which do not appear. This is bad enough, but a further complication arises in the citation of *Rhynchostoa antennulifera* "G. Bak.," which in this instance means J. G. Baker! Mr. Spencer Moore enjoys perhaps a greater variety of citation; he tells us that he has seen himself referred to as Moore, Le Moore, Le M. Moore, S. Moore, Sp. Moore, Spence Moore, Spencer Moore, Spencer Le M. Moore, Spencer Le Marchant Moore, and P. Moore! But in this case the name gives scope for variety, and the citations extend over a wide range of time and place.—Ed. Journ. Bot.]
DOCTOR SARRASIN OF QUEBEC.

By M. L. Fernald.

In Dr. Macfarlane’s interesting discussion (Journ. Bot. 1907, 1–4) of the origin of the generic name Sarracenia, he shows very clearly that the plant was named by Tournefort, not for Dr. Jean Antoine Saracen (or Sarracen), of Lyons, 1547–1598, as some writers have stated, but for a physician of Quebec, who lived more than a century later than Jean Antoine Saracen. In regard to this Quebec physician, Dr. Macfarlane leaves certain matters indefinite which he would have made clearer had he referred to a paper by Professor Penhallow, in which the history of the Quebec physician was worked out in some detail.

According to Dr. Macfarlane, this man was “Dr. D. Sarrasin, physician, anatomist, and botanist of Quebec,” and he “died at Quebec (about c. 1730–1740?).” The initial “D” of Dr. Sarrasin’s given name may have been assumed by Dr. Macfarlane from Tournefort’s dedicatory statement, “Sarracenam appellavi à Clarissimo D. Sarrasin”; but, in view of the then current practice of using the abbreviation “D” for the title Doctor, it is probable that it had no other significance in connection with Sarrasin’s name. Many similar cases could be cited; for instance, Tournefort’s statement in the publication of the genus Garidella, that “Garidella dicitur à Clariss. D. Garidel,” whose name, according to Pritzel, was Pierre Joseph, not “D, ” Garidel; or the frequent references to Dr. Richard Richardson quoted in this Journal only a few pages after Dr. Macfarlane’s article from eighteenth century writers who constantly referred to him as “D. Richardson.”

Professor Penhallow, whose notices of early Canadian botanists were based upon old manuscripts at Quebec and on other local records, found that “the earliest physician, whose name is prominently connected with the botany of this country [Canada], was Sarrasin, resident physician at the Court of Quebec, in the early part of the eighteenth century, a position he held until his death, in 1784, at the age of seventy-five years”; and in his chronological

* D. P. Penhallow, “Review of Canadian Botany from the First Settlement of New France to the Nineteenth Century,” part i. (Trans. Royal Soc. Can. v. sect. iv. 1887, 45–61). [The same section contains a long “étude biographique” on Michel Sarrazin,” by the Abbé Laflamme (pp. 1–23), who states that the name was spelt indifferently Sarrasin or Sarrazin, but thinks the latter the original spelling.—Ed. Journ. Bot.]

† Tourn. Inst. i. 657 (1700). The author of the article which suggested these notes says: “In 1719, Tournefort, ignoring the older names of Collophyllum, Bucanephoron, Bucanephyllon, &c., applied by his predecessors, wrote, ‘Sarracemum,’ &c.; thus implying that the name Sarracena started in the Institutiones of 1719, which was the third edition, and issued eleven years after the death of Tournefort. Furthermore, at least one of the “older names applied by his predecessors,” Bucanephyllon, was published by Plukenet in 1705, five years after Tournefort’s original publication of Sarracena, which was cited by Plukenet.

‡ [But does it not rather mean Dominus?—Ed. Journ. Bot.]
arrangement of Canadian botanists Professor Penhallow not only gives Sarrasin's full name, but the exact date of his death:

"SARRASIN, MICHEL.—Born in 1659; died at Quebec, Sept. 9th, 1734. Physician at the Court of Quebec in 1730."

Thus it would appear that, instead of being named, as Dr. Macfarlane's discussion makes out, for a theoretical Dr. "D." Sarrasin, of Quebec, who died "about c. 1730-1740?" the genus *Sarracenia (Sarracena)* was dedicated by Tournefort to Dr. Michel Sarrasin, physician at the Court of Quebec, who was born in 1659, and died at Quebec, September 9th, 1734.

Gray Herbarium of Harvard University.

BIBLIOGRAPHICAL NOTES.

XLII. — PLANTS OF THE ANTILLES.

In the admirable bibliography with which Dr. Urban has enriched the *Symbola Antillarum*, I find no mention of a book recently acquired for the library of the New York Botanic Garden, as to whose authorship Anna M. Vail, the librarian, lately wrote to me. Miss Vail, having transcribed the title, added a description of the work, which I quote:

"Voyages to the Madeira and Leeward Caribbean Isles; with Sketches of the Natural History of these Islands. By Maria R***** Edinburgh: Printed for Peter Hill and T. Cadell, London. 1792.

"It is a narrow 8vo, with 9 pages of preface and 105 pp. of text. The lady dedicates her little book to Mr. William Smellie, member of the Antiquarian and Royal Societies of Edinburgh. She travelled to the West Indies via Madeira in 1788, and describes a voyage to St. Christopher's in the same year, and a tour through Antigua and Barbuda in 1790, but her principal efforts are focused on a Geographical Description and Natural History of Antigua, 1791. The list of plants, pp. 81-105, would appear to be about the first flora of the island, as far as we have been able to discover here with the bibliographies that we have at our command."

I was unable to supply any information as to the authorship of the book, but Mr. S. F. Skan, of the Kew Herbarium, has been more fortunate. He points out to me that in Dryander's Catalogue of the Banksian library and in the British Museum Catalogue of Printed Books, from which it appears that another edition (? a re-print) of the book was published at Salem in 1802, the name is given as Riddell, and directs my attention to the following passage in the *Dictionary of National Biography* (xlvii. 272) under Robert Riddell, a patron of Robert Burns: "By 1792 Burns was on very friendly terms with Riddell's brother, Walter Riddell of Woodley

* [He died on the 8th and was buried on the 9th; see Laflamme, l. c. 11. — Ed. Journ. Bot.]
Park, four miles south of Dumfries, who had married, in 1791, Maria Woodley, daughter of William Woodley, governor of St. Kitts and the Leeward Islands. The lady was only nineteen, but had a taste for literature, and was anxious to publish an account of her own voyages. Burns gave her a letter of introduction to a printer, and proceeded, according to his wont, to write love-songs about her. Early in 1794, at an entertainment held at Walter Riddell's house to celebrate his return from a voyage to the West Indies, Burns insulted her hostess. Burns's apology was rejected by the lady and her husband, and he attacked Mrs. Riddell in the 'Monody on a Lady famed for her Caprice,' and other verses. By 1795 the poet was again on friendly terms with Walter Riddell's wife. When Burns died in 1796 she published in the 'Dumfries Journal' an admirable article on her friend's character, a defence which reflects credit on both the writer and her subject." Mr. Skan adds that Maria Riddell edited The Metrical Miscellany, published in 1802.

JAMES BRITTEN.

NOTES FROM CORNWALL.—Mr. Hemsley's interesting observations (p. 60) on the Wild Cabbage growing between Fowey and Ready-money afford an opportunity for expressing suspicions that I have had about the origin of these plants since first examining them more than ten years ago. Their gigantic proportions, perennial character, and long, more or less pinnatifid leaves, all of which are foreign to genuine Brassica oleracea, have forced me to the conclusion that they originated from outcasts from some of the gardens that abut on the cliffs above. Along the cliffs at Polruan, just across Fowey Harbour, as well as at Looe, a few miles farther east, plants occur about whose indigeneity there can be no question; these are of much less stature, have short, rounded leaves, and are not nearly so long-lived. Four sheets of such specimens are now before me, on one of which the petals are nearly as large as those on the Walmer plants in H. C. Watson's Herbarium. If my suspicions about the Fowey plants are correct, it would appear to follow that the plate of B. oleracea in Eng. Bot. was prepared from a specimen of similar status, as the leaf there drawn is both long and pinnatifid. The occurrence of Cotoneaster microphylla Wall. by the side of Point Neptune Road, leading from Fowey to Mena-billy, is easily explained. With Erica vagans, E. mediterranea, and several other ornamental species, it was planted there when the road was cut to cover and beautify the bare rocky sides. In several parts of the county, however, I have seen it flourishing on walls and hedge-banks, where it is certain it was never planted. The same observation applies to Veronica angustifolia A. Rich., Leycesteria formosa Wall., Santolina Chamacyparissus Linn., &c. — F. HAMILTON DAVEY.
A *Fumaria* Hybrid.—Whilst botanizing with Mr. A. Wallis in June 1904, we noticed in a cultivated field near Wendover, Bucks, a fine growth of typical *F. densiflora* and *F. officinalis*. With these two species, plants were seen intermediate in character as regards bracts, &c., and, moreover, apparently quite barren. We could not resist forming the opinion that these might well be of hybrid origin, and Mr. Pugsley, who afterwards saw a dried example, was of the same mind. Mr. G. C. Druce (Fl. Berks, 38) says that he has not observed any intermediates between the two species where both grow together in Berkshire, but refers to the *Flora of Herefordshire*, where it is stated that forms of *F. officinalis* occur which are with difficulty kept apart from *F. densiflora* (p. 18). In another field, some miles away, near Pitstone Hill, *F. densiflora*, *F. officinalis*, *F. Vaillantii*, and *F. parviflora* flourished together, but no intermediates were noticed.—C. E. Salmon.

NOTICES OF BOOKS.


This may be taken as a second condensed edition of the *Norges Flora* of M. N. & A. Blytt (1861–1877), which appeared in two parts, with an index and supplement in 1877, consisting of 1348 pages. In the present work of 780 pages the descriptions are much shortened, and also the distribution. The 661 illustrations, although only measuring about 3 in. × 2, are mostly excellent in catching the habit of the species, especially the ferns. The descriptions extend to about 1338 species and 186 subspecies. The classification is that of Engler and Prantl.

The author has consulted all the recent Scandinavian floras; the northern limit of species is given from that laborious work of Norman, the *Arktiske Flora*. The vexed question of nomenclature seems to have attracted attention, as many of the names of the *Norges Flora* of 1861 are changed. In many cases our British species are involved: e.g. *Hymenophyllum peltatum* Desv. = *H. tunbridgense*; *Hierochloe odorata* is so named in the text, but the drawing is called *H. borealis*; *Carex caryophyllea* Latourr. = *C. precoc* Jacq., *C. verna* Chaix. *Potentilla verna* L. contains two subspecies—major Wahlb. = *P. alpestris* Hall, and minor A. Blytt = *P. verna* Fr. & Gilib.; and so on. *Coleanthus subtilis* Roem. & Schult., which occurs on the dried-up sandy shores of large ponds in very dry seasons, may possibly occur in England, as was suggested many years ago by Dr. Trimen.

Of the critical genera, *Rubus* has 14 species with 4 subspecies; *Hieracium*, 88 species and 31 subspecies; *Salix*, 24 species and 2 subspecies, with 32 hybrids; *Carex*, 85 species, 12 subspecies, and 18 hybrids.
The book is compact, clearly and well printed and bound, with remarkably few corrections and additions. Without being too critical, it gives a very good idea of the Norwegian flora, and British botanists will find it well worth adding to their works of reference.

Arthur Bennett.


We gather from Prof. Conway MacMillan’s short introductory note that this is the second issue of a year-book by the Minnesota Seaside Station at Fort Renfrew on the Vancouver coast, the first year-book having been published four years ago. The present volume contains seven papers covering a wide range of subjects.

The principal novelty is to be found in a paper by Mr. R. F. Griggs, in which is established a new genus of Algae—Renfrewia, closely allied to Laminaria. From the latter it is separated “because of its simple discoid holdfast without haptera, which, together with its small size and evident simplicity of structure, marks it as one of the most primitive of the kelps.” The type is R. parvula, a new species, and with it are associated R. solidungula and R. yezzoensis, formerly known as Laminaria solidungula J. G. Agardh, and L. yezzoensis Miyabe. Miss Henkel’s paper on Tide-pools is concerned more with geology than with botany. And Mr. Hall’s paper on the Geological Features of the Station does not touch on botany. The Western Helvellineae of Miss D. S. Hone are fungi which were collected in the western United States and Canada, and include four species of Geoglossaceae, two of Helvellaceae, and one of Rhizinaceae. Mr. A. W. Evans, in treating of the Hepaticae of Vancouver Island, gives a résumé of previous work done, to wit, Mitten’s record of three species (1865), Pearson’s of fifty-five species (1890), and Underwood’s of sixty-six (1893). Mr. Evans has revised these older records, and, having received fresh material from Port Renfrew, is able to raise the total to seventy-one species, and he thinks that more may yet be found.

Mr. F. K. Butters contributes an interesting paper on the Conifers of Vancouver Island, giving a list of thirteen species which occur spontaneously on the island, and a table showing their distribution in the great coniferous forest of Western America from Alaska to California. He regards this great forest of the Pacific coast as being a survival from pre-glacial times. The relations of the species to local climatic conditions in Vancouver Island are considered. Full descriptions of all the native species are given, together with interesting notes on their distribution and habitat. Also a number of species which may be expected to occur in the mountains of Vancouver are briefly described. The author appends a useful key to the genera of conifers found in North-western North America, basing it upon the foliage of the mature plants; and also supplies in a tabulated form a comparative statement of seventeen main characteristics which in varying combinations distinguish respectively the five sections of the genus Abies.
Mr. C. O. Rosendahl publishes the results of his Observations on Plant Distribution in Renfrew District of Vancouver Island, his object being to set forth a few main facts bearing upon plant ecology and plant floristics without unnecessary details. He treats his subject under the following main headings:—(1) Marine formations; (2) Formations of the beach; (3) Formations of the forest-country; and these are further subdivided. He then gives an enumeration of the plants collected, and points out that the chief mass of the island vegetation is composed of gymnosperms; that the monocotyledons are more numerous than the dicotyledons; and that the ferns are profuse in number, but poor in species.

It is, we suppose, to show off the half-tones of the plates that the paper is so heavily mineralized. The volume is the heaviest one for its size that we have ever held in our hands.

A. & E. S. G.


When scientific research is directed to the elucidation of long-familiar phenomena, the interest aroused is prompt and keen, especially if the explanation offered meets all the facts of the case. The heating of hay or corn too hastily garnered, which may even result in spontaneous combustion, is one of these natural happenings well known to all who are interested in agriculture. It has been demonstrated to be due to bacterial action, and Dr. Hugo Miehe, of Leipzig, has published an elaborate treatise, setting forth the results of his many experiments on the subject.

He records first of all the different cases in which such physiological heating occurs: in grasses, where a moderate amount of heat is encouraged and utilized in the formation of ensilage; in tobacco-leaves, where it is a factor in the ripening process; and in hotbeds of manure, which are valuable to the gardener. Hops, on the contrary, are spoiled by heating, and careful drying is essential. The conditions required to induce heating are a sufficient moistness, and a large enough quantity of the material to ensure tight packing and the consequent absence of ventilation. Miehe secured these condition with a quantity of freshly cut hay, and his first experiments were directed to gauging the rise of temperature in different parts of the mass; the detailed results are given in tabular form. On the second day the hay begun to "steam" and take on the characteristic odour of decaying fruits. In six days the highest temperature, 68.5° centigrade, was reached at the centre of the mass.

Evolution of heat is often due to chemical changes, but Miehe, by a further series of experiments, proved that heating in hay was due solely to biological action. He sterilized his material and got no change in temperature; the same hay was then sprinkled with water in which hay and earth had been soaked, and self-heating quickly followed. All the experiments pointed to the connection of some living organisms with the heating process. Further exami-
nation by careful cultures proved that these were chiefly a form of Bacillus coli, B. calfactor, n. sp., and Oidium lactis. These three were the characteristic micro-organisms causing the fermentation of the hay, but others were more or less constant, and they also were isolated and cultivated. Actinomyces thermophilus occurred in great abundance, as white specks and streaks on grass still fresh and fall of sap. Thermomyces lanuginosus appeared when the temperature was at the highest point. Thermosascus aurantiacus, n. g., n. sp., showed itself as tiny yellow specks, also on strongly heated hay; it is one of the lower Ascomycetes, characterized by a group of hyphae and oval-shaped asci, which somewhat resemble those of Gymnoascus, but there is in Thermosascus a pseudoparenchymatous peridium. It also is a thermophil fungus, and grows only at high temperatures. Other fungi that were frequently found were Aspergil-lus fumigatus, not exclusively thermophil, but growing best at blood-heat; Mucor pusillus, which requires considerable warmth to induce vigorous growth; M. corymbifer, occasionally met with in laboratory cultures or on diseased bodies, though its true habitat is now proved to be heated plant remains. Most of these thermophil bacilli and fungi are more or less pathogenic, some of them dangerously so. It is a new discovery that they are thus constantly being generated in nature. Miehe is of opinion that manure heaps and plant remains may be the hot-beds of other bacilli, and that tuberculosis in animals may be propagated in this way.

Other chapters are devoted to self-sterilization: it was found that the organisms died off completely. The reason of this has not been satisfactorily demonstrated. The fermentation of tobacco, respiration, heat, &c., are also discussed at some length. Dr. Miehe has made a valuable and interesting contribution to bacteriology, fungology, and agriculture; and the carefully tabulated experiments and illustrations enhance the value of his work.

A. L. S.

Recent American Nomenclature.

The eleventh volume of "Contributions from the United States National Herbarium" issued last October is devoted to a Flora of the State of Washington by Prof. C. V. Piper, and is the result of his study of the plants of that State during a period of twenty years. It is a handsome book of 637 pages, with numerous illustrations showing aspects of vegetation, and is evidently executed with great care. The introductory matter contains brief biographies of the principal "botanical explorers of Washington"; some of the statements as to the whereabouts of collections require modification—e. g. Scouler's plants are not at the British Museum but at Dublin, and the most complete set of Douglas's plants is in the National Herbarium at the British Museum, not at Kew.

We regret however to observe that Prof. Piper owns no allegiance to the Rules promulgated by the Vienna Congress, but "aims to follow the recently proposed Philadelphia Code." This seemed to us a new authority, but Prof. Piper informs us that it is the
"Code of Botanical Nomenclature" signed by a number of American botanists and submitted to the Congress as a substitution _en bloc_ for the Code of 1867. We made some allusion to this in our pages for 1904, and pointed out that, while very carefully drawn up, it embodied certain principles, such as that of "priority of place," which would hardly be accepted, as indeed they were not. If, as Prof. Piper's action seems to indicate, transatlantic botanists do not fall in with the decisions arrived at by the international assembly after very careful discussion, the confusion which we—in common with most botanists—had hoped was at an end will still prevail so far as American plants are concerned. It is not even as though the American botanists presented an undivided front; there are conspicuous omissions from the list of signatories to the "Philadelphia Code," so that it may be feared that even in American books uniformity will not be attained; and in so far as this is departed from, the Congress, influential and representative as it was, must be regarded as having failed to obtain complete success.

Certain other peculiarities which have distinguished some American authors are observable in Prof. Piper's book. The system of trinominals is in full force, and it is thus impossible to tell whether the plant represented by the second trivial is to be considered a subspecies or a variety. Such a combination as "Festuca rubra kitaibeliana" (Schultes) Piper, Contr. Nat. Herb. 10, 23, 1906," contains in itself objectionable features contrary to the ruling of the Congress, which implicitly condemned trinominals, laid down that "when two or more groups of the same nature are united, the name of the oldest is retained" (Art. 46),* and that all names derived from persons must be spelt with a capital letter. The treatment of _Festuca_, by the way, throws a light on the value to be attached to recent American creations, no fewer than six supposed species being here placed as synonyms.

In other respects the Rules are ignored; we have duplicated names—"Phygopteris phygopteris" (L.) Underw. (note the omission of the capital initial to the repeated name); and the generic names which it was decided to abandon are in full force—how is _Peramium_ to be justified? (see Journ. Bot. 1906, 996).

We have noted in recent American floras the citation of what is called the "type locality." This may be a useful innovation when the locality is known, but Prof. Piper seems to regard it as a necessary feature, with the result that we get such entries as "Type locality, European" or "Type locality, 'Habitat in Anglia, Gallia.'"

At the meeting of the Linnean Society on February 7th, the Rev. John Gerard, S.J., brought forward "Some Observations of Climbing Plants," illustrating his remarks by lantern-slides from his own photographs from living plants and herbarium material. He began by pointing out the two opposing methods of describing spiral growth or torsion as viewed from the exterior or from the interior of the spiral, the result being that the "dextrorse" of the first is the "sinistorsese" of the second method. With or against the sun, which applies to the northern hemisphere, is reversed in the southern hemisphere, and for these reasons he preferred to use the terms "clockwise" and "counter-clockwise" (shortened to "counterwise"); the Honeysuckle (Lonicera Periclymenum) and the Hop (Hulnulus Lupulus) turning clockwise, and the Convulvulus (Convolvulus arvensis) and the Scarlet Runner Bean (Phaseolus vulgaris) twining countercwise. He showed the result of some experiments he had made by growing beans in opaque cylinders, to discover if possible whether the deviation of the twist were innate, or from the direction of the light, the conclusion being drawn that the plant possessed an inclination resembling the instinct of animals, of proceeding in a given direction, and resented any attempt to force it otherwise. The author concluded with some observations on the behaviour of tendrils, as those of Bryonia dioica, displaying one specimen which had varied the torsion four times and showed ten turns in one direction against seventeen in the contrary. Dr. Otto Stapf then gave an abstract of his paper on "New Plants from Malaya," giving the history of his new genus Hallieracantha, which receives eight species from the genus Ptyssiglottis Hallier f., and eleven others are added from the Kew collections; they form a very homogeneous group, are eminently shade-loving plants, and exhibit anisophyll in a very marked degree. The headquarters of the genus are in Borneo.

Dr. Schinz has begun to publish in the Bull. Herb. Boissier for February a series of notes on the changes in the nomenclature of Swiss plants rendered necessary by the Vienna Code. They seem very carefully done, and we are glad to observe that the work of Miller in his Gardeners' Dictionary is receiving due recognition. Continental botanists hitherto have paid scant attention to the investigations of our eighteenth century writers; even in so exhaustive a work as the Genera Siphonogamarum this neglect is noticeable—Radiola, for example, is there attributed to Roth (1788), whereas it was established by Hill in 1756. In citing for Abies rotundifolia " Miller Gard. Dict. ed. 7 (1759) n. 1," Dr. Schinz, however, falls into a curious error: there is no such name in the work, which, moreover, does not contain trivials, which were added only in the eighth edition. A. rotundifolia appears in Stokes (Bot. Mat. Med. iv. 369 (1812)), and is of course antedated by A. glutinosa Gaertn. (1791).
The Trustees of the British Museum have just issued a List of British Seed-plants and Ferns, compiled by Mr. Brittle and Dr. Rendle in accordance with the International Rules of Botanical Nomenclature adopted by the Botanical Congress at Vienna, 1905. These Rules insist on the adoption of the earliest specific name of a plant, no matter under what genus it was first described. This has resulted in a few alterations, as British botanists have generally used the specific name first employed in the genus accepted; these alterations have been made only after careful investigation of the literature of the subject; a detailed account of the more important will be found in this number of the Journal. The compilers are not so sanguine as to suppose that their conclusions are free from error, but they can at least claim that the List is the result of an extensive and careful consultation of botanical literature, for which the fine library of the Department of Botany has afforded exceptional opportunities. The arrangement of Orders is that of Bentham's Handbook, which is followed in the Public Gallery; for the limitation of genera and species, Messrs. Groves's edition of Babington's Manual is followed; the nomenclature of the latter work is adopted except where this is not in accordance with the Rules. The List has been shortened by the exclusion of (1) Channel Island plants, which have no claim to be considered as belonging to the British Flora; (2) critical forms of Rubus, Hieracium, Euphrasia, and Salix, for which reference must be made to monographs; (3) introduced plants which have not become thoroughly established; (4) plants formerly found in Britain, but now extinct.

The death is announced of yet one more botanist named Robert Brown. This last sharer of an honoured name is the subject of a notice by Mr. L. Cockayne in a New Zealand paper—the Lyttelton Times—to whom we are indebted for a copy. Unfortunately, long as it is, the notice is singularly deficient in definite information. Brown "came to the colony more than thirty years since"—we are not told whence—and "for a number of years followed his pursuit as a shoemaker, but latterly that was abandoned altogether, and his time was passed with his microscope, in his beautiful garden, or away in the wilds over the length and breadth of New Zealand." He devoted himself especially to mosses, on which he published numerous papers, illustrated by himself, in the Transactions of the New Zealand Institute for 1892 and following years, describing a large number of new species. He was a self-educated man, and a great walker: "at the age of seventy and upwards he was wont to walk thirty and even forty miles in one day, carrying a heavy burden; it is only a little more than a year ago, and when over eighty years of age, he walked, botanizing, all the way from Kaikoura to Blenheim." Brown died at his residence at St. Albans, near Christchurch, Dec. 13, 1906.

Mr. F. N. Williams is publishing in the Bulletin de l'Herbier Boissier a "Florula Gambica," for "the area comprised within the present political limits of the colony of the Gambia, as finally settled in the Anglo-French agreement dated October 1905." The collections enumerated date from 1750, in which year four plants
were collected by Adanson; "the earliest record of a plant for the colony is in Dillen's *Hort. Eltham*, p. 369, t. 227, f. 358 (1732), where *Spermacoce globosa* Schum. & Thonn. is described from cultivated specimens under the name of *Spermacoce verticillis* globosis. A specimen is preserved in Dillen's herbarium at Oxford."

The news of the sudden death at San Remo on Jan. 28 of Otto Kuntze, in his sixty-fourth year, will come as a surprise to those who have so lately received his latest *brochure* issued in January, and bearing the portentous and characteristic title, "Motivierte Ablehnung der angeblich vom Wiener Kongress 1905 angenommenen inkompetenten und fehlerreichen botanischen Nomenklatur-Regeln, sowie Vorschläge zur international endgültigen Reform auf dem Brüsseler Kongress 1910." Dr. Kuntze, who is chiefly known as a leading polemic in matters relating to nomenclature, and in whom the *suaviter in modo* cannot be said to have accompanied the *fortiter in re*, was a systematic botanist of no mean ability in 1867. His earliest books, published in that year, were a *Flora* of Leipzig and a critical revision of German Rubi which was followed in 1879 by *Methodik der Speciesbeschreibung und Rubus*—an elaborate work. He also monographed *Cinchona* and *Clematis*, and his most important work—the *Revisio Generum* (1891-98)—contains numerous descriptions of new species obtained during his travels in South America and elsewhere, when he made large collections. But it is in connection with the revision of nomenclature that his name will chiefly be remembered, and it is to be regretted that the intolerance of his views and the intemperance of the language in which they were stated led to a somewhat insufficient appreciation of his labour and research. This Journal, in which several of his papers have appeared, has always recognized the importance of his work, notwithstanding obvious shortcomings in taste and temper; the *Lexicon* which, in conjunction with Dr. von Post, he published in 1904, should, as we said when reviewing it, find a place in every botanical library.

Two very pretty little halfcrown (net) books come to us from Mr. T. N. Foulis of Edinburgh, belonging to "The Garden Lovers' Series." The first—*A Garden of Pleasant Flowers*—consists of descriptions of the most familiar garden flowers from Parkinson's *Paradisus*, compiled and arranged by Mr. Alfred H. Hyatt. We have often thought and said that such a selection might well be made, if only on account of the delightful English written by Parkinson and most authors of his time, and here it has been well made. The epistle to the reader, and a small part of the introduction on "The Ordering of the Garden of Pleasure"—not, we think, the best part—are prefixed to the selections. "Paridisii" on the title-page is an unfortunate misprint. The other volume, also edited by Mr. Hyatt, is Reid's *Scots Gard'ner* (1683), to which Lord Rosebery contributes an "appreciation." In each of these books the original spelling is preserved, which in some way not easy to define adds greatly to their attractiveness. They are beautifully printed and suitably bound and cheap, and in these garden-loving days are sure to have the sale which they deserve.
Mr. T. E. Waltham has prepared a successful series of stereoscopic photos of plants in their natural colours, which he has lent for exhibition in the Department of Botany at the Natural History Museum. The series includes a number of orchid flowers and other objects, as well as some general views, such as primroses in a wood, water-lilies on a pond, and a border of herbaceous plants.

We are indebted to a correspondent for the following example of "science as she is taught" by our popular magazines. It is from the Royal Magazine for April, one of Messrs. Pearsons' publications, and is accompanied by a figure of Dionaea, labelled "Droide Muscipeula." "In the vegetable kingdom we find a counterpart which exactly corresponds with the mouse-trap. The plants (if plants they be) [!] which exist by enticing on to their leaves flies and other small insects, exude a sweet gum which, when a wandering insect alights upon it to feed, partially entangles its legs. In the effort to release itself the insect struggles violently, and its wings become involved with the same sticky substance. The time occupied by the little insect in endeavouring to escape is long enough to enable the plant to exert its consciousness, and the fatal petals, which are surrounded by sharp teeth, close upon the living fly and keep it a fast prisoner while its blood is absorbed by the plant. Then the trap unclenches and throws out the skeleton that remains."

Dr. Nordstedt, who is a member of the "Commission de Nomenclature Cryptogamique" appointed at Vienna to report to the Congress of 1910, has published (Botaniska Notiser, 1906, pp. 97-106) an important paper on "The Starting-point of the Nomenclature of Desmids," in which the matter is exhaustively and so far as we can judge very sanely discussed. He sums up his paper thus:

"I propose the following rules for the nomenclature of the Desmidiaceae. 1. The nomenclature begins with The British Desmidiaee by Ralfs 1848. 2. The authors of names given earlier, but accepted by Ralfs in Brit. Desm., must always be quoted as such (e. g.—Ehrenb. sec. Ralfs in Brit. Desm.), except if the identification of the name in Ralfs' Brit. Desm. and in the works of the older authors be very doubtful. 3. Exceptions. The following earlier specific names have priority and must be retained: Closterium Libellula Focke (if removed from Pentium) and Desmidium cylindricum Grev. (Didymoprium cyl. Ralfs 1845). The rule 3 is naturally not quite necessary.

"For several other sections of algae there are also standard works, from which their nomenclature can begin. I will here mention 3 such works, although the selection of names in the two last-mentioned ones has been quite too much dependent on whether their authors saw original specimens or not:—Hirn, K. E., Monographie und Iconographie der Oedogoniaceen. 64 Tab. in 4:o. Helsingfors 1900; in the tables nearly all the known species are represented: Bornet, Ed., et Flahault, Ch., Revision des Nostocacées hétérocystées contenues dans les principaux herbiers de France. Paris 1886-88: Gomont, M., Monographie des Oscillariées (Nostocacées homocystées). Paris 1898."
NOTES ON BRITISH RUBI.

By Edward Gilbert, M.D.

I.—The Suberecti.

Before venturing to make any comments on the British Rubi which may be noticed by eminent students of the British Flora, it seems to me only proper that I should give some slight reasons for my boldness. The main one is that I have worked very hard the last ten years (with the exception of one when I was very ill) in the field and at my own and the National Herbaria in an attempt to determine the position every Rubus I could find held in the Rev. W. M. Rogers's Handbook of British Rubi, and in the London Catalogue of British Plants. In this effort I have had the kind and essential assistance of Mr. Rogers himself. Neither was I quite a novice in the study of Rubi, for I began it in the year 1857 under the guidance of a most careful and clever botanist, Mr. George Jordan, of Bewdley. Another reason is that the immediate neighbourhood of Tunbridge Wells seems to be favoured with an extraordinary variety of Rubi. To a small portion of that my search for them has been mainly limited. In a ninety hours' methodical search of our common one year I found over forty different Rubi. In the year 1902 Mr. Rogers favoured me with a visit for a week, when the Rubi were at the height of their flowering. He was astonished at the variety to be found. A considerable proportion of them he was unable to refer decidedly to any species or variety known to him—even one of the most abundant, which he proposed to call R. tonbridgensis. The effect of all this work and comparison of notes on my mind has been a strong impression that the variety of forms of Rubi is practically unlimited, and that many of them are so closely inter-related that it is impossible to separate them distinctly, or to assign every individual to a distinct place in any scheme of arrangement; in fact, that this distinctness is not to be found in nature with regard to a large proportion of them.

Another impression is that the genus is one of wonderful adaptability to its surroundings—extremely "plastic" one may say. Every spot—wood, lane, hollow, or hill, or what not—seems to make more or less of its own impress on the Rubi that grow there, even the different sites on a varied common such as ours. So much is this the case, that these local distinctions sometimes obscure those that are specific by the resemblance they produce. The great differences found in the form and appendages of the leaves of the same bush seem to me further evidence of this great instability. Even the same bush I have known alter its features so much in two successive years that specimens from it in each of those years would have been supposed to come from quite different Rubi, if their source had not been known. Is not this adaptability of the Rubi the chief source of their ubiquity?

A third impression which has grown strongly upon me is that
the Rubi cross very freely; and, if so, of course not only would the hybrids be very various, but each kind of hybrid would vary a good deal, thus adding confusion to the confounded. It has been told me that it is pure theory to suppose any *Rubus* to be a hybrid. Is it not just as much so to suppose it to be an independent species when it closely resembles two others? *R. Idaeus* and *casius* are admitted to cross. Why not then all the intermediate ones? I am not unlikely to be mistaken; but I fancy I have noted the following things to indicate crossing in the Rubi:—A striking resemblance to some salient feature in each of two other neighbouring Rubi combined with an intermediate character on the whole; a very sparse distribution,—an isolated individual occurring here and there, and not large numbers, about the same spot, as commonly happens with the distinct species; fasciculation of the branches of the panicle; and sometimes some abnormality in growth. Whether what I take to be probably hybrids are less fertile than other Rubi, I cannot say. I have not observed that they are. In California the fruit-growers have found that certain horticultural varieties of fruit trees are incapable of self-fertilization, and that their fertilization can be secured by planting other varieties near them. Is it not likely therefore that the same end may be attained in the same way in nature? What an endless and continually changing variety this would lead to!

My close observation leads me to gather that such a variety does exist among the British Rubi, and this suspicion is much strengthened by the partial confusion which all others, as well as myself, appear to get into when we try to relegate every *Rubus* to some distinct and exact spot in any regular scheme of arrangement; and also by the remarks that have been made in the course of doing so. Is not the provision of a clump of *Egregii*—very unlike to one another—a clever device to lessen the difficulty? Nevertheless careful attempts to form a complete classification must be a most valuable, perhaps essential, step towards an accurate knowledge of any difficult genus. There are certain species (or forms) which stand out conspicuously from all the others, and are easy to name and remember. But there are still more numerous intermediate forms which resemble, it may be equally, two or more of the leading ones, and still more closely resemble one another without being identical. These are the ones that do not lend themselves readily to classification. The difficulty is increased, moreover, by their being usually far less abundant, and consequently much less frequently seen. Thus the eye cannot get so familiarized with them in the fresh state. My own observation has led me to suspect that this thinness of distribution is the main cause why so many have been recorded for only a very few counties, rather than a want of wide distribution. I have found so many of those supposed to be rare in a very small space near me. It needs continuous as well as long-continued viewing of the Rubi one is already acquainted with to keep one's eye familiar with their distinctive features. If one studies the comital numbers for the distribution of each species at the end of Mr. Rogers's *Handbook*, it will be seen
that those given for the rare species accord with suggestive frequency (I think) with those of the commoner species which they most resemble.

I may say a few words on what have appeared to me reliable or fallacious signs of specific difference among Rubi. No one who has observed them much can have failed to notice how much the leaves vary, not only in the same *Rubus*, but even in the same plant. This may be well seen in *R. Idaeus*. Luxuriance makes the leaves larger, and especially wider, and the serration coarser. Leaves may be ovate or obovate in accordance with the vigour or want of vigour in a *Rubus*. Felt is a somewhat uncertain thing, its development being apt to fail if the bush or a part of it grow in the shade.

The colouring of the prickles where the sunshine can reach them appears to me to be remarkably uniform in each *Rubus*, and well worthy of notice in determining the species.

In species in which the sepals become erect, this fails to happen when fertilization of the carpels does not take place (often, if not always).

The comparative prominence of the stamens and styles is an uncertain thing (as it seems to me), depending upon the luxuriance of the plant; when this is high the stamens (and petals too) being longer. The hairiness or hairlessness of the petals is sometimes a valuable distinction.

Having made these general comments on the Rubi, I now venture some on a few individual Rubi:

*R. Idaeus* L. The distinctive characters of the var. *asperrimus*, besides its crowded aciculi, or prickles, seem to be smaller size, tortuosity of the stem, greater hairiness, no accumination to the leaves, which are much more rugose, and yellow fruit. The colour of the prickles may be either "tawny," drab, or purple. It is undoubtedly wild on Tunbridge Wells Common, which is really a moor.

*R. fissus* Lindl. and *R. suberectus* Anderson seem to me very doubtfully distinct. Plants in which some of the supposed distinctions of one are combined with those of the other are found. Mr. Moyle Rogers asserts that *fissus* becomes like *R. suberectus* in damp places. The asserted differences between the two are just those that occur with many another *Rubus* when it grows in a dry sunny place and when in a damp shady one.

M. Sudre points out that Hall's description of his *nesseinis* will apply equally well to either *fissus* or *suberectus*. The specimens of them in the "Type Set of British Rubi" do not seem to make the distinction clear.

If the specimens of *R. suberectus* and *R. fissus* in the national collections are examined, it will be seen what difficulty there has been, and what uncertainty after all, in deciding to which species some of them belong. In the *Handbook* there is also a plain intimation that the same difficulty will occur. The same remarks will apply to the distinction between *R. sulcatus*, on the one hand,
and suberectus, plicatus, and the white form of R. nitidus, on the other.

Now I have found in woods at Lingfield R. suberectus, and also a Rubus of similar tall, straggling growth, &c., but with leaves, stem, and prickles like those of fissus, and still more like those of corylifolius, and suggesting very strongly (to my mind) hybridism between suberectus and corylifolius. The close resemblance between the leaves, stem, and prickles of fissus and corylifolius will be seen on comparing Mr. Rogers’s descriptions of them. If my plant is such a hybrid, of course it obscures the distinction between suberectus and fissus; if it is not, then those two can hardly be distinct. Testimony in favour of the former alternative is, I think, furnished by the fact that this plant in the same woods is very variable; in some cases resembling suberectus much more than fissus; in others, plicatus or hamulosus; and is indistinguishable from specimens of R. sulcatus in the national collections. But it is always tall, straggling, and large-leaved.

M. Sudre has recently sent to the British Museum specimens of the same plant, which he calls sulcatiformis, and thinks is really suberecte × cæsius. Is fissus distinct from it?

R. sulcatus Vest. appears to me an ill-defined species. I have found it, I believe, on the border of a wood in the neighbourhood of fissus or suberectus, of either of which it might well be a luxuriant straggling form, such as is found of other Rubi when growing in deep shade and on rich soil. One specimen, indistinguishable by me from one in the “Type Set,” was referred by Mr. Rogers to R. plicatus Bertramii. The probable explanation seems to me to be that any of the three—fissus, suberectus, or plicatus—may assume the characters of sulcatus under somewhat exceptional, but similar, circumstances. It may be found more or less like and indistinguishable from any one of them. From that fact, and from specimens I have gathered, I infer that R. sulcatus has been artificially formed out of white Suberecti whose axes have been spun out and their leaves enlarged by growth in damp shady situations among other shrubs.

R. plicatus Weihe & Nees is found on open spaces near Tunbridge Wells. There are two well-marked varieties of it, between the first flowering of which there is an interval of about a fortnight. The smaller, var. hemistemon (P. J. M.), has a less hairy panicle and calyx, much shorter anthers and shorter petals, sepals less reflexed, the leaves on the panicle less pointed, and fewer prickles there. The bracts, too, are smaller and undivided. It is much smaller, grows more erect, less among other bushes, but more in open ground, unsupported, and in large groups. It flowers much more profusely, and has more numerous panicles arranged alternately along the stem. The fruit in cool, wet summers is apt not to turn black. The other form (var. Bertramii G. Braun) is equally common, and often grows close to the small one. Intermediate forms may occasionally be found. But I will venture to say that these two varieties are more different and distinct than are many
Rubi commonly held to be distinct species. Another form of *plicatus*, or resembling it, is not uncommon about here. It is of lower growth, and has very numerous small, very strongly hooked and decurved prickles, and leaves very doubly and acutely serrated. This form is not, however, very distinct from the last. I suspect it has often been mistaken for *R. nitidus*, and may be *R. hamulosus* L. & M.

R. Rogersi Linton. A specimen lent me by Mr. Rogers, one in his “Set of British Rubi” at Kew (labelled *opacus*), and one or two which I have gathered, are all precisely alike; but none have the cordate leaves or crowded prickles mentioned in his Hand- book. Mr. Rogers himself cannot always distinguish even living *hemistemon* from Rogersii. M. Sudre considers it a subspecies of *affinis*. I have not a very free acquaintance with it, and may be wrong in suspecting it to be a hybrid between *nitidus* (Wh. & N.) and *affinis* (partly from its very thin distribution where I have found it), or a mere variant of the former. It has aciculi upon the calyx like *nitidus*.

What I have described as a “third form” of *plicatus* appears to me to have been included by Mr. Rogers in his description of *R. nitidus*, and is probably *R. hamulosus* of Lefyr. & Muell. This is a much commoner plant here than the true *nitidus*, and appears to me much more like *plicatus* than it is to the other form of *nitidus* or to *opacus*. I suspect strongly that I have found hybrids between it and *sub erectus*, *affinis*, *Balfourianus*, and *Sprengelii*. There are numerous intermediates, perhaps hybrids, also between it and *plicatus* (*hemistemon*), which combine their characteristics in different ways. Not improbably, I think, *plicatus* Bertramii is one of these. Luxuriant and straggling specimens of it, moreover, have been named by some of the most eminent British authorities, I submit, *R. lentiginosus*, and by me *R. integribasis*. Its close resemblance to *R. orthoclados* has also been noticed by Mr. Rogers and me together, as also its resemblance to *affinis* *Brigsi anus* (Rogers), which Dr. Focke refers to *nitidus*. By far the most probable explanation of all this seems to me to be that all the plants referred to are hybrids, with one parent, *nitidus* (or *hamulosus*) in common, and therefore, of course, vary a good deal. Their sparse distribution and some of their other features point to the same conclusion. Not less so does the difficulty which the best judges appear to find in distinguishing them clearly from their nearest allies and from one another. This difficulty is evident on carefully inspecting the collections of Rubi in the National Herbaria, from the frequency with which the same *Rubus* is named differently, and the same name given to different Rubi. M. Costa considers *R. integribasis*, *R. hamulosus*, and *R. helerythros* to be all varieties of *nitidus*.

I have occasionally met with another plant bearing all the appearance of a cross between *R. nitidus* or *hamulosus* and one of the other *Sub erecti*, especially *affinis*. Some of the specimens labelled *R. opacus* in the national collections and the “Type Set” are just like these; others so labelled differ from those; and taken
as a whole there seems to me nothing definite about them, except some general resemblance to R. nitidus. One labelled opacus in the "Set" is referred by M. Sudre to nitidus, another to integribasis, doubtfully, by M. Sudre. Mr. Rogers's description of opacus applies well to typical R. nitidus. Have not one or more hybrids been gathered under its fold as well, while others related on one side to them have been assigned places as varieties of some other species, or even as distinct species themselves?

There appears to me to reign even more confusion about R. nitidus than about the other Suberei. Mr. Rogers describes it first as having "nearly straight or falcate prickles." But a few lines lower he says, "the typical plant, with its strongly hooked prickles" has bright pink flowers, though there is a white variety, which is R. hamulosus. This last plant I believe to be common about Tunbridge Wells; but I have never seen the pink one. In one spot only have I found a plant exactly like the illustration of R. nitidus in the Rubi Germanici of Weihe & Nees, and as like a specimen of it at Kew from Dr. Focke. But this appears to me to agree with Mr. Rogers's description of the subsp. opacus. It is a very distinct plant. In the National Herbaria, however, are specimens named opacus (Focke) differing from that; yet, I submit, indistinguishable from others, named integribasis, Briggsianus, a var. of affinis, sulcatus, and plicatus.

These appear to be intermediates (hybrids, probably, I suggest) between nitidus and one or other of the other Subereci, especially R. affinis. I have found isolated specimens of them on our common, where affinis and plicatus are abundant, and hamulosus, I believe, is to be found; and I have been sufficiently puzzled by them.

R. integribasis P. J. Muell. is another of the indistinct group of plants between affinis and nitidus or the other Subereci. But I gather that there are also other sources of error in connection with it. One is a plant I have found which suggests to me strongly a cross between plicatus (or hamulosus) and Balfourianus. Another is a weakly plant I once found and thought to be R. integribasis, an opinion which was confirmed by finding a specimen like it so named in the National Herbarium. It is, however, different from any other specimens of integribasis, and more recent consideration has induced me to think it R. rusticanus × Sprengelii. One specimen in the "Type Set" at Kew, named integribasis, is held by M. Sudre to be Questieri. In every vice-county in which integribasis is said to be found (in the Appendix to Mr. Rogers's Handbook nitidus is also found, and also plicatus; and Balfourianus in all but one. In some cases probably R. plicatus × Sprengelii has been taken for integribasis; and also a hybrid between one of the Subereci and one of the rhamnifoli. It is worthy of note, I think, that there is a great deal of resemblance between R. nitidus and R. Sprengelii, which comes out very strongly in the description of the two in Mr. Rogers's Handbook.

If my observations are correct, it follows that R. integribasis figures in the national collections under the names of six other Subereci also. This, I should gather from what I have found in
the field, duly represents the natural state of things, but that its relationship to nitidus and affinis is the most frequent. When its petals have a tint of lilac, as mentioned by Mr. Rogers, it has been noticed by me to have also other signs of a connection with Balbournianus—a very common Rubus here.

R. affinis is abundant here, and a very distinct species. R. holerythros Focke I have not been able to make out as a distinct species. The name seems to have been applied to luxuriant specimens of affinis, and to intermediates (hybrids?) occasionally occurring between affinis and some Rhamnifolians. R. affinis × dumnoniensis and × carpinifolius may, I believe, be occasionally found upon our common.

Mr. Rogers says that R. rhombifolius Weihe, which includes, so Dr. Focke states, R. carpinifolius B roseus, cannot always be distinguished from R. holerythros. It seems to me that there is good reason to think this is because they are both hybrids of affinis with the same or different Rhamnifolians; and that some of these hybrids are as much like one as the other, holerythros and rhombifolius—that they are a hybrid, variable as hybrids always must be.

It will thus be seen that the reputed rarity of a Rubus runs very much with its thinness of distribution and its indefiniteness of distinction.

(To be continued.)

NOTES ON HALORRHAGACEÆ.

BY JAMES BRITTEN, F.L.S.

Last autumn Dr. A. K. Schindler visited the National Herbarium and went through our Halorragaceæ, making interesting notes upon the sheets. He had not seen the Herbarium before publishing his monograph of the order (Das Pflanzenreich, 29 Heft (iv. 225)), and it may be worth while to print certain of his determinations, especially of Robert Brown’s Australian plants, which supplement the information therein given. The notes follow the order of the monograph.

Haloragis scabra Benth. The type of the species—Goniocarpus scaber Koenig in Ann. Bot. i. 547 (1805) (Ludicripia octandra Banks Herb. !) from Macao, D. Nelson, 1780—is referred by Dr. Schindler to his var. a elongata.


H. Rubra Schindler. Walter’s plant, on which this is based, was distributed by Mueller as H. tetragyna.

H. tetragyna Hook. f. No. 4416 of Brown’s collection (from Port Jackson) consists of three plants, named by Schindler respectively H. tetragyna var. geminana, H. tetragyna var. bicallosa, and H. teucroides. No. 4115, from “perforated granitic mountain, Bay I.
South Coast, Jan. 1802," is *H. tetragyna* var. *hispida* Schindler, which is not localized in the monograph. A sheet of specimens collected by Banks at Cape Grafton in 1770 contains *H. teucrioides* and *H. tetragyna* var. *genuina*.

H. *aggregata* Buchanan "var. a *diffusa* (Hook. f.) Schindler." There would seem to be some confusion about this name. The *H. tetragyna* var. *diffusa* of Hook. f. was based on the plant called by Banks and Solander *Cercidia procumbens*, but this Dr. Schindler names (in herb.) *H. aggregata* var. *incaea*, applying the name *diffusa* to a very small-leaved plant which certainly agrees better with the descriptions. I find an example almost exactly cor responding with this among the Banksian duplicates; the specimens show considerable range in the size of the leaves, and the form seems hardly to deserve a name. The figure does not agree with it.

H. *longifolia* Schindler. To this Dr. Schindler refers Brown 4419 and 4420, from Port Jackson, which Bentham placed under *H. tetragyna*.

H. *salsoloides* Benth. Dr. Schindler does not cite under this Brown's specimens (no. 4432) on which Bentham's description was largely based. The citation of the name as "*H. salsoloides* (Reichh.) Benth." seems unnecessary, as Reichenbach's name in Sieber's *exsiccata* and in Steudel's *Nomenclator* was a mere *nomen nudum*.

H. *diffusa* Diels. Dr. Schindler refers to this the plant distributed by Mr. C. P. Andrews (no. 288) as *H. teucrioides*.

H. *heterophylla* Brongu. var. *capreolicornis* Schindler. To this are to be referred Brown's plants from Port Jackson and Port Dalrymple (nos. 4430 and 4431).

H. *levis* Schindler. Brown's Grove River plant (no. 4427), placed under *H. alata* in the *Flora Australiensis*, is identified by Dr. Schindler with his *H. levis*.

H. *tenuifolia* Benth. Dr. Schindler places here the plant named *H. Gossii* F. Muell. in Journ. Bot. 1897, 165 and Journ. Linn. Soc. xxxiv. 190.

H. *breviloba* Schindler. The plant distributed by Mr. C. P. Andrews (no. 289) as *Meionectes Brownii* is referred here by Dr. Schindler; it was collected near Perth, W. Australia.

H. *simplex* R. Br. MSS. (*H. pusilla* var. (?) *subaphylla* Benth. Fl. Austral. ii. 481). On the sheet of specimens Dr. Schindler has noted—"Certainly different from *H. pusilla* and not a variety of same; perhaps near *H. salsoloides*, but there being no flowers and fruits, not determinable." Brown's MSS. contain a full description of both flowers and fruit, which it seems desirable to publish:—


Digitized by Microsoft®
angustum attenuata decidua. Stamina epigyna petalis longiora; filamenta $8$ æqualia capillaria tenuissima glabra pallida distincta; antheræ basi insertæ, oblonge glabraæ stamineæ bilocularæ loculis appositis medio longitudinaliter dehiscentibus. Ovarium inferum obtuse tetragonum glabrum; stylæ quatuor filiformes erectæ æqualæ staminibus (etiam petalis) breviores longitudinaliter hispidi; stigmatæ simplicissima acuta. Flores alterni, sessiles remotiusculi (intermodiis plus duplo breviores) tribacteae. Bractæ erectæ membranaceæ fusce, exterior major fere longitudine floris, concava oblonga acuta; laterales ovarii circiter longitudine subulato-lanceolatae planiusculæ. Caulis simplex vel basi parum divisus erectus glaber sulcatus 3–5-pollicaris viridis subaphyllus. Squamis tantum bracteis exterioribus similibus alternis distantibus instructus. Radix fibrosa.” (No. 4438.)

Brown gives the locality “Bay I. South Coast, Jan. 1802.” Mr. C. P. Andrews distributes (no. 287) under the name “Haloragis pusilla var. subaphylla” what looks like the same plant from “swampy ground, Albany,” but the material is insufficient for examination.

H. RACEMOSA Lab. var. angustifolia Schindler. Dr. Schindler refers no. 4451 of Brown’s collection to this variety.

H. PANICULATA Br. and H. LANCEOLATA Br. were not seen by Dr. Schindler when preparing his monograph and their position was therefore doubtful; he notes that the former (no. 58) should follow H. foliosa (no. 84).

MYRIOPHYLLUM VOTSCHII Schindler (M. pedunculatum Hook. f.) in part. To this Dr. Schindler refers the plant distributed by Kirk (no. 551) from the Bluff, South Island; it is only recorded from North Island in the monograph. Brown’s plant (no. 4441) from King’s Island, Tasmania, named by Bentham M. pedunculatum, is referred by Dr. Schindler to his var. angustatum of M. amphibium, which he records only from Curitie’s River, Victoria.

M. PROPINQUUM A. Cunn. var. a genuinum. Dr. Schindler refers here Brown’s Port Jackson plant (no. 4448) included by Bentham under M. verrucosum. No. 4442 is M. verrucosum.

M. ELATINOIDES Gaud. The plant distributed as “Ceratophyllum demersum L.” in the very badly named set of Bang’s “Plantæ Bolivianæ” (no. 800) should be placed here.

GUNNERA LOBATA Hook. f. Dr. Schindler places Dysemone lobata Banks & Sol. as a synonym. Sir Joseph Hooker’s description was based upon this and on specimens collected by himself on Hermite Island. Dr. Schindler named the Banksian specimens in the Herbarium G. magellanica, of which they are clearly small examples. A comparison of these with Parkinson’s drawing made during the voyage and cited by Hooker (l.c.) under lobata shows that the two do not correspond; and a search among the duplicates resulted in the discovery of two small specimens which are identical with the Hermite Island plant, to which Solander’s description also applies. Dr. Schindler did not see Parkinson’s drawings, in which both species are represented; he quotes that of G. magellanica (D. inte-
grifolia Banks & Sol.) "ex A. DC."; both however are cited by Hooker. The very small size of the specimens of G. magellanica mislabelled D. lobata no doubt explains the confusion which occurred. D. lobata Banks & Sol. thus represents two species, as under:

**Gunnera lobata** Hook. f.

*Diffuseone lobata* Banks & Sol. Icon. ! MSS. ! et Herb. (pro parte)!
   et ex Hook. f., l. c. (pro parte).

**G. magellanica** Lam.

*Diffuseone lobata* Banks & Sol. in Herb. Mus. Brit. (pro maxima
   parte) ! non Icon. et MSS.; et in Herb. Vindob.).

---

**NOTES ON THE FLORA OF FLINTSHIRE.**

**By A. A. Dallman, F.C.S.**

Having devoted some considerable time to the elucidation of the Flora of Flintshire (v.-c. 51), I have deemed it advisable to place the results of such work on record. Comparatively little attention has been devoted to the botany of Flintshire at any time, which in this respect is perhaps one of the least known of the British counties. For the little which has been done regarding its botanical productions we are chiefly indebted to J. E. Bowman, of Wrexham, who contributed a number of Flint records to the *New Botanists' Guide* and *Topographical Botany*, and the late Robert Brown. The latter compiled a useful list of "Flintshire Plants not recorded in Edition II. of *Topographical Botany*," which appeared in this Journal in 1885. Save a few scattered records nothing of any importace has been published on the subject since that date. Brown's herbarium is now in the Liverpool Museum, and includes a considerable number of Flint specimens. This collection contains some acceptable information, and also several plants hitherto unrecorded for the county, and these are indicated in the following list.

The Flintshire records in *Topographical Botany* are largely based on a "catalogue" of "plants seen in the county of Flint," which was supplied to Mr. H. C. Watson by J. F. Robinson.* All "records" traceable to this source will be ignored by me, just as his "catalogues" for Anglesey and Carnarvon plants—which are also unfortunately incorporated in *Topographical Botany*—were rejected by Mr. J. E. Griffith in the *Flora of Anglesey and Carnarvonshire*. It is to be regretted that the second edition of *Topographical Botany* is rather misleading. A number of Flintshire plants appearing therein, and to which no authority is appended, are merely "records" of this same person, which have been extracted, minus the

---

[* For further information as to Robinson, see Journ. Bot. 1904, 300.—Ed. Journ. Bot.*]
“authority,” from ed. i. of that work. To quote Watson’s own words: “Better is it—over and over again I would repeat,—far better is it to overlook and ignore a hundred alleged facts, if only five or ten of them are likely to be bad, to be false and misleading, although the other ninety may perchance be sound and valuable. If the vitiating grains cannot be winnowed out, must remain for a time undistinguishable, let the whole be rejected. The author of a local flora, the reporting secretary of a provincial society, the editor of a fact-recording journal who allows his work to be adulterated by the errors of incompetent contributors, is so far giving the stamp of his own authority to what is worse than valueless.”

In addition to the main part of the county, which I may term Flintshire proper, there are two detached portions, the larger being geographically in Shropshire, and the smaller situate in Denbighshire. Although politically both are regarded as constituting part of the county of Flint, I confine myself in the Flora to the natural division, or Flint proper, i.e. v.-c. 51. It had been my intention to give some ecological notes, together with a short physico-botanical account of the county, but I defer this to some future occasion. Some little investigation on the Fungi and Algae is also omitted.

Not being resident in the county my work is necessarily considerably handicapped, and of an intermittent nature. I would take this opportunity of inviting assistance and information towards a complete Flora of Flintshire, which I hope to prepare in due course. Very much requires to be done before this is possible, and the following list is merely preliminary. I wish to express my deep indebtedness to Mr. J. A. Wheldon, F.L.S., for his kind and valuable assistance, and especially in connection with Cryptogamia; to the Rev. W. Moyle Rogers for the determination of several Rubi; and to Lord Mostyn and his agent Mr. Pickering for facilities in investigating Llyn Helyg. My thanks are also due to Mr. J. Clubb, M.Sc., Curator of the Lord Derby Museum, Liverpool, who kindly extracted several records for me from the herbarium of the late Robert Brown. Flowering plants and ferns unrecorded for Flintshire in Topographical Botany (or of the afore-mentioned nature) and new county records are indicated by an asterisk; those recorded in Top. Bot. but without the citation of any authority have a † prefixed. There is no list of hepatics, mosses, or lichens for the county, so I have not prefixed an asterisk to their names. The initials W. & D. (Wheldon and Dallman) indicate that the record rests on the joint authority; where no authority follows, I alone am responsible for such record.

† *Popover Rheas* L. and † *P. dubium* L. — *Chelidonium majus* L. Frequent throughout most of the county, but generally in the vicinity of houses.


† *Berberis vulgaris* L. Several bushes near the summit of the Bailey Hill, Mold; doubtless planted here.


*Reseda lutea* L. About the Denbigh Cement Works near Caerwys, amid doubtful surroundings.— *R. Luteola* L. North of Bagillt; near Coed Talon.


† *Polygala vulgaris* L.


*Montia fontana* L. Hope Hill, 1904; Caergwrle; damp ground above Rhysceae.

† *Hypericum perforatum* L. Walwen.—† *H. dubium* Leers. "West slope of Coed-yr-Esgob, about 1⅓ miles south of Prestatyn, 24th August, 1885, R. B.,” *Herb. Brown*; a common plant in many parts of the county, especially on limestone. — *H. humifusum* L.

Malva moschata L. Near Nannerch; Cilcain; Mostyn; Rhuddlan; Caergwrle. — *M. sylvestris L.

*Tilia vulgaris Hayne.

*Radiola linoides Roth. Damp gravelly ground near the boat-house at the east end of Lllyn Helyg, here, as in Carnarvonshire and elsewhere, growing in company with Centunculus, altitude 600 ft., August, 1906, W. & D. — *Linum usitatissimum L. A weed in a cornfield south-west of Nannerch, September, 1906. — *L. catharticum L.


†Ilex Aquifolium L. I should consider this wild in some parts of the county, especially the mountainous portion.

*Acer Pseudo-platanus L. — *A. campestre L. In quantity in Wared Wood about one and half miles south-east of Northop; Caergwrle; several trees in hedge near Plâs Yw.


*Prunus insititia Huds. Side of lane to east of Moel Plâs Yw, altitude 900 ft., August, 1906.

*Rubus Idæus L. Near Rhydtaffarg, 1905; mountain clough about one and a half miles north of Moel Arthur; near Nannerch; Rhydymwyn; Nant-y-Flint. — *R. dumetorum W. & M. Common in


Herb. Brown. — *Alchemilla arvensis Scop. Caergwrle Castle Hill, easily overlooked, May, 1905; Ysceifiog. — *A. vulgaris L. — *A. vulgaris L. c. jilecaulis Buser. Quarry west of Whitford, W. \& D., August, 1906.—Agrimonia odorata Mill. Very fine near where the Holywell road branches from the main road, about one mile north of Nannerch Station, August, 1906. — †A. Eupatoria L. "West slope of Coed-yr-Esgob, about 1\( \frac{1}{2} \) miles south of Prestatyn, July, 1885."


*Salix fraga tridactylites L.—*Chrysosplenium oppositifolium L. Common.—*C. alternifolium L.—Parnassia palustris L. Apparently scarce in this county; three plants by roadside between the Cheshire boundary and Queen's Ferry; a few plants near Sarn Mill, south of Ysceifiog; sparingly in marshy land near the streamlet west of the road leading from the Mold road to Lixwm.

*Ribes Grossularia L. Frequent.—*R. rubrum L. Two bushes, apparently indigenous, south-west of Rhydymwyn, August, 1906.— *R. nigrum L. Near Wallwen, an escape.

*Cotyledon Umbilicus L. Near Caergwrle on millstone grit, 1908. —*Sedum rupestre L. "Rocks in the valley of the River Alyn, about 3 miles west of Mold, Sept. 18th, 1873," Herb. Brown; still there, 1906.—*S. reflexum L. "Naturalized on wall and hedge-bank near Pwll-y-bont in a lane leading from Meliden to the sea-shore, August, 1886," Herb. Brown; on old stones by a ruined cottage in the valley north of Ysceifiog, W. & D.; naturalized in quantity on walls about a farm by the roadside, a mile or so south-west of Nannerch.—*S. acre L.—*Sempervivum tectorum L.

*Dracera rotundifolia L. A remarkably scarce plant in Flintshire apparently, doubtless on account of its calciphobous nature. In swampy ground by the clough above Bryn Ffynnon, about a quarter or a third of a mile above the rifle target, September, 1906.

*Epilobium angustifolium L. In fair amount in a small dell or excavation in the wood almost facing Nannerch Station, at the point marked Wal-goch on the Ordnance Map, September, 1906.— *E. hirsutum L.—*E. montanum L.—*E. palustre L.—*Circaea lutetiana L. In most of the woods.

*Bryonia dioica Jacq. Rather uncommon; two or three plants in hedge on right of road from Cymmau to Caergwrle, near the latter place, 1904; in a hedge just off the road from Bagillt to Halkin, near the former place, 1906.

*Hydrocotyle vulgaris L.—*Sanieula europea L.—*Conium maculatum L. Near Prestatyn, 1906; about Greenfield Abbey; Rhydymwyn. — *Apium graveolens L. Marsh about Rhuddlan Castle. —*A. nodiflorum Reichb. fil. —*A. inundatum Reichb. fil. Mud in shallow watercourse running under road between the Cheshire boundary and the railway before reaching Queen's Ferry, 1905; Pant-yr-Gôf; Llyn Helyg.—*Sison Amomum L. Roadside east of Rhyl; in fair quantity along the roadside one mile north-east of Queen's Ferry; a few plants between Queen's Ferry and Ewloe, by the roadside about half a mile past the junction with the Hawarden road.—*Egopodium Podagraria L. Holywell; Rhydymwyn; Pen-y-Fford; Nannerch.—*Pimpinella Saxifraga L. Frequent on the limestone.—*Conopodium denudatum Koch. Hope, 1904; Caergwrle. —*Myrrhis odorata Scop. Near Cilcain; in

†Hedera Helix L. — Adoxa Moschatellina L. Cornus sanguinea L. In fair quantity in the hedgerow on the left side of the lane between Ysgeifiog and Lixwm; near Nannerch; wood on left-hand side of the road between the Denbigh Cement Works and Caerwys; Maes Mynan.

*Sambucus nigra L. — *S. Ebulus L. Naturalized near Rhymdwyn, an old station. — *Viburnum Opulus L. Pont Bleiddyn, 1905; near Cefn-y-Bedd; Nant-y-Flint; near Nannerch; Rhymdwyn. — †Loniceru Periclymenum L.

†Galium verum L. — †G. Cruciards Scop. — †G. saxatile L. — †G. palustre L. — †G. Ararine L. — †Asperula odorata L. — †Sherardia arvensis L.


†Sebiosa succisa L. — *S. Columbaria L. "Rocky ground between Nant-yr-Ogof and Talargoch Hill, about 2 miles South of Prestatyn, 24th August, 1885," Herb. Brown; Rhymdwyn; Lixwm; Caerwys. — *S. arvensis L.

†Eupatorium cannabinum L. Very fine near Greenfield Abbey. — †Solidago Virgaurea L. "Hedge-bank between Caerwys Railway Station and the town, August, 1886," Herb. Brown. — †Aster Tripolium L. Muddy shore of the Dee by Queen's Ferry, 1903; marsh below Rhuddlan Castle, August, 1906. — Frigeron acre L. "West slope of Coed-yr-Esgob, about 1 1/2 miles south of Prestatyn, July, 1885," Herb. Brown; near Frith; hedge-bank between Caerwys Railway Station and the town; on colliery refuse about three-quarters of a mile south-west of Cefn-y-Bedd Railway Station. — †Gnaphalium uliginosum L. — *Inula Heleniwm L. In a suspicious situation, Cilcain, August, 1906. — I. Conyza DC. Near Caerwys; south-west of Rhymdwyn. — *Ambrosia artenisiarzolia L. This alien was growing in considerable quantity about the mill behind Greenfield Abbey in 1906. — †Matricaria inodora L. "Grassy lane about 1 1/2 miles south-east of Rhyl, near a farm called Tre-llewelyn.
1906; about three-quarters of a mile south-west of Cefn-y-Bedd Railway Station.

†Jasione montana L.—*Wahlenbergia hederacea Reichb. Marshy ground by a streamlet on west side of the road to Llandyrnog, about three miles south-west of Nannerch, the Denbigh border being close by, altitude 900 ft., August, 1906. —*Campanula Trachelium L. Near Caerwys, scattered along the hedgeside of a field lying between the road and Pandy Woollen Mills, August, 1906.—*C. latifolia L. Maes Mynan; north-east of Caerwys, W. & D.; one of the few old Flint records, being mentioned in Gough's Camden's Britannia (1789) as growing "near Holywell." —†C. rotundifolia L.

†Fuchsia Myrtillus L.—†Calluna Erica DC.—†Erica Tetralix L.—†E. cinerea L.

†Armeria maritima Willd.

†Primula acaulis L.—*P. acaulis L. × P. veris L. Caergwrle, both parents being close by, 1904. —†Lysimachia nemorum L.—†Glaux maritima L.—†Anagallis arvensis L.—†A. tenella L. About three miles south-west of Cileain, in company with Wahlenbergia; shore of Llyn Helyg; above Bryn Ffynnnon.—*Centunculus minimus L. Damp gravelly ground bordering Llyn Helyg, altitude 600 ft., September, 1906.

†Frasinus excelsior L.

†Erythrea Centaurium Pers.—†Gentiana Amarella L. Lixwm; Halkin; Caerwys; Whitford. —†G. campestris L. Less frequent than the last; near the road to the east of Glol.—†Menyanthes trifoliata L. Swamp by lane near Plas Captain, near Lixwm, August, 1906, W. & D.; swampy ground in field a little distance south-west of Nannerch.

*Cynoglossum officinale L. Rhyl, August, 1906. —*Symphytum officinale L. Damp field opposite the mill at Cefn-y-Bedd, 1904; railway-bank north of Buckley Station; waste ground near Mold Railway Station.—*Borago officinalis L. "Apparently naturalized on the west bank of the River Elwy, 1 mile north of St. Asaph, R. B., August, 1873," Herb. Brown.—†Lycopsis arvensis L.—*Anchusa sempervirens L. Still occurs on the ruins of Greenfield Abbey, whence it was originally erroneously recorded as Pulmonaria angustifolia; Maes Glás and Basingwerk are other names of this Abbey; near Holywell. —*Myosotis sylvatica Hoffm. Woods near Rhymwyn. —†M. caspíosa F. Schultz. —†M. arvensis Lam. —†M. versicolor Reichb.—*Lithospermum arvense L. "Cornfield near Rhyl, July, 1873, R. B.,” Herb. Brown.

†Volvulhus sepium Junger.—†Convulvulus arvensis L.

†Solanum Dulcamara L. —*Lycium chinense Mill. Naturalized near Queen's Ferry and elsewhere along the coast.

Verbascum Thapsus L. Near Nannerch; Mostyn; Rhymwyn; Frith; about three-quarters of a mile south-west of Cefn-y-Bedd Railway Station. —*Linaria Cymbalaria Mill. Near Cefn-y-Bedd, 1904; Holywell; in quantity on a wall by the roadside between Pen-y-Fford Railway Station and Pont Bleiddyn, about a mile from the former place, 1905; extending for some distance along the stone hedge-bank between Ysceifiog Church and end of the lane to

*Pinguicula vulgaris L. Apparently rather scarce and local in Flint; rill north-west of Cilcain, near Moel Lllys-y-coed, 1000-1100 ft., August, 1906, W. & D.; swampy ground near the stream above Bryn Ffynnon.

*Verbena officinalis L. In a small quarry or excavation near the road, a short distance south of Caerwys, August, 1906; lane by smithy by the road, about three-quarters of a mile south-east of Pandy Paper Mills, near Caerwys.

*Mentha piperita L. Dry bed of the River Alyn, a short distance south of where it crosses the Cilcain road, altitude 400-500 ft., August, 1906; by the stream north of Ysceifiog, at about 350 ft., August, 1906, W. & D.—†M. hirsuta Huds.—*M. sativa L. Marshy ground skirting Llyn Helyg, August, 1906, altitude 600 ft., W. & D.; moist ground in wood south-east of Rhydymwyn Railway Station, altitude 415 ft. —†M. arvensis L. Cornfield above Bryn Ffynnon, altitude about 700 ft.—*Origanum vulgare L. "Abundant on the west slope of Coed-yr-Esgob, one to two miles south of Prestatyn, August, 1885, R. B.,” Herb. Brown; frequent on the limestone; on the left side of the lane between Ysceifiog and Lixwm; about the Denbigh Cement Works and onward to Caerwys; Maes Mynan, south-west of Rhydymwyn; in quantity about the Hendre Mine and Quarry, Clan-yr-Afon, near Rhydymwyn.—†Thymus Serpyllum Fr.—*Salvia Verbenaca L. "Among the ruins of Rhuddlan Castle, July, 1873, R. B.,” Herb. Brown; still there in quantity, 1906.—†Nepeta Glechoma Benth.—*Scutellaria minor Huds. Small swamp north-east of Moel Llys-y-Coed, altitude 950-1000 ft., August, 1906, W. & D.—†Eruella vulgaris L.—Ballota nigra L. Ruins of Greenfield Abbey. —†Teucrium Scorodonia L.— Marrubium vulgare L. "Abundant among the ruins of Diserth Castle, and on the adjacent rock, nearly 3 miles south of Prestatyn, July, 1885, R. B.,” Herb. Brown; about some cottages near the shore, about half-way between Rhyl and Prestatyn.—†Stachys palustris L.—†S. sylvatica L.—†S. arvensis L.—*Galeopsis angustifolia Ehrh. Several plants on some waste land near Rhyl, August, 1906; this is probably the "Galeopsis Ladanum" recorded for Flint by Miss Atwood in Top. Bot.—

† Plantago maritima L. "Salt-marsh near the mouth of the River Elwy by Foryd, Rhyl, September, 1887, R. B.," *Herb. Brown*.

—† *P. major* L.—† *P. lanceolata* L.—† *P. Coronopus* L.—*Littorella juncea* Berg. Shore and bed of Llyn Helyg in quantity, altitude 600 ft., August, 1906, *W. d* *D.*


*Ulmus montana* Stokes.—† *U. suberosa* Ehrh.

† Mercurialis perennis L.

Humulus Lupulus L. Hedge between Hawarden and Broughton Hall Railway Station; hedge near Cefn-y-Bedd; roadside about half a mile north of Namarch Railway Station; hedges between Flint and Bagillt.—† *Urtica dioica* L.—† *U. urens* L.—† *Parietaria officinalis* L. "Hedge-bank in leading from Meliden to Pwll-y-bont, about 1½ miles south-west of Prestatyn, July, 1885, R. B.," *Herb. Brown*; Flint; Cymman; Lixwm; Caergwrle.

† Betula alba L. Hope Hill, 1903; about Llyn Helyg; swamp by lane near Plas Captain, near Lixwm.—† *Alnus glutinosa* Medic. —† *Corylus Avellana* L. — *Quercus Robur* L. α *pedunculata* Ehrh.—γ *Sessiliflora* Salisb.—† *Castanea sativa* Mill.—† *Fagus sylvatica* L.

*Salix pentandra* L. Swampy ground by lane near Plas Captain, near Lixwm, altitude about 600 ft., 1906, *W. d D. —*S. alba* L. Nant-y-Flint, 1906.—*S. aurita* L. Frequent.—† *S. cinerea* L.—*S. aurita* L. × *S. Caprea* L. Swampy ground by lane near Plas Captain, near Lixwm, 1906, *W. d D. —*S. aurita* L. × *S. cinerea* L. With the last.—*S. Caprea* L. Frequent.—*S. repens* L. In limited quantity on the south shore of Llyn Helyg, *W. d D. —† Populus tremula L. Apparently rather scarce; two trees in
the hedge on the roadside just out of Caerwys towards Croes Waen.

*Taxus baccata L. A single tree about one hundred yards above the road on the east slope of Moel Plâs Yw, just beyond the turning to Plâs Yw, altitude 900 ft.—*Elodea canadensis Michx. "Shallow pond about ½ mile north of St. Asaph, between the River Elwy and the high-road by Gwern-eigron and Plâs coch, August, 1886," Herb. Brown.


†Iris Pseudacorus L.

Tamus communis L. Common.


†Juncus biflorus L.—†J. squarrosum L.—†J. glaucus Leers.—†J. effusus L.—†J. conglomeratus L.—†J. lamprocarpus Ehrh.—†Luzula campestris DC.

†Typha latifolia L. — †Sparganium ramosum Huds. — †S. simplex Huds.

†Arum maculatum L.—†Lemna minor L.—†L. gibba L.

†Alisma Plantago-aquatica L.—†Triglochin palustre L.—†T. maritimum L.

†Potamogeton polygonifolius Pour. Moist places south-west of Nannenfh towards the Denbigh border.—†P. pusillus L.


†Phalaris arundinacea L.—†Anthoxanthum odoratum L.—†Alopeurus geniculatus L.—†A. pratensis L.—*Milium effusum L. Rhydymwyn.—†Phleum pratense L.—†Agrostis canina L.—†A. vulgaris
THE JOURNAL OF BOTANY

With.—[Ammophila arundinacea Host. —[Aira caryophyllea L. —
[. crecox L. —[Deschampsia cespitosa Beauv. —[D. flexuosa Trin.
[. Holcus lanatus L. —[Trisetum pratense Pers. —[Arrhenatherum
avenaceum Beauv. —[Siegioginia decumbens Bernh. —[Phegnites com-
munis Trin.—[Cynosurus cristatus L. —[Molinia varia Schrank.—
*Melica uniflora Retz. Hope; Caegwrlre.—[Dactylist glomerata L.
[. Poa annua L. —[P. pratensis L. —[P. trivialis L. —[Glyceria
fluitans R. Br. —[Festuca rigida Kunth. —[F. ovina L. —*Bromus
unioioides H. B. K. Several plants of this alien on some waste
ground near Flint, 1905.—[B. giganteus L.—[B. mollis L.—*B.
sterilis L.—*Agropyron caninum Beauv.—[A. repens Beauv.—[Brac-
chypodium gracile Beauv.—[Lolium perenne L.

*Pteris aquilina L. —[Lomaria Spicant Desv. —[Scotophyllum
vulare Symons.—*Polystichum lobatum Presl. Pont Bleiddyn,
1905; occurs in many other localities.—[Polypodium vulgare L.—
[Asplenium Trichomanes L.—[A. Adiantum-nigrum L.—[A. Bata-
muraria L.—*Ceterach officinarum Willd. Wall near Nannerch,
1906.—[Lastrea Filix-mas Presl.

*Equisetum maximum Lam. Pont Bleiddyn; Mostyn; Caegwrlre.
—[E. arvense L.—[E. limosum Sm. Llyn Helyg; swamp near Plas
Captain; Pant-yr-Gof; near Mostyn Hall.

*Isoetes lacustris L. In quantity on the bottom of Llyn Helyg,
altitude 600 ft., 1906. This lake, though of considerable extent,
does not exceed six feet in depth at any point. The Quillwort and
Littorella together form a vast carpet covering acres of the bed of
the llyn. The lake is surrounded by fir-woods and it is curious
that so prolific and interesting a spot should never have been pre-
viously visited by any botanist. This is the only sheet of fresh
water of any extent in the county.

*Ptilularia globulifera L. In fair amount about the north-east
margin of Llyn Helyg, fruiting abundantly, altitude 600 ft., August,
1906, W. & D. This is a very acceptable addition to the flora, and
especially so as I am afraid it must have long been extinct in the
old station recorded in Withering.

*Chara vulgaris L. Cefn-y-Bedd; Rhydymwyn; near Buckley.

HEPATICE.

Marchantia polymorpha L.—Conocephalus conicus L.—Lunularia
cru ciata L. Rhydymwyn; Pont Bleiddyn.—Anreura multifida L.—
A. pinguis L.

Pelilia epiphylla L.

Madothere platypylla L. On limestone rocks in the Leet.—
Frullania dilatata L., W. & D.—Diplophyllum aibicans L.—Seapania
purpurascens Hook. Damp ground above Bryn Ffynnon; swampy
ground north-west of Cilcain, altitude about 1000 ft., W. & D.—
S. undulata L. —S. irigua Nees. South shore of Llyn Helyg,
W. & D.—Plagiochila asplenoideus L.—P. Dillonii Tayl. Rhydymwyn,
W. & D.—Lophocola bidentata L.—L. heterophylla Schrad., W. & D.
—Aliicularia scalaris Schrad.—Chiloscyphus polyanthos L.—Kantia
Trichomanis L.—Odontoschisma sphagni Dicks.
Musci.


*Fontinalis antipyretica* L. Very plentiful in the River Alyn, especially about Caergwrle.


Lichenes.


Ramalina farinacea Ach. — R. fraxinea Ach. Apparently less frequent than the preceding species; Llyn Helyg; Cilcain.—Usnea hirta Hoffm.—U. florida Ach.—Platysma glaucescens Nyl. On sycamore-trunks near Llyn Helyg, altitude 600 ft., W. & D.—Evenia prunastri Ach.


Opegrapha atra Pers. On ash-trunks, Nannerch; Cilcain; Mostyn. — Arthonia Swartziana Ach. On an ash-trunk in the wood south-west of Rhydymwyn, W. & D.

NOTES ON AFRICAN PLANTS.

By Spencer le M. Moore, B.Sc., F.L.S.

Schizoglossum Huttonii S. Moore in Journ. Bot. 1902, p. 383. It was, I believe, Dr. Schlechter who first drew my attention to this plant, which he informed me was not a Schizoglossum but a Sisyranthus. More recently Mr. N. E. Brown confirmed this, and on re-examination of the flower I find that I made a strange mistake in the position of the pollinia, which really are erect instead of pendulous, as in the Schizoglossums. The plant should therefore be known as Sisyranthus Huttonii. Mr. Brown also informs me that the Natal plant collected by Harold Fry (Herb. Galpin, 2737), which was considered identical with Sisyranthus Randii S. Moore (Journ. Bot. 1903, p. 201), is really referable not to that species but to S. Huttonii.

Parasia (Belmontia) Thomasi S. Moore in Journ. Bot. 1901, p. 260. In his monograph of the genus Sebae in Bull. Herb. Boiss. 1906 (a genus with which Belmontia is, perhaps somewhat unnecessarily, included), Dr. Schönspitze was unable to place the above species in his clavis. The characters relied on for this purpose (l. c. pp. 721-2) are firstly, the absence from, or the presence of, a number of glands ("brownsche Korper") upon the anthers; and secondly, the presence or absence of a hairy pad or ring round the style. The first of these characters was satisfied in the description cited above, where three glands, one apical and two basal, are mentioned, but nothing was said about the style. Examination shows this organ to be glabrous throughout, so that the species must be placed near the beginning of the genus, between S. exacoides and S. pusilla. It should be mentioned that the style is not half as long as the corolla-tube, as might be gathered from the description, but that it reaches, when still in position, a point about midway between the base and throat of the corolla. The real length is about 4.5-5 mm.

Lankesteria elegans T. And. The locality of the plant alluded to in my recent paper (Journ. Bot. 1907, p. 91), as also the collector, were inadvertently omitted. Dr. Bagshawe found the specimen in the Budongo Forest, Unyoro (no. 923).

Vitex Isotjensis Gibbs in Journ. Linn. Soc. xxxvii. 463. On further examination I find that the plant, named as above in Journ. Bot. 1907, p. 94 (Bulawayo; Eyles, 1201), is different in several respects from the species described by Miss Gibbs. As it seems to be new, a description of it is here appended.

Vitex Eylesii, sp. nov. Frutex grandis ramulis robustis quadrangularibus molliter fulvo-tomentosis deinde glabrescentibus, foliis sepiis 5-foliolatis petiolis sat longis fulvo-tomentellis fultis foliolis obovatis base longiuscula cumeatis apice obtusissimis vel breviter cuspidatis et tunc apice ipso obtusis margine undulatis vel fere omnino integris membranaceis supra pubescentibus subitus griseo-tomentosis, floribus in cymis pedunculatis divaricatis densis
tomentosis dispositis, bracteis anguste linearibus quam calyx sæpe longioribus ultimis abbreviatis, calycis anguste campanulati dilute fulvo-tomentosi limbo 5-lobo lobis inter se subæqualibus deltoideis acutis quam tubus brevioribus, corollæ extus pubescentis tubo calycem breviter excedente sursum leviter dilatato lobo antico obovato marginé erispo apice integro quam reliqui rotundato-ovati obtusissimi multo majore, antheris subinclusis harum localis diversgentibus, ovario apice hirsututo 2-locellato imperfecte 4-locellato, stylo incluso, ovulis juxta medium loculum affixis, drupa ——.

Foliola profecto evoluta 6·0-9·0 cm. × 3·5-5·0 cm., exstant alia juvenilia multo minora; petioluli 0; coste secundarë utrinque circa 10, infimæ summæque parum aspectabiles; petioli adusque 8·0 cm. long. Pedunculi communes 4·0-5·5 cm. long.; cymarum ramuli + 2·0 cm. long.; cymæ ipsæ sæpissime 1·5-2·0 cm. diam. Bracteæ ± 0·8 cm. long., tomentosis. Flores heliotropini. Calyx totus 0·5 cm. long.; hujus lobi ægæ 0·2 cm. long. Corollæ tubus 0·7 cm. long., faucibus 0·2 cm. diam.; lobi anticius 0·3 cm., lobi laterales 0·2 cm., postici 0·15 cm. long. Stylus glaber, 0·45 cm., stigmatæ rani 0·05 cm. long.

Differs from V. isotjensis (which is a tree) in habit, in the leaflets more markedly cuneate at the base, in the longer bracts, the relatively narrower but longer calyces with larger acute lobes, and the longer heliotrope corollas with somewhat different lobes. Among other points it is easily distinguished from V. Hildebrandtii Vatke by the narrow tube of its corollas.

Coleus matopensis S. Moore in Journ. Bot. 1907, p. 97. The collector of this was Mr. F. Eyles.

SEED-PRODUCTION IN VIOLETS.

By E. S. Gregory.

An erroneous impression prevails amongst botanists with regard to the seed-bearing qualities of the open early flowers of the Noninimum section of British violets. It has been generally admitted that an occasional cross has happened (otherwise how could hybrid violets exist?), but the serious business of producing fertile seed has been relegated to the cleistogamous or later flowers, which must, of necessity, be self-fertilized. In cases where these violet plants are deprived of the sun's rays, it has been proved that no open flowers are produced; under these conditions, however, abundant seed is furnished by the very numerous though inconspicuous later flowers.

In his Natural History of Plants (ii. 393-395), Kerner writes:— "The beautiful Viola mirabilis has scented flowers, stored with honey, which unfold great violet petals in the spring. If these blossoms are visited by hive or humble bees they are cross-fertilized; but many are not thus visited, and their fate is then to wither without effecting that process of autogamy which has been
described as taking place in the species of violet belonging to the *Melanium* section. In the summer, however, special branches of the same individual plant bring forth small green flower-buds which do not open, but nevertheless produce soon afterwards large ripe capsules full of seed. This phenomenon, in apparent contradiction to the ordinary idea of the result of the flowering process, did not escape the attention of the botanists of the eighteenth century, and they named this species of violet in which the majority of the large open blossoms fail to produce fruit whilst the closed bud-like flowers are invariably productive *Viola mirabilis*, or 'the Wonderful Violet.' In *V. mirabilis* and in all its allied species, called 'canescent' in the language of descriptive botany, the cleistogamous flowers are developed on special shoots, and these shoots are either erect or else prostrate in long zigzags. . . . In several varieties of the kind called by descriptive botanists 'acanescent,' such as *V. colitina* and *V. sepincola*, the cleistogamous flowers develop likewise underground, their stalks springing from special shoots of the rootstock. In all these cases the two kinds of flowers are always borne on the same plant, though on different branch systems. . . . There is a species of violet named *V. sepincola* which grows deep in the shade of the woods clothing the hills at the foot of the Solstein chain in the Innthal district. I saw it there for the first time about the middle of May, and it was then covered with an abundance of ripe fruit. In following years I looked for flowers of this plant early in the spring, as soon as the snow had melted, but found that not a single individual had developed open flowers with expanded petals on erect above-ground stalks. On the other hand, there were a number of cleistogamous flowers concealed under the fallen leaves and partially buried in the earth, so that it looked very much as if the species produced no other kind of blossom. But plants subsequently reared in a part of my garden which was exposed to the sun's rays during some hours of each day developed, in the next year but one after their being sown, in addition to cleistogamous flowers, beautiful scented blossoms of a violet colour, which were borne on erect stalks, and in due time unfolded their petals. This result throws some light on the nature of the stimulus which causes the formation of the flowers in question. No open aërial flowers were produced by *V. sepincola* so long as it grew in the cool shade of a dense wood, but when transferred to open ground accessible to sunlight, such flowers were developed. One can hardly err in ascribing to the sun's rays a very important influence in stimulating plants to the inception of flowering-shoots, especially such as bear blossoms possessing bright-coloured petals. Indirectly, however, this advantage accrues to the plants in question that, living as they do in deep shade, where no bees would, in any case, visit them, even if they had open flowers, they can confine their constructive energy to the inception and development of cleistogamous flowers and save themselves the trouble of producing open flowers adapted to cross-fertilization (but useless in the place in question). If the spot where the violet grows becomes exposed to the sunlight through
the trees shading it being blown down or felled, humble and hive bees make their appearance in search of honey, and, buzzing from flower to flower, cross one with another. In such circumstances the open sweet-scented violet-blossoms are in request, and the same plant-individual, which for years in the dark shade has developed none but cleistogamous flowers, is now stimulated by the sun's rays into producing flowers with expanded petals."

Lord Avebury (British Wild Flowers in Relation to Insects, p. 58), after having explained the uses of cleistogamous flowers to the order Violaceae, says:—"In fact, according to Bentham, the pansy (V. tricolor) is the only one of our English species in which the showy flowers generally produce seed." With regard to this plant Mr. Darwin writes:—"It is curious in this case, as in many others, how long the flowers may be watched without seeing one visited by an insect. During one summer I repeatedly watched some large clumps of heartsease many times daily for a fortnight before I saw a humble bee at work. During another summer I did the same, and then one day, as well as on two succeeding days, I saw a dark-coloured humble bee visiting almost every flower in several clumps, and after a few days almost all the flowers withered and produced fine capsules."

In the spring and summer of 1905 I originated a series of experiments, hoping thereby to ascertain whether the early open flowers of our British violets are useful as well as ornamental. A wild-flower garden at Fairleigh, Weston-super-Mare, where I cultivated almost all our violets (excepting those which need marsh or fen) greatly facilitated my efforts. A sunny bank, facing south, helped the bees to do their duty, although I must admit that they were more often occupied in visiting plants of the Boraginaceae.

As the showy open flowers unfolded, I tied red silk round the stems of V. odorata vars. sub-carnea and alba, a red violet (which I suspect of being a cross between V. sub-carnea and ordinary V. hirta), V. hirta, V. hirta var. propera (of which the seedlings were noticeably hairy), V. Riviniiana, and V. silvestris. The two latter were less disposed to set seed than were the acaulescent violets, though the seed set by them germinated more quickly. On May 4th I tied muslin bags around the now perfectly formed capsules, and later carefully gathered in my seed, which was placed at once in paper-bags and labelled.

In July of the same year, by the kindness of Mr. Lynch (the curator), I was allowed to sow the seeds in boxes protected by a frame in the Botanic Gardens, Cambridge. Except in the cases of two species, I counted in the seeds, by which means it was possible to arrive at pretty accurate results, which were as follows:—

<table>
<thead>
<tr>
<th></th>
<th>Seeds Sown</th>
<th>Seedlings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V. odorata, sub-carnea</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>V. odorata, alba</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>V. odorata (red)</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>V. hirta</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>V. hirta, propera</td>
<td>Many</td>
</tr>
<tr>
<td>6</td>
<td>V. Riviniiana</td>
<td>Several</td>
</tr>
</tbody>
</table>
3. This is the violet which I suspect of being a cross between *V. odorata alba* and *V. hirta*.
4. The capsules in this species had been the prey of wood-lice.
5. Seedlings noticeably hairy.
6. In this box three seedlings appeared in the autumn, whilst the rest waited for spring.

As the plants are now flourishing in the *Viola* bed of the Botanic Gardens, I consider the experiment conclusive.

**EUPHORBIA PEPLIS L. IN BRITAIN.**

**By C. E. Salmon, F.L.S.**

In September of last year Mr. C. J. Alexander, of Tunbridge Wells, was fortunate enough to alight accidentally upon a plant of *E. Peplis* on the coast of Sussex. It was growing in a very suitable and likely spot in the eastern part of the county; and the finder, not realizing at the time the importance of his discovery, did not search for further specimens. A week or two afterwards I visited the locality, but failed to see any more examples during a somewhat prolonged search. Mr. F. J. Hanbury also tells me of the occurrence of the plant in Kent in 1900.

As this discovery of *E. Peplis* in Sussex and Kent appears to considerably extend its range eastward in England, the Isle of Wight being formerly its most easterly station, it may not be out of place here to give a detailed and, I think, a fairly complete list of its already known British or Channel Island localities, and the results are appended below.

It seems likely that the seeds of *E. Peplis* may remain buried in the shore sands at some considerable depth for a long period, and it is only when local conditions alter under tidal or other influences that the seeds may find themselves at a suitable depth underground for germination. On the other hand, it must not be forgotten that the mischievous and inane practice of intentionally sowing seeds of rare plants in wild localities is not yet wholly stamped out in England.

1. **Cornwall West.** "Tithymali marini species minima ex Cornubia" (Merrett, 118 (1666)). "Inter Pensans et Marketjeu copiose in Cornubia" (Ray, Cat. 237 (1670)). Sands by Penzance Green, very sparingly in 1830 and 1831, H. C. Watson (New Bot. Guide, ii. 1885). Penzance, Lloyd, 1836 (Hb. Boswell). Marazion Green, E. T. Bennett (Phytol. iv. 1 (1851)). St. Agnes, Scilly Isles, J. Woods in Penzance Nat. Hist. and Antiq. Soc. Trans. 1852, but Dr. Raffles was never able to verify it (Davey, Tentative List, 193, 1902). St. Mary's, Scilly Isles, 1900, R. N. Milne (Davey in Journ. Roy. Inst. Cornwall, xvi. 72); still there, but in very small quantity, in 1905, C. E. S.

2. **Cornwall East.** In Top. Bot. without personal authority. Whitsand Bay, near the Rame, one plant in 1847 nearly at the


Sark. (Babington, Primit. Fl. Sarn. 87 (1839)).


WATSON EXCHANGE CLUB REPORT, 1905–6.

[The following notes are extracted from the Report of the Watson Botanical Exchange Club for 1905–6. The Report contains a “half-plate photo” of Polygala serpyllacea var. vinooides, a plant described in this Journal for 1906, p. 34. The notes as usual display those differences of opinion between competent botanists which are apt to puzzle the confiding beginner; and the matter is further complicated by the fact that in some cases the same plants receive further (and differing) comments in the Report of the Botanical Exchange Club for the same year: see, for example, the notes in each Report on specimens of Lepidium heterophyllum from Northamptonshire: “Viola Iririiana Reichb., forma minor,” which Mr. Druce (Rep. Bot. Exch. Club) agrees with Mrs. Gregory in thinking “should certainly equal V. flavicornis Forster,” Mr. Marshall thinks (Rept. Watson Club) “merely a starved state, and not deserving a special name.” Those who are doubtful as to the specific distinctness of certain “critical” plants will find their scepticism confirmed by the notes on Enphrasta.

It may be worth while to call attention to a not infrequent misuse of the term “type,” of which an example is found in the statement that Gloucestershire specimens of Carex Leersii are “exactly like the type-specimen in Herb. Brit. Mus.” A “type-specimen,” as defined by Mr. Jackson in his Glossary, is “the original specimen from which a description was drawn up,” and this is undoubtedly the meaning of the phrase in its strict sense. In the present instance the specimens of C. Leersii in the National Herbarium may be described as authentic, as they were collected and determined by F. Schultz and distributed in “F. Schultz and F. Winter, Herbarium Normale,” Cent. 2, n. 173; but they are not “type.”

May we suggest that it would be useful if the Reports of both Exchange Clubs included a list of the addresses of their members? This was done in the early days of the Botanical Exchange Club, which now does not even give the names of those belonging to it.—Ed. Journ. Bot.]

Clematis Vitalba L. Martinshaw Wood, Leicestershire, v.-c. 55, Sept. 1905. I am sending a few specimens of Clematis, as it has hitherto been recorded as naturalized, or an escape, for Leicestershire. In the Martinshaw it is found in great plenty on the rocks
and disused quarries, and appears to be indigenous.—C. B. Headly. This is certainly the best record we have; but the *Clematis* is almost exclusively a chalk plant, and I fear we cannot claim it as indigenous for Leicestershire, unless it should be found on the oolite on the eastern border of the county.—W. B [ELL].

*Ranunculus tripartitus* DC. Catsfield, East Sussex, v.-c. 14, 1894.—Coll. E. S. Salmon. Comm. C. E. Salmon. A very pretty but puzzling Batrachian. Named "*pelatus* var. *truncatus*," "*intermedius*," and "*ololeucus*" during the past three or four years by well-known botanists. Major A. H. Wolley-Dod says that "the almost free stipules remove it from any *pelatus* form, and its small flowers are against this, too." *R. ololeucus* Lloyd must be very similar to this plant, but the fruits of that species have longer beaks, and the petals are wholly white. Prof. Corbière very kindly sent me a specimen. These Catsfield examples show well-developed capillary submerged leaves, and appear to be large-flowered *R. tripartitus* DC. The flowers were usually of *Lenormandi* size.—C. E. S.

*Viburnum Opulus* L. (yellow-fruitied form). Narborough, Leicestershire, v.-c. 55, July, 1904. This form, which was first pointed out to me by Mr. A. B. Jackson, is remarkable in that the berries never become red, but retain their yellow colour until they fall. The bushes from which these specimens were gathered presented a striking contrast to those close by that bore berries of the normal red colour, these latter being red practically as soon as the fruit is formed. Beyond this characteristic there is no essential difference between the fruit of the type-plant and that of the form, except, perhaps, in that the berries of the latter may be said to be less globose.—A. R. Horwood. The yellow-fruitied Guelder-rose has been known at Narborough Bogs for many years; and it is quite constant in the colour of its fruit. I know no other station. Is it worthy of a varietal name or of being raised to a specific form? Some plants with less differentiation and constancy have been so honoured.—W. B. A yellow-fruitied form would seem to be of rare occurrence. I have not found any reference to it in books, and have it only from Ednaston, South Derbyshire.—E. F. L.

*Linaria supina* Desf. Par, East Cornwall, v.-c. 2, Sept. 13th, 1905. This plant occurs in great abundance along the sandy beach all around the harbour, along the St. Blazey-Fowey railway line, and by the roadsides, and I think it has every claim to be considered a native. It has been known as one of the common plants of that district for quite sixty years.—F. H. Davey.

*Mimulus luteus* L. [Lungsdorffii Donn.] Walkham Vale, South Devon, v.-c. 8, May 29th, 1905. This species is very plentiful on the banks of the River Walkham. There are large masses of its yellow blooms for a distance of seven or eight miles. In Mr. Archer Briggs's *Flora of Plymouth* this station is not mentioned. These specimens differ from those from the Dove in Derbyshire, in that these are mostly upright and rooting from the two or three lower nodes only, while the Derbyshire ones are more recumbent and
root at least three-fourths of the length of the stem.—C. B. Headly.

*Nepeta Glechoma* Benth. var. *parviflora* Benth. (1) Lowesby, Leicestershire, v.-c. 55, May 21st, 1905.—A. R. Horwood. (2) Scraptoft, Leicestershire, May 18th, 1905.—A. R. Horwood. (3) Sheet Hedges Wood, Leicestershire, May, 1905.—H. P. Reader. (1) According to Bab. Man. ed. ix., this should be subglabrous; the present plant is very hairy. Mr. Beeby once remarked to me that the species was trimorphic, and that he did not believe in the alleged variety.—E. S. M. The small-flowered form is nearly as common in Leicestershire as the type, and is usually found in close proximity thereto.—W. B.

*Salicornia appressa* Dum. Thorney Island, West Sussex, v.-c. 18, Aug. 25th, 1905. I came upon a patch of nearly half an acre in what I believe to be a hitherto unknown locality. One characteristic is entirely lost in pressing. The stems and roots go down perpendicularly into the ground, whilst the foliage lies closely pressed upon the surface, absolutely at right angles to the stem.—R. S. Standen. Likely enough to be right; but much too young for certain determination.—E. S. M.

*Urtica pilulifera* L. var. *Dodartii* (L.). Cultivated, Underdown, Ledbury, July 4th, 1905. These are self-sown seedlings—the type (*pilulifera*) has vanished from my grounds, and this is the only form now found there. I forward a specimen of *pilulifera* (type) gathered in 1901. I believe that the late H. C. Watson noticed the same thing when he grew the plant.—S. H. Bickham.

*Glyceria plicata* Fr. var. *pedicellata* (Townsend). Scraptoft, Leicestershire, v.-c. 55, June 28th, 1905. Prof. Hackel, in confirming this determination, writes, November, 1905, “In my view, *G. pedicellata* Towns. is a form of *G. fluittans*, not of *plicata*. Your specimen agrees well with the authentic one in my own herbarium from Townsend.”—A. R. Horwood. Mr. Townsend agreed that his *G. pedicellata* was *G. fluittans × plicata*; it never fruits.—E. S. M.

---

**SHORT NOTES.**

*Lithospermum officinale* L. var. *pseudo-latifolium* in Cornwall.—In August, 1905, while staying at St. Ives, we found, both at Carbis Bay and at Lelant, a plant which we labelled provisionally *Lithospermum officinale*, on account of the character of its seeds. In its habit and colour and shape of leaves, however, it differs widely from the type. Comparison with Mr. C. E. Salmon’s description of *L. officinale* L. var. *pseudo-latifolium* (Journ. Bot. 1906, 367) has shown a very close agreement. Our plant is much less strict than the type, the leaves are ovate-lanceolate acute, much more broadly based than in the type, dark green and not grey-green in colour, and with the under surface less hairy. The seeds are more markedly cavo-punctate than seems to have been the case in
Mr. Salmon's plant, but otherwise the agreement is very close indeed. The distinction from the normal *L. officinale* is well-marked, the whole appearance and habit being entirely different.—E. & H. Drabble.

**ALNUS ROTUNDIFOLIA Mill.** (p. 125).—The name published as above by Miller is to be found in the *Abridgment of the Gardener's Dictionary*, published in 1771, where binomials are consistently used. It must replace Gaertner's name of 1791.—G. Claridge Druce.

A **GLAMORGANSHIRE SEDGE.**—In Journ. Bot. 1902, 250, Mr. W. A. Shoolbred and I recorded *Carex Leersii* F. Schultz (my no. 2550) from hedge-banks near Pyle. It is a smaller plant, and in some other points differs from an authentic specimen at Brit. Mus. (F. Schultz & Winter, Herb. Norm., Cent. 2, 178). Herr Kükenthal, on whose authority we published it, has now named specimens in Herb. C. E. Salmon as "*C. echinata* Murr. = *C. Pairai* F. Schultz." In Lond. Cat. ed. ix. *C. echinata* replaces *C. stellulata* Good. *C. Pairai* has been found recently in West Cornwall by Mr. Druce.—Edward S. Marshall.

[In his *Prodromus* (1770) Murray gives no description of his *C. echinata*, which stands (p. 76) as: "*Carex echinata* mii f. Car. spicis ternis echinatis, glumis lanceolatis, capsulæ mucrone simplici Hall. Hist. n. 1366. Oed. Dan. T. 284." Both Haller's description (which Murray quotes as above) and Oeder's figure undoubtedly represent the plant subsequently known as *C. stellulata* Good. We have however in the National Herbarium the plant from Murray's herbarium, labelled by him: "*Carex echinata* mii v. *Prodromus* p. 76. Hall. Hist. n. 1366. Hercynia citat: ego in pratis udis Gotreyde [?] crebro referi. 1770." This has been named by Mr. C. B. Clarke *C. muricata* and by Pastor Kükenthal *C. Pairai* F. Schultz: Townsend (Fl. Hants, ed. 2, 463) under *stellulata* notes "Murray's *C. echinata* is *C. divisa*; see sp. in Brit. Mus. Herb." While it thus appears that the plant which Murray intended to describe was what is now called *C. Pairai*, the description cited from Haller, which is the only description he gives, and the figure he quotes from Oeder are, as has been said, *C. stellulata*, so that the name, if synonymy be excluded, is a *nomen nudum* and cannot stand. In face of the synonymy, however, and of the practice when Linnaeus's books and herbarium do not agree, it would seem that *C. echinata* Murr. (Prd. 76, non herb.) should stand as the name of the plant.—Ed. Journ. Bot.]

**FUMARIA BORÆI** Jord. (p. 9).—The Rev. W. Moyle Rogers states that he found no Fumarias in the English Lake District in the summer of 1906. In August of that year we found *Fumaria Boræi* by the side of the road leading from Dunmail Raise to Grasmere. The plant did not occur abundantly, only two or three specimens being seen.—E. & H. Drabble.

**SISYMBRIUM PANNONICUM** Jacq. in Cheshire.—This plant, which occurs abundantly at Crosby, on the Lancashire side of the Mersey, does not seem to have been recorded from the Cheshire side. It
was found in considerable quantity at Hoylake in September, 1905, growing on waste ground, and evidently quite established.—E. Drabble.

A Hybrid Erigeron.—In August, 1884, I found *E. acris* L. and *E. canadensis* L. growing together in sandy ground near Tilford, Surrey. With them was one specimen which at the time I suspected to be their offspring, and, having recently come across the plant in my herbarium and carefully examined it, I am convinced that such is really the case. Though *E. acris* × *canadensis* does not seem to have been previously detected in Britain, Focke says that it has been found in a few stations in East Germany.—Edward S. Marshall.

*Stipa membranacea* L.—In the *Annals of Scottish Natural History*, 1906, p. 229, I suggested that *Festuca uniglumis* Soland. was antated by the trivial name given by Linnaeus as *Stipa membranacea*, Sp. Pl. 560, 1753. This was contested in this Journal (p. 28), and more recently on p. 107, where Messrs. Britten and Rendle say: "Stipa membranacea L., which has been suggested as a synonym, is altogether doubtful; for full discussion, see Duval-Jouve in Rev. Sci. Nat. Sér. 2, ii. 32-5, 1880." My attention to this grass was called many years ago when I examined the grasses of the Linnean Herbarium and checked them with General Muuro's excellent paper which appeared in *Journ. Linn. Soc.* vi. pp. 33-55, and in which he identified the above plant with *Festuca uniglumis*. Recently I have again examined the specimen. Oftentimes the herbarium of Linnaeus is of little value in determining the types of the *Species Plantarum*, but in this instance no such difficulty occurs. The specimen is labelled in Linnaeus's own hand, "Stipa membranacea," and its origin is given "Loefling, ex Hispania"; and as the description in Sp. Pl. is based on Loefling's plant from Spain, we need have no hesitation in saying that this specimen is the type. It is true the description "laxa debilis" does not appear applicable to *uniglumis*; but the fact is the plant of Loefling is a lax shade-growth form, to which the above description is not inapplicable, while it also helps to corroborate the identity of the specimen as being the Linnean type. Linnaeus says that the habit is that of an *Arena*, and this at first glance suggests something quite away from *Festuca*; but the Linnean genus *Arena* contained *A. flavescens*, to which indeed this specimen is not very dissimilar. It is true that Duval-Jouve (l.c.) writes at considerable length on the subject, but his objections are chiefly based on the fact that Linnaeus's description on the genus *Stipa* excludes this plant. Obviously, if it were a *Stipa*, there would be no reason in removing it to *Festuca*. He also says that the words "laxa debilis" cannot refer to *uniglumis*. But a glance at the Herbarium would have shown that they do. On the other hand, Link, Parlatore, and other eminent botanists accepted *Stipa membranacea* as synonymous with *F. uniglumis*; therefore Link, who put it in the genus *Vulpia*, called it *V. membranacea*. I may say that Prof. Hackel, although bearing in mind the words "laxa debilis" and
not having had an opportunity of consulting the Linn. Herb., considered *Stipa membranacea* was the earliest binomial. As I have said, Gen. Munro so identified it, and Sir James E. Smith has written on the specimen, "E. uniglumis proxima." I have no doubt Munro's identification is correct, although it is very different in habit from the grass when growing in mobile sea-sand, and a side-light is thrown on this point by a cultivated specimen in Herb. Brit. Mus. closely resembling the Linnean type from Hugh Davies, of Anglesey, who draws attention to its very different appearance from the normal sea-coast form. I therefore venture to contend that, if the earliest trivial is to be maintained, our plant must be known as *Festuca membranacea.*—G. Clarke Druce.

**A Correction.**—Owing to a misunderstanding, the measurements of the figures on Plate 481A have been given on p. 85 incorrectly; they should be twice as great as there given—viz. figs. 1, 2, × 50; figs. 3, 4, 5, × 250.

The conclusion as to the true position of *Splachnobryum* being among the *Splachnaceae* has been recently confirmed on independent grounds by W. J. Jongmans (Über Brutkörper bildende Laubmoose; Nijmegen, 1907).—H. N. Dixon.

---

**NOTICE OF BOOK.**

*Recent Progress in the Study of Variation, Heredity, and Evolution.*


The University of Cambridge seems to be the headquarters of a school of philosophical biologists, who, profoundly interested in those problems of biology which at first were "made in Germany," and fascinated the minds of the keenest scientists among those engaged in original research in the Fatherland, while they adopted German methods both of analysis and synthesis of facts and theories, have succeeded in forming an English group of workers in the problems of life and mind, the progress and results of whose labours are in no wise less important and often more lucid in their literary expression than those of their German co-workers in similar fields of investigation and scientific research. The problems which modern biology is attacking with perennial vigour bear chiefly on Variation and Heredity, and the side issues either involved in them or associated with them. Natural Selection, which formerly occupied such a prominent place in the Darwinian scheme of the survival and salvation of the fittest (a prominence, however, which was neither sanctioned nor encouraged by Darwin himself either in his correspondence or in his later works), is now, by general consent, relegated to the more subordinate position of an agency which is no longer considered causal but directive.

Mr. Lock tells the story of the progress towards solution of the
inter-related problems of Variation and Heredity in their bearing on Evolution with a clearness and felicity of expression especially welcome in an English treatise on these somewhat abstruse subjects. The portraits of Darwin, Francis Galton, Prof. de Vries, and Mendel are admirable; and that of Köhreuter (who died in 1806), after an engraving, serves to call to mind the original work of an early student of the phenomena of hybridity who seems to have escaped the notice of modern botanists, even if he has not been all but forgotten by them.

No one now attempts to defend the Linnaean concept of the species, as an entity immutable and constant, incapable of either degeneration or of modification. Few, however, are prepared to go as far in their extreme views as to abolish species altogether; as in the case of the reader of a paper on Corals at a meeting of the Linnaean Society not so very long ago. Therein it was suggested, so great was the confusion encountered in attempting to adjust specimens to catalogues and descriptions, to abolish the grade of species altogether, and to label new finds as "chunk no. 1 from the Australian Reef," or "chunk no. 2 from the Indian Ocean."

So arbitrary and indefinite is the idea of a species, that, as the author implies in his first chapter (on p. 9), "Jordan's species are just such true and constant groups as those of Linnaeus." Again, "Varietates levissimas non curat botanicus," said Linnaeus. But a good many botanists, and among them the most painstaking and critical of observers in the field, have rightly devoted much attention to structural differences which preserve their distinctive characters and come true to seed, when transplanted to the uniform soil of a garden—as Jordan himself found, when he applied the method of experiment.

It is of interest that the author endorses an opinion doubtfully expressed, by many apologists, that Darwin, at a critical period in formulating his hypothesis, was profoundly impressed by Malthus's Essay on Population, and, seeking in Nature a substitute for the artificial selection of the breeder, found it in the extension of the Malthusian doctrine to organic beings in general.

It is not without significance that Mr. Lock devotes two whole chapters out of the ten to the discussion of Mendelism. The original work and valuable experiments of the brilliant and far-seeing Abbot of Brünn, unnoticed and lost sight of for a generation, and accidentally brought to light by the independent investigations along similar lines of research by De Vries in Holland, by Correns in Germany, and by Tschermak in Austria, serve only to enhance the reputation of their author, and to emphasize the value and the importance of the proposition now known as Mendel's Law. Cuenen's experiments on mice, Mr. R. H. Bifffen's experiments with cereals—especially wheat, and Messrs. Bateson and Punnett's somewhat complex and involved study of Andalusian fowls have considerably widened the basis for the application of the Mendelian Law and its ancillary corollaries. The author is certainly justified in stating that "there can be no sort of doubt that Mendel's brief paper is the most important contribution of its size which has ever been made
to biological science." The dominant and recessive factors in the phenomena of Heredity have to be reckoned with in the improvement or degeneration of the race. The one set of factors, like the other, are under the directive influence of natural selection; and that higher agency which is causal rather than directive must be left to control and fix those factors which make for the good of the race, and to eliminate those factors which retard its progress.

Finally—and this seems to be the gist of Mr. Lock's arguments—the author's work is intended to show that Mendel's Law of Heredity is considerably simpler than, and completely replaces (in the opinion of the most competent biologists), Weismann's Theory of Inheritance, the fashionable biological creed of some years ago: though it must not be forgotten that many of the conceptions used in the Mendelian expression of the facts are unconsciously borrowed from Weismann's theory. As Dr. J. T. Cunningham points out, in discussing Eimer's Organic Evolution, selection, whether natural or artificial, is analogous to the process of denudation in geology. It explains extinction of forms, gaps, and intervals which separate groups of genera, just as denudation explains the want of continuity in the stratified rocks.

Frederic N. Williams.

BOOK-NOTES, NEWS, &c.

At the meeting of the Linnean Society on 7th March, 1907, Messrs. H. & J. Groves exhibited a series of specimens of Nitella ornamentopoda A. Braun, collected by the Rev. Canon Bullock Webster. This rare species has only been found in a small district in the West of France, from Angoulême in the north to the south of Arcachon, and doubtfully in one locality in Portugal. The especial interest of the specimens exhibited, which were collected to the south of Arcachon in March and April, 1906, was that they represented gatherings of the plant from very different habitats and showed great variations. The plants collected in shallow ditches were already in full fruit, while those from running water and from Lake Cazan were quite immature, and so far sterile. Only a few specimens of this species have previously reached England, and the collection exhibited was probably by far the most extensive series of forms yet obtained. Braun recognized two forms—the more typical one almost resembling in habit some forms of our N. tenuis- sina (this form was called f. moniliformis by Prof. Migula), and the other var. laxa, which resembles N. gracilis. Among the specimens were some from roadside ditches near Arcachon, representing a third and very distinct form; this may be called var. robusta. It is 4-5 in. high, very dark green, much more robust than the ordinary form, and with comparatively short ultimate rays to the branchlets, giving it the appearance of N. mueronata in miniature. N. ornamentopoda is interesting as representing in Europe Braun's section Polyarthroductyla. The headquarters of the species in this
section is Australasia, where there are eleven species, two reach north to Japan, and one occurs in India. Two or three are found in South America, and one in North America. Three species occur in Africa, one of which is also recorded by Dr. Nordstedt from Portugal. It is not quite certain that \textit{X. ornithopoda} is distinct from this last. At the same meeting Mr. G. C. Druce read a paper on the occurrence of \textit{Spergularia atheniensis} and \textit{Agrostis verticillata} in the Channel Islands, specimens of the plants being shown.

The Oxford University Press has just published \textit{The Dillenian Herbaria}: an account of the Dillenian collections in the Herbarium of the University, together with a biographical sketch of Dillenius, selections from his correspondence, notes, &c., by Mr. G. C. Druce, edited, with an introduction, by Prof. Vines. We hope to notice it in an early issue.

Acting on the principle that “forewarned is forearmed,” Mr. E. S. Salmon, the mycologist of the South-Eastern Agricultural College, Wye, has been doing his best to inform gardeners and fruit-growers of a danger that threatens them in the advent of a new gooseberry disease. It is a white mildew, belonging to the same family of fungi as the hop-mildew, and it fastens on leaves and fruit, weakening the bushes, and preventing the growth of the berries, or rendering them unfit for consumption. The disease is indigenous to America, and has doubtless been transported to Europe along with some young bushes. The fungus made its appearance in Ireland, where it was identified in 1900, and where it has now spread over a considerable area. Recently it has turned up in England, in Worcestershire, imported, it is strongly suspected, on gooseberry bushes and on \textit{Ribes aureum} from the Continent; for the Continent of Europe has also been invaded since about the year 1900. The mycologists there, however, are on the alert, and, with Government aid, are trying to stamp out the pest. Mr. Salmon’s efforts have unfortunately been hampered by the action of Mr. Massee, the expert for the Board of Agriculture, who alleged that the disease was not new, that it was comparatively harmless, and that it could easily be kept in control by the use of fungicides. Mr. Salmon’s contention is that for this disease fungicides are of comparatively little use, and that Government aid is necessary to stop all importation of bushes for a time. It is fatally easy for Governments and for people to do nothing, and a willing ear is lent to the man who advises that policy; so no attempt has yet been made to check importation. The Board of Agriculture has, however, recognized that there is need for watchfulness, and has issued a leaflet warning growers of the serious nature of the disease. More active measures will be taken, we do not doubt, when once the fungus has become thoroughly established, and we shall have the satisfaction of shutting the stable-door after the steed has been stolen.
Three Interesting Ascomycetes.
THREE INTERESTING ASCOMYCETES.

By W. B. Grove, M.A.

(Plate 485.)

1. Dasyscypha canescens Mass. F. F. iv. 346. (Fig. 1.)
   Lachnella canescens Phill. Disc. 259.
   Poziza canescens Cooke ex Phill. l. c.

Some specimens of this Discomycete, which I found in March on dead wood at Studley, presented a very peculiar appearance under a lens, on account of their hoary aspect. With a low power of the microscope this was seen to be due to numerous brown hairs, many of which bore at their tips an amorphous shining-white mass, which recalled the crystals of oxalate of lime borne on the hairs of D. ciliaris, with the exception that the lumps were very irregular in shape and size.

Under a higher power these masses were found to consist, not of crystals, but of a number of fusiform conidia, and many similar hyphae were seen on the surface of the surrounding wood, bearing the same masses of conidia, and presenting the appearance of a species of Acrotheca.

The following is a description of the fungus, drawn up from my specimens:

Cups rather crowded, 1½-1 mm. across, sessile, at first globose, then hemispherical and flattened; disk at length nearly plane, dull brown, edge slightly elevated; exterior densely pilose, with flexose brown hairs, paler than the disk; hairs cylindrical, septate, pale brown below, paler upwards, slightly swollen and nearly hyaline above the upper septum, crisped when dry, often inclined at the tip, averaging 100 × 4 μ; many, especially round margin of cup, bore at the faintly denticulate apex a shining-white irregular mass about 15-20 μ thick, consisting of fifteen to thirty conidia. Asci cylindrical, 60 × 5 μ, apex rounded; paraphyses slightly longer, 70 μ, hyaline, lanceolate, apex very acute, 3-3½ μ thick at widest part; spores biseriate, hyaline, oblong-fusoid, about 11-12 × 2 μ, showing a tendency to become uniseptate.

Acrotheca canescens Grove. — Hyphae as above. Conidia hyaline, oblong-fusoid, somewhat acute at the ends, 10-12 × 3 μ.

It will be seen that the conidia were almost exactly like the ascospores, differing only in being rather stouter, and not presenting, so far as seen, any appearance of a septum. The hyphae which grew upon the neighbouring wood were more thickly scattered, and sometimes shorter, but otherwise extremely similar to the hairs of the cup.

Of the connection of the conidia with the Dasyscypha there cannot be the slightest question, as the hairs of the cup on which they grew were undistinguishable from the other hairs that clothed it, and were seen to rise from the cells of the excipulum. The number of cups found presenting this phenomenon was several
hundreds. It seems likely that the name *canescens* was suggested to Cooke by this hoary coating, as the few non-conidiiferous cups were of a nearly uniform brown.

2. *Coryne urnalis* Sacc. Mass. F. F. iv. 153. (Fig. 2.)

*Ombrophila purpurea* Phill. Disc. 324.

*Bulgaria purpurea* Cooke, Grev. ii. 168.

There is considerable interest attached to the species of *Coryne*, because some of them present the unusual character of bearing in their asci two kinds of spores; the relation of these spores to one another is an open question.

The same phenomenon occurs in the Discomycetous genus *Tymanis*. Similarly, among the Pyrenomycetes, some species of *Nectriacei* are met with, having apparently the same external appearance, but bearing sometimes eight spores, at another time innumerable smaller ones, in an ascus. Some authorities, as Tulasne, consider these two forms in each case as belonging to the same species; others, as Saccardo, state that they are recognisably distinct, even in external appearance.

Last December I received from Aberystwith, by the courtesy of Dr. J. H. Salter, some specimens of *Coryne urnalis* in which the two kinds of spores were present in large numbers. If a fragment of the hymenium was crushed under a cover-glass, the field was crowded with spores of both kinds. On cutting sections, it was noticed that most of the asci contained the usual elliptic-fusoid spores, measuring 25–30 \( \times \) 5 \( \mu \); the contents of these were very granular, and many of them were distinctly 5 or 6 septate (fig. 2f.) Paraphyses fasciculate at base, linear, granular, always longer than the asci.

But here and there an ascus presented the peculiar appearance shown in fig. 2e. There were four of the fusoid spores, alternating with the same number of groups of minute globose spores (2½ \( \mu \) diam.), about twenty in each group. Moreover, these bodies resembled very closely (except that they were more regular in size) the granular contents of some of the larger spores.

When section after section was examined and showed the same arrangement, it became evident that the groups of small spores simply replaced a single larger one, the protoplasm which should have formed the latter being broken up into about twenty smaller portions, each of which surrounded itself with a cell-wall. Thus the microspores, though in appearance and refractive power like the granular masses seen within an unseptate megaspore, were more distinct in outline as well as more regular in size.

But it seemed impossible to conceive of any reason for this peculiar formation, since the other four megaspores were exactly of the same character as when the normal eight spores arose in the ascus. Since, in addition, some of the cups produced, not asci, but hyphae bearing huge numbers of minute allantoid conidia, 5 \( \times \) 1 \( \mu \) (fig. 2e), it will be seen that this species produces three very different kinds of spore.
3. \textit{Eleutherosphera longispora} Grove. (Fig. 3.)

\textit{Eleutheromyces longisporus} Phill. \& Plow. Grev. xiii. 78 (1885);

In July I found at Studley, on the top of an oak stump, a large chrome-yellow mass of the plasmodium of a Myxomycete. This was brought to Birmingham and placed under a bell-glass, but owing to the disturbance of the conditions it never developed properly, although a few irregular sporangia were formed.

But, as it decayed, the surface became covered with a fine, white, arachnoid mycelium, much interwoven, with many strands composed of parallel hyphae (hyphae reaching 12 \( \mu \) diam.). At the crossings of these strands there were formed globular or discoidal masses (1-\( \frac{1}{2} \) mm. diam.) of perithecia, the long necks protruding in all directions like the spines of an Actinosphaerium, the bases immersed in a slight layer of mucus, twenty to fifty in a cluster.

The perithecia were hyaline and whitish, faintly tinged with yellow when older, globular or ellipsoid below, prolonged into a tapering neck; the venter was formed of large pseudo-parenchyma (cells averaging 10 \( \mu \) diam.), the cells becoming elongated upwards, and at the tip of the ostiolum these were reduced to six or eight narrow linear cells surrounding the orifice. The point was as sharp as a needle, but soon broke off about half-way down, leaving a stumpy peritheciun. Cells individually as clear as glass, colourless, with a few minute nuclei; the wall of the peritheciun was only one cell thick everywhere except at the base.

The peritheciun, which resembled the archegonium of \textit{Marchantia}, was often empty, but in other cases was filled with delicate asci, which soon became diffusent; asci clavato-fusiform, four-spored; spores fusiform, acute at each end, hyaline, uniseptate, each cell uniguttulate or full of greenish granules which were often arranged in two groups, surrounded by a layer of mucus by which the spores were held together after the diffuseness of the asci. Perithecia 450-500 \( \times \) 60-90 \( \mu \); asci 120 \( \times \) 25 \( \mu \); spores 60-70 \( \times \) 8-10 \( \mu \); no paraphyses. There is only room in the peritheciun for about eight or ten asci.

This is apparently an extremely rare species; I cannot find any other records of it. It is curious that it was discovered by Plowright in 1882 on the very same kind of habitat as in the present case. The perithecia of my specimens were not so broad, nor were the spores ciliate at each end, as described by Plowright, but otherwise the agreement is perfect. It may, of course, be that the cilia are a later development, but I am inclined to think that the mucus when dried might present the appearance of a cillum at the ends, as in several cases it was seen as shown in fig. 3e. But the other end of such a spore was often darker in colour and not ciliate.

The spores are distinctly uniseptate when mature, so that it cannot, according to modern views, be congeneric with \textit{Eleutheromyces subulatus} (Tode), though the similar texture of the perithecia and diffuseness of the asci are indications of a close affinity. It is therefore necessary to found for it the genus \textit{Eleutherosphera}, which is distinguished from \textit{Eleutheromyces} mainly by its septate spores.
Eleutherosphaera, n. g.—Perithecia subglobosa, ostiolo longo subulato, diaphana. Asci fusoidi. Sporidia fusoidia, hyalina, septata.

Explanation of Plate 485.

Fig. 1.—Dasycypha canescens—a, cup × 50; b, asci, paraphyses and spores × 500; c, Acrotheca canescens × 100; d, hyphae and conidia × 500.

Fig. 2.—Coryne urinalis—a, immature ascus and paraphyses × 600; b, ascus dehisced at apex; c, mature ascus, containing four megaspores and about a hundred microspores, flattened by pressure of cover-glass; d, spores, face-view below, profile-view above; e, hyphae and conidia × 600; f, group of all three kinds of spores × 600.

Fig. 3.—Eleutherosphaera longispora—a, perithecium × 250; b, ascus with spores × 250; c, ostiole of perithecium × 600; d, unripe spore, e, mature spores × 600.

Forms of Potamogeton New to Britain.

By Arthur Bennett.

1. Potamogeton vaginatus Turcz. "Foliis omnibus submersis membranaceispellucidis, basi vaginantibus lineari-setaceis acutis trinerviis, venis transversis destitutis; vaginis laxis; spicis longe pedunculatis, floribus interrupte verticillatis; fructibus obovatis, semiornicularibus compressis, siccatis dorso obtusi, medio-que stria tenui pereuris.


"Præter notas indicatas a precedente [P. pectinatus], quocum a beato Ledebourio injuste conjunctum fuit, habitu robustiore dignoscitur." Turczaninow in Fl. Baicalensi-Dahurica, ii. 2, 162 (1856).

P. pectinatus Ledeb. Fl. Ross. iv. 31 (1853), (pro parte).


Distribution. Europe: Sweden! Archangel, Russia! Switzerland! Austria! Mecklenburg! Finland! Asia: Turkestan! Songaria! Irkutsk, Turczaninow! N. America: Labrador, Waits in herb. Boissier. Assiniboia, Macoun! Buffalo Lake, lat. 56°! Extends north to 64°; Bygde, Gulf of Botnian, and in Finland to 66°, Haaparanta: Hartm. Skand. Fl. ed. 12, 55 (1889). The plant probably occurs in other parts, but its distribution is as yet imperfectly worked out. Great Britain: Shetland (co. 112); Tingwall Lock, in Scalloway, Mainland (W. H. Beeby sp. !), Aug. 1887.

Differs from pectinatus in the loose ample sheaths of the lower leaves, the leaves (always?) without transverse veins, the first smaller, more compressed, and in many the keels are almost obsolete. I possess the plant from fourteen stations, and have seen it
from twelve others. In fruit the heads of fruits are closely agglomerated around the peduncle, and very interrupted.

Other references to it will be found in Hjelt, Consp. Fl. Fennica, 547 (1895); Le Jolis in Mem. Soc. Nat. Cherbourg, xxvii. 294 (1891); Asch. & Graebn. Syn. Fl. Mittel-eur. i. 351 (1897).


P. borealis Kihlman ex Bot. Notiser, 1887, 84.

P. Wolfgangii Kihlman, Herb. Fennica, 34, 128 (1889).

P. salicifolius b lanceolatus Hartm. Skand. Fl. ed. xi. 432 (1879).

P. gramineus f. Wolfgangii Neuman & Ahlfvengren, Sveriges Fl. 796 (1901).

P. alpinus × gramineus Aschers. & Graebn. Fl. Mitt.-eur. i. 328 (1897).


Sweden: Björkgren (Tiselius sp.). Denmark: Gudena in Jyllandia (Baagoe sp.). Ireland: Co. Westmeath and Longford. In the River Inny (Barrington sp.).

The specimens accord well with the Danish ones, but not so well with the Swedish. Ascherson and Graebner (op. cit. p. 333) make two forms of this: A. per-gramineus, B. per-natans.

I have some doubt whether the Swedish and Danish specimens really belong to the same form. This was recorded doubtfully as P. fluïtans Roth in Irish Top. Bot. 318 (1901).

4. P. nitens Weber var. maximus mihi. This is the plant we have been naming var. latifolius Tis. non Fieber, Pot. Böh. 90 (1888). Fieber’s plant is simply the type of Weber’s nitens, and Tiselius’s name will not hold. In some states this comes in habit and appearance near perfoliatus L.

I have seen specimens from East Perth (Sturrock), Mid Ebudes (S. M. Macvrier), and Kerry (Scully).

5. P. pusillus L. var. acuminatus mihi. In 1892 Messrs. Kidston and Stirling sent me two sheets of specimens named “P. acutifolius Link.” They were gathered on the Forth and Clyde Canal in Stirlingshire, June 30th, 1891. They do not belong to Link’s species, but it is not easy to place them. In habit they are
between *acutifolius* and the f. *angustissimus* of *P. zosterifolius* Schum. They have the "look" of a North American species, but I know none to which they can be referred: they have the nervation of the *pusillus* series. In 1883 I gathered in a ditch at Acle, near Yarmouth, East Norfolk, a form of *pusillus* that connects this Stirling plant with the type. A still nearer approach to it are specimens gathered by Mr. C. E. Salmon in a ditch near Camber Castle, East Sussex, in 1900; but these are not so far away from the normal *pusillus* as the Stirling plant. After remaining in doubt for some years I propose to name them as above.

Diffrs from typical *pusillus* by being larger in all its parts, by the long linear acuminate leaves, the stem more compressed.

6. *P. pectinatus* L. var. *salina* Voch. *P. pectinatus* L. var. *pseudomarinus* Ar. Benn. in Trans. Norf. & Norw. Nat. Hist. Soc. 381 (1882). This is a var. of *pectinatus* often named *filiformis*. I have it under that name (or rather *marinus*) from Hungary, Bohemia, &c. In Watson's herbarium it is called "a maritime variety of *P. pectinatus*" by the Rev. K. Trimmer. It seems to be the form that *pectinatus* usually assumes in saline districts in Europe and Asia, whence I have it gathered by Potanin in North China, and Przewalski in West Mongolia. Fries (Nov. Fl. Suec. ed. ii. 53 (1828)) describes a var. *ß submarinus*, which may be this plant. I have not been able to see a specimen named by Fries, but have seen one with Voch's name attached, which is certainly the same.

7. *P. intermedium* Tiselius, *Sveriges Flora*, 797 (1901), ex Hagström in Neuman & Ahlfv. In the year 1875 Dr. Boswell Syme gathered in Kirbister Lock, Orphir, Orkney, a series of puzzling plants, which on a scrap of paper placed with them he has named "*P. heterophyllus.*" No doubt they approach closely to that plant, especially in the fruit, yet they are not like any other Scottish *heterophyllus* or *nitens*. The growth of the young plant and the fascicles of curved leaves in the leaf-axes are very like *nitens*. Of specimens sent to Dr. Tiselius, he said: "I believe it rather to be *P. gramineus*. It surely looks like my *intermedium.*" The specimens vary considerably among themselves. The plant produces floating leaves on long peduncles. I have a similar plant from Lock of Banles, Birsay, Orkney, J. W. H. Traill, 1888. It may be called *P. heterophyllus* Schreb. var. *intermedium*.

8. In the year 1882 the late Mr. Sturrock, of Rattray, sent me specimens from the Lunan Burn, and from a loch near, that I have never been able to name. The plants need studying in situ, but so far as dried specimens allow one to judge, they come near to a rare hybrid named × *P. landii* by Richter (Fl. Europææ, i. 13 (1690)), and considered by Almquist to be "*P. graminea × pralonga,*" and found in Småland, Sweden. It seems impossible to doubt that *pralongus* is represented in them, especially in the lower leaves and stipules, while in the barren shoots *heterophyllus* seems apparent. The flowers all seem imperfect, mostly closed, and so lend themselves to hybridity, but they should be grown and watched.

* See Hartm. Skand. Fl. ed. 12, 49.
9. **P. prelongus** Wulf. I have as yet seen no British specimens of the extreme states of this species, *i.e.* *brevifolius* Celak., or the Swedish plant with leaves twelve inches long!—*f. elegans* Tis.; but a very narrow-leaved form (eight inches long) occurs in Caushield Lochs, Roxburgh (A. Brotherston), and in Kinardlochy Lochs, alt. 1250 ft., in Mid Perth (W. F. Miller). This I take to be the "var. *β* foliis angustioribus" of Hooker's Brit. Fl. ed. 3, 77 (1835), judging from specimens in the Kew Herbarium.

10. **P. Friesii** Rupr. × **P. acutifolius** Link? A specimen from Wretton Fen, West Norfolk (Boswell herbarium ex Mr. F. J. Hanbury), is probably the above, but the material I possess is poor, and it must be gathered and studied in situ. I believe about twenty-five acres of the fen are still existent, as this was awarded to the poor for turf-cutting at the enclosure.


12. **P. alpinus** Balbis × **P. prelongus** Wulf.? In the Canal Odiham, North Hants, 27, 6, 1880 (Miss Charlotte E. Palmer). I wrote to Miss Palmer respecting these specimens, and she kindly sent me specimens in 1904, "gathered within one hundred yards of those in 1880." These proved to be *alpinus*, but the flowers seemed all sterile. I could not find a fruit formed on any of the spikes, yet *alpinus* is one that fruits freely. This, of course, points to a state of *alpinus* rather than a hybrid, but the 1880 specimens are decidedly different in habit and leaf-structure. Miss Palmer names *natans*, *perfoliatus* in plenty, and *pectinatus* as growing in the canal near, and suggests "*alpinus* × *perfoliatus," but I do not think this can be so. I am not aware that this hybrid has occurred: neither do I recollect ever having seen the two species in juxtaposition. There is no record of *P. prelongus* from the canal in Surrey, and it is not given by Mr. Townsend for Hants. It is a species not recorded for the southern counties of England, though I should expect it to occur in some of the larger ponds of Hants (i.e. Fleet or Sowley, &c.). The early date is not against it, as I have specimens from Anglesea with ripe fruit gathered in June. In the specimens the flowers are dropping off at this early date (in June).


Hab. Lunan Burn, East Perth, July, 1882 (J. Sturrock).

The typical plant grows in the same burn, and was gathered at the same date.

14. **P. upsaliensis** Tislius in Bot. Notiser, 1884, 15. *P. deci- piens* Nolte in part ex Asch. & Graebn. op. cit. 332. One specimen sent me by the late Mr. Sturrock from "the Earn above Forteviot, West Perth, 18. 7. 1881. leg. Dr. Buchanan White": it should be searched for by Perth botanists.
15. *P. obtusifolius* Mort. & Koch. var. *fluvialis* Lange & Mortensen in Bot. Tidsskr. x. 200 (1878). In describing the type our British floras say, "peduncle about as long as the spike," or "peduncle very short"; though Hooker & Arnott (Brit. Fl. ed. 8, 480 (1860)) remark, "occasionally the peduncle is double the length of the spike." In the var. *fluvialis* the peduncles are sometimes $2\frac{1}{4}$ in. long. In the original description of the species in Röhlings Deutschl. Fl. i. 855 (1828), the peduncle is given as short, "about as long as the spike." It is likely that Fries's var. *lacustris* (Herb. Norm. v. no. 81 (c. 1840), Summ. Veg. Scan. 68 (1846)) is the same as *fluvialis*, as he speaks in his Nov. Fl. Suec. 48 (1828) of a form occurring in deep lakes, with the stems elongated (two feet long), and with more slender stems than the type. Ascherson & Graebner do not mention either of these forms. Chamisso in *Linn.*, ii. 179 (1827) describes a "forma elongata" with a stem three feet long in deep water, but no mention is made of the length of the peduncle.

---

**SYNOPSIS OF THE ORDERS, GENERA, AND SPECIES OF MYCETOZOA.**

**By A. AND G. LISTER.**

A considerable number of new species of Mycetozoa have been recorded since the publication of the British Museum Catalogue in 1894. Most of these have been described or referred to in this Journal, and the list now offered includes all those that have come under our observation up to the present time; it is, however, clearly to be understood that it comprises only those species which we have personally examined. With three or four exceptions they are all represented in the British Museum Collection.

The synopsis of the orders and genera in the British Museum Catalogue and that in the Guide to the British Mycetozoa are preceded by introductions in which the technical terms are explained; we hope that either of these introductions will serve to elucidate the terms used on the present occasion.

The colour of the spores is described as seen with transmitted light under a magnifying power of 600 diameters.

The bibliography at the end refers to the additions and alterations which we have seen reason to adopt since the publication of the Catalogue. The species of which there are figures in the papers referred to are marked by an asterisk after the reference-number.

Subclass I.—Exosporæ. Spores developed outside a sporophore.

Order I.—Ceratiomyxaceæ. Sporophore membranous, branched; spores white, borne singly on filiform stalks arising from the areolated sporophore. 1. *Ceratiomyxa*.

Subclass II.—Endosporæ. Spores developed inside a sporangium.

Cohort I.—Amacosporales. Spores violet-brown or purplish
grey (ferruginous in *Stemonitis ferruginea* and *S. flavogenita* colourless in *Echinostelium*).

Subcohort I.—**Calcariineæ**. Sporangia provided with lime (calcium carbonate).

Order I.—**Physaraceæ**. Lime in the form of minute round granules.

A. Capillitium charged with lime throughout  2. **Badhamia**.

B. Capillitium of hyaline threads with vesicular expansions filled with lime (= "lime-knots").

Sporangia subglobose or in the form of plasmodiocarps; capillitium without free hooked branches  3. **Physarum**.

Sporangia stalked, shortly cylindrical, tubular  4. **Physarella**.

Sporangia stalked, saucer-shaped  5. **Trichamphora**.

Sporangia long, cylindrical, branching; capillitium a close elastic network, with minute lime-knots  6. **Erionema**.

Plasmodiocarps cylindrical, forming a net; capillitium with free hooked branches; lime-knots taking the form of vertical plates  7. **Cienkowskia**.

Sporangia forming an æthalium  8. **Fuligo**.

Sporangia of the shape of a covered goblet, ovoid or globose; stalks cartilaginous  9. **Craterium**.

Sporangia ovoid, shining, clustered; stalks membranous  10. **Leocarpus**.

C. Capillitium without lime.

Sporangium-wall opaque  11. **Chondrioderma**.

Sporangium-wall hyaline  12. **Diachæa**.

Order II.—**Didymiaceæ**. Lime in crystals deposited outside the sporangium-wall.

Crystals stellate; sporangia distinct; sporangium-wall membranous (except in *D. leoninum*)  13. **Didymium**.

Crystals stellate; sporangia forming an æthalium  14. **Spumaria**.

Crystals in the form of lenticular or stellate scales; sporangium-wall cartilaginous  15. **Lepidoderma**.

Subcohort II.—**Amaurochætineæ**. Sporangia without lime.

Order I.—**Stemonitaceæ**. Sporangia distinct, provided with a stalk and columella.

A. Sporangium-wall evanescent.

Sporangia cylindrical; capillitium spreading from the columella and forming an even superficial net.  16. **Stemonitis**.

Sporangia globose or cylindrical; capillitium spreading from the columella; superficial net wanting or imperfect  17. **Comatricha**.

Sporangia globose; capillitium springing only from the apex of the sporangium  18. **Enerthenema**.
Sporangia very minute; capillitium scanty, colourless, branching from a short columella ... 19. *Echinostelium*.

B. Sporangium-wall more or less persistent.

Sporangium-wall a uniform membrane; capillitium spreading from the columella ... 20. *Lamproderma*.
Sporangium-wall persistent in the form of minute discs at the apices of the rigid forking capillitium threads

21. *Clastoderma*.

Order II.—*Amaurochætaceæ*. Sporangia combined into an æthalium.

Capillitium irregularly branched ... 22. *Amaurochæte*.
Capillitium with chambered vesicles ... 23. *Brefeldia*.

Cohort II.—*Lamprosporales*. Spores variously coloured, but not violet-brown or purplish grey (violet in some species of *Cribraaria*).

Subcohort I.—*Anemineæ*. Capillitium wanting, or if present not forming a system of uniform threads (except in *Alwisia*, q.v.).

Order I.—*Heterodermacæ*. Sporangium-wall membranous, beset with microscopic round plasmodic granules.
Sporangia æthaloid, the walls not forming a persistent net

Sporangium-wall forming a persistent net ... 25. *Cribraaria*.
Sporangium-wall persistent in the form of numerous parallel ribs

26. *Dictydium*.

Order II.—*Liceaceæ*. Sporangia solitary; sporangium-wall cartilaginous (membranous in *Licea biforis*).

Sporangia solitary, sessile ... 27. *Licea*.
Sporangia stalked, furnished with a lid of thinner substance

28. *Orcadella*.

Order III.—*Tubulinaceæ*. Sporangium-wall membranous, without microscopic plasmodic granules; sporangia clustered, cylindrical or ellipsoid.
Sporangia cylindrical, compacted, without pseudo-columella

29. *Tubulina*.
Sporangium-wall with tubular extensions connecting it with a hollow pseudo-columella ... 30. *Siphoptychium*.
Sporangia stalked, ellipsoid, with a brush of tubular threads attached above and below to the sporangium-wall

31. *Alwisia*.

Order IV.—*Reticulariaceæ*. Sporangia combined into an æthalium; their walls incomplete, perforated or forming a spurious capillitium.
Sporangia columnar ... 82. *Dictydiæthalium*.
Sporangia convolute; inner sporangium-walls reduced to broad bands. 33. Enteridium.

Sporangia convolute; inner sporangium-walls lacinate. 34. Reticularia.

Order V. — Lycogalaceae. Sporangia forming an aethalium; pseudo-capillitium consisting of branched colourless tubes. 35. Lycogala.

Subcohort II. — Calonemineae. Capillitium present as a system of uniform or sculptured threads.

Order I. — Trichaceae. Capillitium consisting of free tubular threads ('elaters'), or a network branching at wide angles, with thickenings in the form of spirals or rings.

Elaters free, spirals distinct. 36. Trichia.

Threads free, scanty, spirals obscure. 37. Oligonema.

Capillitium combined into a network of threads with distinct spiral thickenings. 38. Hemitrichia.

Capillitium a network with thickenings in the form of rings. 39. Cornuvia.

Order II. — Arcyriaceae. Capillitium a network of tubular threads branching at wide angles and thickened with cogs, half-rings, spines, or warts (usually scanty and of free threads in Perichæna populina).

A. Capillitium elastic: —

Sporangia stalked; sporangium-walls evanescent above. 40. Arcyria.

B. Capillitium not elastic: —

Sporangia sessile or shortly stalked, clustered, the walls single, persistent. 41. Lachnobolus.

Sporangia sessile, rarely stalked, the wall usually double, persistent. 42. Perichæna.

Order III. — Margaritaceae. Capillitium of solid threads coiled and hair-like, or straight and attached to the sporangium-wall, simple or branching at acute angles.

A. Sporangia dehiscing irregularly: —

Threads profuse, coiled. 43. Margarita.

Threads straight. 44. Dianema.

Threads penicillate, spirally banded. 45. Prototrichia.

B. Sporangia dehiscing in lobes: —

Threads with moniliform thickenings. 46. Listerella.

Subclass I. — Exosporaæ.

Order I. — Ceratiomyxaceae.

1. Ceratiomyxa Schroeter. Surface of sporophores mapped out into polyhedral areolæ, from the centre of each of which arises a slender stalk bearing a single ellipsoid spore.

C. mucida Schroeter.
THE JOURNAL OF BOTANY

Subclass II.—ENDOSPOREÆ.

Cohort I.—Amaurosporales.

Subcohort I.—Calcarineæ.

Order I.—Physaraceæ.

2. Badhamia Berkeley. Sporangium-wall membranous, containing lime-granules; capillitium a coarse network charged throughout with granules of lime; spores clustered or free.

A. Spores clustered:—
   a. Spores warted on one side chiefly—
      a. Sporangia 1 to 1.5 mm. diam.—
         * Lime in sporangium and capillitium white—
            Plasmodium orange, sporangia grey, clustered or scattered . . . . . . . . . . B. hyalina Berk.
            Plasmodium white, sporangia white, heaped
                           B. populina List. (18, p. 129*).
         ** Lime in sporangia and capillitium yellow B. nitens Rost.
            β. Sporangia 0.3 to 0.5 mm. diam., capillitium white or apricot-coloured . . B. versicolor List. (15, p. 61*).
      b. Spores equally warted all over . . . . B. utricularis Berk.

B. Spores not clustered:—
   a. Sporangia yellow or orange . . . . B. decipiens Berk.
   b. Sporangia white or grey—
      Sporangia globose on long membranous stalks, spores nearly smooth, blackish . . . . . . . . . . B. magna Peck
      Sporangia subglobose sessile or with firm yellow or brown stalks, spores closely spinulose, dark purple-brown
                           B. macrocarpa Rost.
      Sporangia discoid, depressed, on short black stalks, spores violet-brown . . . . . . . . . . B. orbiculata Rex
      Sporangia subglobose, sessile, spores violet-brown, nearly smooth, plasmodium white . . B. panicera Rost.
      Sporangia globose sessile or on short membranous stalks; spores violet-brown, plasmodium orange
                           B. foliicola List. (9, p. 209).
   c. Sporangia sessile, hemispherical, or forming plasmodiocarps, chalk-white; spores smooth, ellipsoid
                           B. ovispora Racib. (10, p. 354*).

C. Sporangia flesh-coloured or purple-brown:—
   Sporangia sessile, without a true columella B. lilacina Rost.
   Sporangia stalked, stalk continued into the sporangium as a columella . . . . . . . . B. rubiginosa Rost.

3. Physarum Persoon. Sporangium-wall membranous, with incorporated ("innate") deposits of lime in round granules,
either in clusters or densely compacted; capillitium a network of delicate threads containing lime-knots.

A. Sporangia stalked (occasional sessile forms):—

a. Stalks charged with lime throughout—

a. Capillitium lax—

Stalk white, sporangia grey, lime-knots large white, columnella none . . . . . . . . P. leucopus Link
Stalk white, rarely rufous, sporangia tawny yellow, globose, columnella conical . . . . . . . . P. melleum Mass.
Stalk olive or yellowish, short or absent, sporangia olive or yellow, globose, ovoid or forming plasmodiocarps, columnella none . . . . . . . . P. variabile Rex
Stalk and sporangium pale yellow, columnella large hemispherical . . . . P. luteo-album List. (18, p. 180*)

β. Capillitium rigid, persistent—

Stalk white or brownish below, sporangium white, lime-knots small, white . . . . . . P. globuliferum Pers.
Stalk, sporangium, and lime-knots red P. pulchripes Peck
" " " " " " mouse-brown P. murinum List.
" " " " " " purple P. pulcherrimum Berk. & Rav.
" " " " " " yellow, robust P. citrinum Schum.
" " " " " " straw-coloured, slender P. tenerum Rex

Stalk and sporangium white, capillitium with a central ball of lime . . . . . . . . P. compactum List.

b. Stalks without lime, or with deposits in the wall only—

a. Lime-knots purple-red, sporangium rose-red

P. roseum Berk. & Br.

β. Lime-knots and sporangium violet-purple

P. Newtoni Macbr.

γ. Lime-knots orange, sporangium glossy, mottled blue and red, stalk red or orange . . . . P. psittacinum Ditm.


ι. Lime-knots yellow or orange; sporangium yellow, orange, or grey—

Sporangia subglobose, stalked; capillitium lax, lime-knots fusiform . . . . . . . . . . . P. viride Pers.
Sporangia contorted, stalked, usually clustered; capillitium lax, lime-knots fusiform . . . P. polymorphum Rost.
Sporangia subglobose, stalks red-brown, slender, lime-knots angular . . . . . . . . . . . P. Berkeleyi Rost.
Sporangia subglobose; stalks brown, short or absent, lime-knots large and branching

*P. auriscalpium* Cooke (11, p. 115).

Stalk penetrating the sporangium for four-fifths its height

*P. penetrale* Rex

ζ. Lime-knots white; sporangia grey—

* Stalk free from refuse matter—

Stalk straw-coloured; sporangium globose; capillitium with a central ball of lime.  *P. nucleatum* Rex

Stalk ochraceous, short or absent, sporangia ovoid or cylindrical, with a long pseudo-columella

*P. Crateriachea* List. (8, p. 323).

* Stalk straw-coloured, slender; sporangia compressed; spores marked with patches of warts

*P. straminipes* List. (12, p. 163*).

Stalk red-brown; sporangia globose, white

*P. calidris* List.

Stalk white, membranous, short or absent; sporangia ovoid or subglobose (and then sessile), without pseudo-columella—

Spores very dark all over.  *P. didermoides* Rost.

Sporangia always sessile, spores paler on one side

*P. didermoides* var. *lividum* List. (12, p. 162).

** Stalk containing refuse matter—

Stalk buff, black, or white; sporangium subglobose; spores brownish violet.  *P. nutans* Pers.

Stalk black, buff, or white, stout; sporangia compressed, often lobed; spores dark purple-brown

*P. compressum* Alb. & Schw.

Stalk yellowish or dark, slender; sporangia compressed and lobed, often clustered (smaller than *P. compressum*, to which it is very nearly allied)

*P. Nicaraguense* Macbr.

B. Sporangia sessile, never stalked:—

a. Lime-knots white—

a. Sporangium-wall single—

Sporangia subglobose or forming plasmodiocarps white, or grey, spores pale brownish violet, 7–8 μ diam.

*P. cinereum* Pers.

Sporangia subglobose or forming plasmodiocarps white, or grey, spores dark violet-brown, 9–11 μ diam.


Sporangia much compressed, forming rosettes or net-like plasmodiocarps, lime-knots fusiform

*P. gyrosum* Rost. (16, p. 210*).

Sporangia crowded, chestnut-brown

*P. Gulielmae* Penz. (24, p. 34).
β. Sporangium-wall double—

* Sporangia scattered, forming plasmodiocarps—

Plasmodiocarps sinuous, muriform, white; spores marked with strong ridges and spines, brownish purple

P. echinosporum List. (18, p. 147*).

Plasmodiocarps sinuous, muriform, white or buff, inner wall fragile, colourless; spores purple-brown, spinulose...

P. bivalve Pers.

Plasmodiocarps sinuous, buff or brown, marked with pale lines of delhiscence; spores pale brownish violet, nearly smooth

P. bogoriense Racib. (11, pp. 117, 122*).

Plasmodiocarps white, usually compressed, inner wall purplish, persistent; spores dark purplish brown, spinulose...

P. Diderma Eost.

** Sporangia crowded, reniform or subglobe—

Sporangia red or brownish buff; lime-knots large, angular, orange-red or red-brown

P. rubiginosum Fr.

Sporangia red; lime-knots rounded, yellow, with usually red centres...

P. inaequale Peck

Sporangia yellow or orange; lime-knots angular, yellow

P. virescens Ditm.

b. Lime-knots yellow, red, or brown—

Plasmodiocarps and large branching lime-knots yellow


Plasmodiocarps and lime-knots brown

P. æneum R. Fr. (3, p. 62; & 11, p. 117*).

Sporangia red or brownish buff; lime-knots large, angular, orange-red or red-brown

P. rubiginosum Fr.

Sporangia red; lime-knots rounded, yellow, with usually red centres...

P. inaequale Peck

Sporangia yellow or orange; lime-knots angular, yellow

P. virescens Ditm.

4. Physarella Peck. Sporangia stipitate, shortly cylindrical, perforated from above by a deep umbilicus; capillitium of delicate threads with minute fusiform lime-knots and stout spine-like processes densely charged with lime granules springing perpendicularly from the sporangium-wall...

P. mirabilis Peck

5. Trichamphora Junghuhn. Sporangia discoid or saucer-shaped, stipitate; stalk red-brown; sporangium-wall membranous, with evenly distributed deposits of lime granules; capillitium consisting of colourless branching threads with many or few lime-knots, or of membranous tubes filled with lime throughout, or without lime...

T. pezizoidea Jungh.

6. Erionema Penzig. Sporangia forming long cylindrical branched plasmodiocarps, or stalked and drooping, bright yellow; capillitium a close elastic network of slender colourless threads with few small yellow lime-knots

E. aureum Penz. (23, p. 36; & 17, p. 98*).
7. Cienkowskia Rostafinski. Sporangium-wall cartilaginous at the base; capillitium a loose network of rigid threads with many free curved, sharp-pointed branchlets, connected with flat perforated calcareous plates attached at their margins to the sporangium-wall . . . . . . . C. reticulata Rost.

8. Fuligo Haller. Sporangia elongate, branching and interwoven, forming a pulvinate Æthalium, often with a barren superficial layer forming a cortex; capillitium as in Physarum.

Æthalium and lime-knots yellow, rarely reddish or white; spores 7-8 μ . . . . . . . F. septica Gmel.


Æthalium and lime-knots pure white, the latter large; spores usually ellipsoid, 13 × 16 μ . . F. ellipsospora List.

9. Craterium Trent. Sporangium stipitate, goblet-shaped, usually with a lid of thinner substance, or ovoid or globose; sporangium-wall charged with lime and cartilaginous at least in the lower part; stalk cartilaginous, translucent; capillitium of branching hyaline threads connecting large lime-knots which are often confluent in the centre, forming a pseudo-columella.

a. Sporangium-wall smooth, glossy—
   Lime-knots white . . . . . C. pedunculatum Trent.
   Lime-knots brown . . . . . C. concinnum Rex

b. Sporangium-wall mealy or rugose—
   Sporangia violet . . . . . . . C. rubescens Rex
   Sporangia brown, powdered with white in the upper part
     C. leucocephalum Ditm.

Sporangia yellow rugose—
   a. Sporangia ovoid, spores 7-9 μ . . C. mutable Fr.
   b. Sporangia globose, spores 10-12 μ . . . . . . C. citrinellum List.

10. Leocarpus Link. Sporangium-wall of two layers, the outer cartilaginous and calcareous, the inner hyaline; capillitium a network of hyaline threads with branched and anastomosing brownish lime-knots . . . . . . L. vernicosus Link

11. Chondrioderma Rost. Sporangium-wall charged with lime in the form of round granules (except in C. Trevelyani q. v.); capillitium without lime-knots.

Subgenus 1. Euchondrioderma. Outer sporangium-wall a smooth crust composed of lime granules densely compacted (except in C. simplex); inner layer membranous.

a. Spores reticulated . . . . . C. subdictyospermum Rost.

b. Spores not reticulated—
   a. Sporangia white—
      Sporangia disc-shaped, stalked . . C. Micheliil Rost.
Plasmodiocarps flat; columella brownish flesh-coloured

C. reticulatum Rost.

Sporangia hemispherical; columella white, convex; inner sporangium-wall rarely persistent; spores violet-brown, 7–10 μ. . . . C. spumarioides Rost.

Sporangia subglobose; columella small, convex, white; inner sporangium-wall persistent, colourless; spores purplish brown, 11–14 μ. . . . C. globosum Rost.

Sporangia subglobose or ovoid (or forming plasmodiocarps in var. deplanatum); columella subglobose or clavate, orange, red-brown, or pale, absent in plasmodiocarp forms; inner wall persistent, orange below; spores purplish brown, 9–14 μ. . . . C. niveum Rost. (including C. Lyallii Mass.).

b. Sporangia flesh-coloured, depressed C. testaceum Rost.

c. Sporangia reddish clay-coloured or brownish buff, wall single . . . C. simplex Schroet. (15, p. 85*).

Subgenus 2. Leangium. Sporangium-wall cartilaginous.

a. Sporangium-wall brown externally, white and crystalline on the inner side; columella none C. Trevelyani Rost.

b. Sporangium-wall without a crystalline layer—

a. Spores with widely scattered warts, sporangia stalked

C. floriforme Rost.

b. Spores closely spinulose or nearly smooth—

Sporangia pinkish brown, sessile, subglobose; columella indefinite; capillitium usually colourless

C. Sauteri Rost.

Sporangia ochraceous, sessile, subglobose or ring-shaped; columella indefinite; capillitium purple-brown

C. ochraceum Schroet. (20, p. 150; & 15, p. 88).

Sporangia brown, marked with close radiating dark lines, sessile, hemispherical; columella white, prominent

C. asteroides List. (16, p. 209*).

Sporangia grey or pale brown; columella pale, hemispherical; stalk stout, ochraceous

C. radiatum Rost.

Sporangia mottled brown; columella convex, ochraceous; stalk black . . . . . . C. roanense Rex

Sporangia and clavate columella white; stalk slender, black . . . . . . C. rugosum Rex

Sporangia bright orange; columella clavate; stalk slender, dark brown . . . . . . C. lucidum Cooke

† Numerous alpine gatherings showing intermediate forms prove that C. Lyallii cannot be regarded as more than a variety of C. niveum.
12. Diachæa Fries. Lime present in stalk and columella, rarely wanting; entirely absent from the purple capillitium and iridescent sporangium-wall.

A. Sporangia globose:—
   a. Lime in stalk white.
      Spores with dark raised bands and tubercles
      D. splendens Peck
      Spores spinulose . D. bulbillosa List. (12, p. 165*).
      Spores delicately reticulated
      D. subsessilis Peck (9, p. 213, & 12, p. 166*).
   b. Lime in stalk orange . . . . . D. Thomasii Rex

B. Sporangia cylindrical:—
   Spores nearly smooth; lime in stalk white
   D. elegans Fr.
   Spores delicately reticulated; lime absent in the two recorded gatherings D. cylindrica Bilgram (2, p. 524).
   Spores warted; lime usually absent D. caespitosa List. (syn. Comatricha caespitosa Sturgis).†

Order II.—Didymiaceæ.

13. Didymium Schrader. Sporangia stalked or sessile; lime-crystals either scattered on the membranous sporangium-wall, or closely combined and forming a crust; capillitium often thickened at intervals with dark nodes.

A. Superficial crystals closely combined to form a thin egg-shell-like crust:—
   Sporangia sessile, pulvinate; capillitium threads scanty, broad at the base . . . . . . . D. difforme Duby
   Capillitium profuse, slender throughout
   D. difforme var. comatum List. (14, p. 8).
   Sporangia sessile, flat; capillitium rigid, dark, profuse, slender at the points of attachment . . D. dubium Rost.
   Sporangia turbinate, shortly stalked; capillitium rigid, colourless . . . . . . D. Trochus List. (12, p. 164*).

B. Superficial crystals scattered, or loosely combined:—
   a. Plasmodiocarps; capillitium associated with large olive-coloured vesicles . . . . . . D. Serpula Fr.
   b. Sporangia usually stalked; capillitium without vesicles; spores more or less spinulose—
      a. Sporangia disc-shaped with dark stalks D. Clavus Rost.
      β. Sporangia subglobose or effused—
         Stalk and columella dark brown; stalk opaque and granular D. farinaceum Schrad.

† Further experience inclines us to regard this form as a species of Diachæa distinct from D. Thomasii.
SYNOPSIS OF MYCETOZOA

187

Stalk olive-brown or orange, translucent, not granular

D. nigripes Fr.

Stalk and columella white; crystals on sporangium-wall scattered or forming a wrinkled crust; sporangia often effused ... ... ... D. effusum Link

Stalk short membranous, pale buff; crystals on sporangium-wall forming a smooth, thick, deciduous envelope

D. crustaceum Fr.

C. Sporangia with orange stalks; sporangium-wall hyaline; spores dark brown, closely reticulated (nearly allied to D. effusum)

D. intermedium Schroet. (5, p. 209).

14. Spumaria Persoon. Sporangia confluent, forming an æthaliun, enclosed in a mass of white lime-crystals; the other characters as in Didymium.

Sporangia elongate and lobed; spores strongly spinulose

S. alba DC.

Spores closely reticulate

S. alba var. dictyospora R. Fr. (3, p. 60).

15. Lepidoderma De Bary. Sporangium-wall cartilaginous, beset with superficial crystalline discs or scales; capillitium usually rigid, without lime (except in L. Carestianum var. granuliferum List., q. v.).

Sporangia with orange stalks ... ... ... L. tigrinum Rost.

Sporangia subglobose or hemispherical, sessile, rarely with short grey-brown stalks, or forming plasmodiocarps

L. Carestianum Rost.

(including L. Chailletii Rost. (25, p. 63)).

Plasmodiocarps; capillitium containing lime in the form of rounded nodules

L. Carestianum var. granuliferum List. (25, p. 63).

(syn. Didymium granuliferum Phill.;

Lepidoderma granuliferum R. Fr. (4, p. 8)).

Subcohort II.—Amaurochætineæ.

Order I.—Stemonitaceæ.

16. Stemonitis Gleditsch. Sporangia cylindrical stipitate, fasciculate; stalk continued as a columella to near the apex of the sporangium; capillitium radiating from all parts of the columella, the ultimate branches normally uniting to form an even superficial net.

† Further extensive gatherings made by Mr. Petch in Ceylon confirm the integrity of Berkeley & Broome's species, and show it to be distinct from Lepidoderma tigrinum.
A. Spores grey, violet-grey, or rufous violet:—
   a. Spores reticulated, surface net of capillitium with angular meshes... S. fusca Roth.
   b. Spores minutely warted, almost smooth—
      Meshes of surface net rounded, 20-100 μ or more wide — (imperfect in var. flaccida)... S. splendens Rost.
      Meshes of surface net angular, less than 20 μ wide; spores 7-8 μ diam., sometimes ferruginous; plasmodium white
      S. herbatica Peck

B. Spores pale ferruginous:—
   Spores 7-9 μ diam.; plasmodium yellow
      S. flavogena Jahn. (6, p. 165).
   Spores 4-6 μ diam.; plasmodium white
      S. ferruginea Ehrenb.

17. Comatricha Preuss. Sporangia subglobose or cylindrical, stalked, gregarious; capillitium spreading from the columella; superficial net wanting or imperfect.

A. Spores rather dark brownish violet or grey:—
   a. Spores nearly smooth—
      Capillitium dense, crisped or flexuose throughout; on wood... C. obtusata Preuss.
      Capillitium with primary branches stout and nearly straight; on wood... C. laxa Rost.
      (closely allied to C. obtusata).
   b. Spores spinulose or reticulated—
      α. Sporangia globose; columella ending in strong branches continued into the flexuose network of the capillitium; spores warted; on leaves... C. lurida List.
      β. Sporangia long, slender, cylindrical—
         Spores reticulated... C. longa Peck
         Spores spinulose... C. irregularis Rex

B. Spores pale; lilac or reddish lilac:—
   a. Spores marked with a few widely scattered warts, otherwise smooth or (in var. heterospora) delicately reticulated, 4-6 μ diam.; on wood (var. microspora on leaves)
      C. typhoides Rost.
   b. Spores minutely spinulose or nearly smooth, 6-10 μ diam.—
      Sporangium-wall completely evanescent; on leaves (on wood in var. gracilis)... C. Persoonii Rost.
      Sporangium-wall persistent at the base as a membranous cup, to which the capillitium is attached; on leaves
      C. rubens List.

18. Enerthenema Bowman. Sporangia stipitate; columella reaching to the summit of the sporangium; capillitium springing from the superficially extended apex of the columella... E. elegans Bown.
19. **Echinostelium** De Bary. Sporangia stalked, very minute, 50 μ diam., colourless; capillitium branches few, arising from the apex of a short columella. . . . **E. minutum** De Bary

20. **Lamproderma** Rostafinski. Sporangia stalked, globose or ellipsoid (sessile in *L. Lycopodi*); sporangium-wall membranous, somewhat persistent, shining, iridescent; stalk black; capillitium of branching and anastomosing threads spreading from the upper part of the columella.

A. Sporangia stalked; spores more or less spinulose:
   a. Spores echinulate, 15-20 μ . . . . **L. echinulatum** Rost.
   b. Spores spinulose, or nearly smooth—
      α. The dark flexnose capillitium arising by a few (6-9) branches from the apex only of the columella; spores smooth . . . . . . . . . . . . **L. arcyronema** Rost.
      β. Capillitium spreading in very numerous branches from the abruptly ending columella—
         Capillitium threads dark, pale at the base
         **L. irideum** Mass.
         Capillitium purple with hyaline tips; stalk usually 2-3 mm. . . . . . . . . . . . . **L. physaroides** Rost.
         Capillitium pale or brownish purple; stalk 1 mm. or less . . . . . . . . . . . . **L. violaceum** Rost.

B. Sporangia sessile; spores reticulated . . . . **L. Lycopodi** Raunk.

21. **Clastoderma** Blytt. Sporangia minute, stalked, brown; sporangium-wall partly evanescent, partly persistent in the form of minute discs at the apices of the rigid forking capillitium threads; columella short or hardly evident

   C. **Debaryanum** Blytt

Order II.—**Amaurochætaceae**.

22. **Amaurochæte** Rostafinski. Æthalia pulvinate, composed of elongate confluent sporangia; lateral sporangium-walls not developed; capillitium rising from the base in irregularly flattened strands, and dividing into many anastomosing branches . . . . . . . . . . . . **A. atra** Rost.

23. **Brefeldia** Rostafinski. Æthalia pulvinate, composed of sub-cylindrical, branched, and confluent sporangia; capillitium of numerous horizontal threads, those of adjacent sporangia uniting on the boundary line, and there forming chambered vesicles. . . . . . . . . . . . . **B. maxima** Rost.

Cohort II.—**Lamprosporales**.

   Subcohort I.—**Anemineae**.
   Order I.—**Heterodermaceae**.

24. **Lindbladia** Fries. Sporangia either combined to form an æthalium or closely compacted, usually with a strongly deve-
loped spongy hypothallus; sporangium-wall membranous, beset with microscopic dark plasmodic granules.

Sporangia forming an æthalium . . . *L. Tubulina* Fries
Sporangia closely compacted, sessile, or shortly stalked

*L. Tubulina* var. *simplex* Rex

25. *Cribraria* Persoon. Sporangia globose, stalked; sporangium-wall persistent and usually forming a cup in the lower half, continued above as a net of slender threads more or less thickened at the nodes, evanescent in the meshes; spores nearly smooth.

A. Nodes of the net not thickened:
   a. Sporangia clay-coloured, cup imperfectly defined, sporangium-wall subpersistent above . . . *C. argillacea* Pers.
   b. Sporangia red, net close . . . . . *C. rubiginosa* Fr.
   c. Sporangia nut-brown or rufous—
      Sporangia 0·6 mm. diam., net lax . . . . . *C. rufescens* Pers.
      Sporangia 0·1 to 0·2 mm. diam . . . . . *C. minutissima* Schw.

B. Nodes of net thickened:
   a. Sporangia nut-brown—
      a. Cup ribbed, perforated at the margin, merging into the branching nodes. . . . . . *C. macrocarpa* Schrad.
      b. Cup well-defined, nodes flattened, angular, branching
         *C. aurantiaca* Schrad.
      c. Cup replaced by strong ribs; nodes flattened
         *C. splendens* Schrad.
   b. Cup well-defined or absent, nodes thickened, prominent, numerous—
      Nodes with free rays, and connected by delicate threads, many of which are parallel . . *C. intricata* Schrad.
      Nodes rounded in outline, without free rays, connected by four to five delicate threads . . . . . *C. tenella* Schrad.
   c. Sporangia dark or red-brown—
      a. Stalk two or three times the height of the sporangium; plasmodic granules dark, 1–2 μ diam.
         *C. pyriformis* Schrad.
      b. Stalk four to six times the height of the sporangium—
         Cup one-third the height of the sporangium, nodes polygonal
         *C. languescens* Rex
         Cup minute or absent, nodes rounded, prominent
         *C. microcarpa* Pers.
   c. Sporangia purple—
      Cup one-third the height of the sporangium, 0·7 mm. diam.
      *C. purpurea* Schrad.
      Cup one-half of the sporangium, 0·5 mm. diam.
      *C. elegans* Berk. & Curt.
   d. Sporangia violet-blue; sporangia 0·25 mm. diam.
      *C. violacea* Rex
26. **Dictydi um** Schrader. Sporangia globose, purple-brown; sporangium-wall with parallel ribs extending from the base to the apex, connected by slender transverse threads

D. **umbilicatum** Schrad.

**Order II.**—**Liceaceae.**

27. **Licea** Schrader. Sporangia sessile and hemispherical, or forming plasmodiocarps; sporangium-wall cartilaginous (membranous in *L. biforis*); spores olive-brown or nearly colourless.

A. Sporangium-wall cartilaginous:

Sporangia hemispherical, dehiscing in lobes; spores 9–11 μ

*L. minima* Fr.

Sporangia pulvinate, dehiscing in lobes; spores 16–20 μ

*L. pusilla* Schrad.

Plasmodiocarps elongate, 2–4 mm. long, dehiscing irregularly

*L. flexuosa* Pers.

B. Sporangium-wall membranous; plasmodiocarps about 0·2 mm. long, 0·05 mm. wide, dehiscing by a longitudinal fissure

*L. biforis* Morg. (22, p. 52).

28. **Orcadella** Wingate. Sporangia stipitate; sporangium-wall opaque, cartilaginous, granular except in the upper part, where it forms a membranous lid

O. **operculata** Wing.

**Order III.**—**Tubulinaceae.**

29. **Tubulina** Persoon. Sporangia cylindrical, crowded on a common hypothallus; capillitium none.

Sporangia clustered on a broad hypothallus, spores 5–8 μ

*T. fragiformis* Pers.

Sporangia clustered on a stalk-like hypothallus, spores 3–5 μ

*T. stipitata* Rost.

30. **Siphoptychium** Rostafinski. Sporangia cylindrical, with tubular threads connecting the wall with a hollow central pseudo-columnella

S. **Casparyi** Rost.

31. **Alwisia** Berkeley & Broome. Sporangia stalked, ellipsoid; sporangium-wall evanescent in the upper half; the lower half at length splitting into lobes bearing the persistent straight threads of the capillitium

A. **Bombarda** Berk. & Br.

**Order IV.**—**Reticulariaceae.**

32. **Dictyditealthalium** Rostafinski. Æthalium flat, formed of erect columnar sporangia; sporangium-wall incomplete, dome-shaped on the top, continued to the base in four to six straight threads

D. **plumbeum** Rost.

33. **Enteridium** Ehrenberg. Æthalium composed of confluent interwoven sporangia, their walls perforated with large openings.
Spores warty, usually clustered . . . E. olivaceum Ehrenb.
Spores reticulated, free . . . . . . E. Rozeanum Wing.

34. Reticularia Bulliard. Æthalia composed of interwoven sporangia; the persistent portions of their walls rusty brown, forming broad membranous folds and strands, dividing above into narrow threads.

Æthalia large, at first enclosed by a silvery cortex; spores faintly reticulated . . . . . . R. Lycoperdon Bull.

Æthalia small, shining iridescent; spores sharply reticulated

Æthalia large, at first enclosed by a silvery cortex; spores faintly reticulated . . . . . . R. Lycoperdon Bull.

Æthalia large, at first enclosed by a silvery cortex; spores faintly reticulated . . . . . . R. Lycoperdon Bull.

Æthalia large, at first enclosed by a silvery cortex; spores faintly reticulated . . . . . . R. Lycoperdon Bull.

Æthalia large, at first enclosed by a silvery cortex; spores faintly reticulated . . . . . . R. Lycoperdon Bull.

(Athis species is closely allied to Enteridium Rozeanum.)

Order V.—Lycogalaceæ.

35. Lycogala Micheli. Æthalia subglobose, with a cortex consisting of two more or less closely combined layers, and provided with cell-like vesicles; pseudo-capillitium tubes thick-walled where they traverse the cortex, thin-walled amongst the spores; spores in mass pale pinkish grey.

A. Cortex of Æthalium smooth or areolated

L. flavo-fuscum Rost.

B. Cortex of Æthalium warty:

Æthalia globose . . . . . . . . L. miniatum Pers.

Æthalia conical . . . . . . . . L. conicum Pers.

Subcohort II.—Calonemineæ.

Order I.—Trichiaceæ.

36. Trichia Haller. Sporangia stalked or sessile; elaters free, pointed at each end, thickened with two to five spiral bands; spores reticulated or warty, in the former case the reticulation continuous or broken and forming when seen in profile a "border" to the spore.

A. Spores reticulated or marked with broken bands:

Elaters 7-8 μ wide; spores reticulated; border 2 μ wide

T. favoginea Pers.

Elaters 4-5 μ wide; spores reticulated with narrow bands; border 1 μ wide; sporangia stalked, clustered

T. verrucosa Berk.

Elaters 4-6 μ wide; spores reticulated with broad pitted bands; border 0.5-1 μ wide; sporangia sessile

T. affinis De Bary

Elaters 4-6 μ wide; spores with the reticulation broken into irregular shallow pitted warts; border interrupted, 0.5 μ wide; sporangia sessile . . . . T. persimilis Karst.

Elaters 4-6 μ wide; spores very closely reticulated; border none; sporangia sessile . . . . . T. scabra Rost.
B. Spores minutely warted (sometimes minutely reticulated in *T. fallax*):
   a. Spirals of elaters two ........................................... *T. varia* Pers.
   b. Spirals of elaters three or more—
      a. Elaters shortly tapering at the ends.
         Sporangia sessile, wall uniformly thickened with granular matter; elaters smooth or spinulose
         *T. contorta* Rost.
         Sporangia sessile, wall without granular thickening; spirals or elaters faint ........................... *T. lutescens* List. (9, p. 216).
         Sporangia stalked, wall membranous, thickened in rounded areas with granular deposits; elaters spinose
         *T. erecta* Rex
   β. Elaters smooth, very gradually tapering at the ends—
      Stalk hollow, filled with spore-like cells .......................... *T. fallax* Pers.
      Stalk solid .................................................. *T. Botrytis* Pers.

37. Oligonema Rostafinski. Sporangia minute, densely clustered or heaped, sessile; threads more or less scanty, spiral bands obscure; spores reticulated.
   Sporangia globose, heaped together; sporangium-wall smooth; spores irregularly reticulated ........................... *O. nitens* Rost.
   Sporangia ovoid, crowded; sporangium-wall with minute granular thickenings; spores regularly reticulated
   *O. flavidum* Peek (18, p. 187).
   Threads more or less combined into a network, faintly reticulated and marked with scattered rings, spines, and indefinite spiral bands; spores closely and regularly reticulated
   *O. flavidum* var. *aureum* List. (18, p. 188)†
       (syn. *Calonema aureum* Morg.)

38. Hemitrichia Rostafinski. Sporangia stalked or sessile; capillitium an elastic network of branching threads, thickened with two to six spiral bands; spores minutely warted or reticulated.

A. Spores nearly smooth, or minutely warted:—
   a. Capillitium red, spinose ........................................... *H. rubiformis* List.
   b. Capillitium yellow or yellow-brown—
      a. Sporangia stalked—
         Stalk solid ..................................................... *H. intorta* List.
         Stalk hollow, filled with spore-like cells—
            Cup papillose ............................................... *H. clavata* Rost.
            Cup smooth .................................................. *H. leiocarpa* List.

† The characters shown in the four specimens of *Calonema aureum* we have seen do not in our opinion present specific distinction from forms of *O. flavidum*, of which species it would appear to be a variety.
β. Sporangia sessile—
Spirals of capillitium one to three, prominent, sporangium-wall membranous . . . . . . . H. Wigandii List.
Spirals of capillitium three or more, indistinct; sporangium-wall thickened with granular deposits . . . . . . . H. Karstenii List.

B. Spores reticulated:—
Capillitium threads spinose . . . . . . . H. Serpula Rost.
Capillitium threads smooth . . . . . . . H. chrysospora List.

39. Cornuvia Rostafinski. Sporangia sessile; capillitium a network of threads with thickenings in the form of simple rings; spores reticulated . . . . . . . . . C. Serpula Rost.

Order II.—Arcyriaceæ.

40. Arcyria Hill. Sporangia stalked; sporangium-wall evanescent above, persistent below as a membranous cup; stalk filled with spore-like cells; capillitium with thickenings in the form of half-rings, cogs, spines, or broken reticulation, rarely with three to five faint spiral lines in addition.

A. Spores 9-11 μ diam.; sporangia orange-red or buff:—
Sporangia ovoid; wall reticulated . . . . A. ferruginea Sant.
Sporangia clavate; wall papillose . . . . A. versicolor Phill.

B. Spores 6-8 μ diam. :—

a. Capillitium attached to the cup—
Sporangia clavate, grey or yellowish; capillitium closely spinulose or warded . . . . . . . A. albida Pers.
Sporangia globose, yellow; capillitium with spines arranged in an open spiral . . . . . . . A. pomiformis Rost.†
Sporangia globose, white, on slender stalks; capillitium closely spinulose or warded, the warts usually arranged in more or less spiral lines . . . . . . . A. globosa Schwein.
Sporangia red, ovoid or subcylindrical; capillitium marked with cogs and half-rings . . . . A. punicea Pers.
Sporangia rose-coloured, subcylindrical or turbinate, small; capillitium delicate, marked with transverse bands and minute spines . . . . . . A. insignis Kalchbr. & Cooke

b. Capillitium free from the cup—

α. Network of mature capillitium expanding, not drooping—
Capillitium marked with cogs and spines only . . . . . . . A. incarnata Pers.
Capillitium marked with cogs, spines, and three to four indistinct spiral bands in addition . . . . A stipata List.

† There appears to be sufficient ground for separating Arcyria pomiformis and A. globosa from A. albida, and placing them as distinct species.
\( \beta \). Network of mature capillitium becoming much elongated, drooping—

Sporangia buff; wall evanescent above. \( \text{A. flava} \) Pers.

Sporangia red; wall persistent above in a few shield-like fragments. \( \ldots \ldots \ldots \ldots \ldots \text{A \( \text{\OE} \text{rstedtii} \) Rost.} \)

41. \text{Lachnobolus} Fries. Sporangia sessile or shortly stalked, clustered; capillitium a loose network of closely warted threads attached to many parts of the single-layered persistent sporangium-wall.

Sporangia globose, sessile, heaped. \( \ldots \ldots \ldots \text{L. circinans} \) Fr.

Sporangia globose or ellipsoid, clustered, shortly stalked

\( \text{L. occidentale} \) Maebr. (21, p. 188\( ^{\circ} \))

very closely allied to \( \text{L. circinans} \).

42. \text{Perichaena} Fries. Sporangia subglobose, sessile, rarely shortly stalked, or forming plasmodiocarps; sporangium-wall of two layers, the outer thickened with dark granules, which are exceptionally absent in the upper part; single in \( \text{P. microspora} \); capillitium of slender branching tubular threads, minutely warted, or spinose.

A. Sporangium-wall stout, brown or grey, inner layer smooth:—

Capillitium spinose. \( \ldots \ldots \ldots \text{P. chrysosperma} \) List.

Capillitium minutely warted, abundant; spores 10-11 \( \mu \) diam.

\( \text{P. depressa} \) Lib.

Capillitium minutely warted or nearly smooth, scanty; spores 12-14 \( \mu \). \( \ldots \ldots \ldots \ldots \ldots \text{P. populina} \) Fr.

B. Sporangium-wall membranous:—

Sporangia globose or forming plasmodiocarps, yellow or paleumber; inner layer of wall papillose; spores 10 \( \mu \)

\( \text{P. variabilis} \) Rost.

Plasmodiocarps flesh-coloured; spores 6 \( \mu \)

\( \text{P. microspora} \) Penz. & List. (24, p. 76).

Order III.—Margaritaceae.

43. \text{Margarita} List. Sporangia globose, with a translucent wall; capillitium a profuse coil of slender hair-like scarcely branching threads. \( \ldots \ldots \ldots \ldots \ldots \text{M. metallica} \) List.

44. \text{Dianema} Rex. Sporangia sessile, or forming plasmodiocarps; sporangium-wall membranous or cartilaginous; capillitium consisting of nearly straight threads, slender at both ends, attached above and below to the sporangium-wall.

A. Sporangium-wall translucent, membranous; spores free:—

Capillitium threads nearly simple, attached to the sporangium-wall by short branches. \( \ldots \ldots \ldots \ldots \ldots \text{D. Harveyi} \) Rex

Plasmodiocarps; capillitium threads converging to acuminate points of attachment to the sporangium-wall

\( \text{D. depressum} \) List.

B. Plasmodiocarps; the wall granular, cartilaginous; spores clustered. \( \ldots \ldots \ldots \ldots \ldots \text{D. corticatum} \) List.
45. **Prototrichia** Rost. Sporangia globose; capillitium threads rising from the base of the sporangium as stout strands marked with spiral thickenings, dividing at length into a pencil of slender branches attached at the tips to the upper part of the sporangium-wall. **P. flagellifera** Rost.

46. **Listerella** Jahn. Sporangia hemispherical, 0.2 to 0.3 mm. diam., black, dehiscing in lobes; sporangium-wall membranous with granular deposits; capillitium scanty, of very slender threads marked with mouliform thickenings, attached to the sporangium-wall; spores pale umber **L. paradoxa** Jahn (7, p. 538*).

**Bibliography.**

1. Albertini, I. de, and Schweinitz, L. D. de: Conspectus Fun-gorum. . . . (Leipzig (1805)).
9. ——: Notes on some Rare Species of Mycetozoa (ibid. xxxv. (1897), p. 209).
11. ——: Mycetozoa of Antigua and Dominica (ibid. xxxvi. (1898), p. 113).
15. ——: Notes on Mycetozoa (ibid. p. 81).
17. ——: Notes on Mycetozoa from Japan (ibid. xlii. (1904), p. 97).

Digitized by Microsoft ©
NOTE ON COFFEA ENGLERI, &c.

By K. Krause.

On pp. 114-116 of this Journal Mr. Spencer Moore has given some remarks on the memoir on Rubiaceae from Tropical Africa published by me in Engler's Botan. Jahrb. xxxix. pp. 516-576. In this note he declares that Coffea Engleri, described and figured by me (l. c. pp. 546-547), is undoubtedly identical with Trixalysia jasminiflora (Klotzsch) Benth. et Hook. f., a plant which Peters was the first to collect near Sena, and which, more recently, was observed by Miss Gibbs in the Matopos, close to the locality of Coffea Engleri. For several reasons, however, I am unable to adopt this view.

First, as for the number of ovules. I have again examined the ovary; notwithstanding the rather young state of the flowers, I have ascertained that each of the two cells contains only one ovule attached to the common septum. Therefore it seems impossible to refer the plant to Trixalysia, a genus having always two or more ovules in each cell. Moreover, in several other points of minor importance our plant does not agree with the character of Trixalysia; it differs in the length of the filaments, the form of the anthers, the size of the flowers, the shape of the stipules, in addition to the generic character of the number of ovules mentioned above. With T. jasminiflora more especially, to which it was referred by Mr. Spencer Moore, it has very little in common, as may be seen by looking only superficially to the type of Peters, or by comparing the diagnosis as published in the Flora of Tropical Africa. Coffea Engleri differs from it by the mode of vegetation, being an erect tree of about 9 ft., whereas T. jasminiflora represents a shrub only 5 ft. high, and, not rarely, of climbing habit. Further, the bark is rough and dark brown in C. Engleri; rather smooth and pale brownish in T. jasminiflora. Other differences are to be found in the shape, consistency, and indument of the leaves.

More important still are the floral differences. The calyx of C. Engleri is much shorter than that of T. jasminiflora, also quite entire, not split to the base at two opposite lines; the corolla-lobes of C. Engleri are somewhat broader and much more obtuse than in T. jasminiflora, where the light emargination of the apex is wanting; the filaments of my species are very short, hardly perceptible, the anthers oblong and obtuse at both ends, whereas the filaments of
T. jasminiflora are longer and protruding beyond the tube, and the anthers narrow, very much acuminate; finally, the styles and the stigmas do not agree in shape. From the differences mentioned it appears, then, that the identity of C. Engleri and T. jasminiflora is impossible. Mr. Spencer Moore will be able to satisfy himself when comparing the figure of C. Engleri—which I have since re-examined and found correct in every detail—with the dissections of the floral parts of T. jasminiflora as shown in Engler & Prantl (Natürl. Pflanzenfam. iv. 4, p. 81, fig. 29, F–H). I must object also to his view that no species of Coffea would likely occur in those parts of Africa; at any rate, I know several species of Coffea from the district of Mosambique, which the Matopos are generally attached to (cf. Fl. Trop. Afr.), viz. C. racemosa Lour., sanzebariae Lour., and C. ibo Fröhl.

Another note of Mr. Spencer Moore refers to a specimen of Oldenlandia collected in British East Africa by Kässner as n. 653 or 655,* and described by me as Oldenlandia Kässneri. Having learned since that the name O. Kässneri has been used for another plant, I now propose to call my former O. Kässneri O. leptophylla. At the same time O. leptophylla cannot possibly be identical with O. Wiedenmannii K. Sch. (not "Wiedemannii" as printed) O. Wiedemannii, which Mr. Spencer Moore knew only ex descriptione, is a species established by Schumann, who also recognized O. leptophylla as a new species, and had given it a special name. It seems very difficult to believe that the same author should have published again as a new species a plant formerly named and described by himself. In fact, O. Wiedenmannii and O. leptophylla are species essentially different: chiefly by the upper parts of the stem, the calyx and ovary being rather densely hairy in O. Wiedenmannii, completely glabrous in O. leptophylla; also by the shape of the petals, different in the two species: oblong and distinctly acuminate in O. Wiedenmannii; broader, more ovate and rather obtuse at the apex in O. leptophylla. I think there is no doubt left about the diversity of the two species.

A third note of Mr. Spencer Moore about Pentanisia crassifolia, described by me, will perhaps prove to be better founded. I was induced to create this species by its leaves being very thick, nearly fleshy, remarkably different in that respect from all other species of the genus so far described. As Mr. Spencer Moore now declares that his P. sericocarpa shows the same quality, unfortunately not mentioned by him in his original description, I think both species identical, although a few small differences in the dimensions of the floral parts seem to remain.

[Dr. Krause is certainly correct in his view that Coffea Engleri K. Krause is not the same plant as Tricalysia jasminiflora Benth. & Hook. fil. In fact, I now find that the specimens from Rhodesia referred by me to T. jasminiflora (Bulawayo, Rand, 637; and

---

* As for the number so far doubtful, Mr. Spencer Moore declares it to be 653, whereas the specimen of the Berlin Museum is distinctly 655. He is right, then, in supposing that there is an error, but it is not with me.
Matopo Hills, Miss Gibbs, 67) do not belong to that species, but to *T. pachystigma* K. Schum. The error arose from specimens of the two species being mixed up together in the Kew Herbarium, and my inadvertence, due partly to the special appropriateness of the trivial to the Rhodesian plant, in naming my specimen as I did. In my recent note, then, I was really comparing *C. Engleri* with *T. pachystigma*, and I confess myself still unable to see any distinction between them except in two points. One of these relates to the calyx, which, as Dr. Krause tells us, is entire in the case of *C. Engleri*, whereas in *T. pachystigma*, as in *T. jasminiflora*, expansion of the bud causes the calyx to split down on either side, although in early states of flowering the calyx is entire. As regards the second point, namely, the ovules, I would remark that close to the top of each ovary-cell of *T. pachystigma* is attached a large fleshy placenta upon which, near its middle, are inserted two small collateral ovules, the placenta projecting beyond them in the form of a tongue. In each of the ovarian cells of *C. Engleri* Dr. Krause finds one ovule “attached to the common septum,” which is just what one would conclude is the case in *T. pachystigma*, unless one discovered the two small ovular knobs projecting from the placenta.

Of course I am not in a position to say that Dr. Krause has overlooked these ovules; but seeing that we have to do with two plants growing in the same locality, a locality carefully explored by museum correspondents, the two, calyx apart, indistinguishable except when their ovaries are dissected; seeing, too, that one of these plants is said to belong to a genus hitherto unknown from that part of Africa, and that, as the oversights of skilled botanists have shown, it is often an easy matter to mistake a mass of closely pressed ovules or a number of ovules more or less immersed in a prominent placenta for a single ovule, it is a matter for regret that, as Dr. Krause admits, his material should be in a somewhat immature condition. I would remark further that *T. pachystigma* has a double calyculus unsplit during flowering; it is to be presumed that what Dr. Krause regards as a calyx is not the uppermost of these whorls, the calyx having been already shed.

Before dismissing the matter, one would like to know whether *T. pachystigma* is in the collection made at Bulawayo by Professor Engler. If it be, and dissection reveals its difference from *C. Engleri*, then I must concede the point at issue, and conclude that we have to do with a remarkable case of homoplastic resemblance. If it be not, I venture to think there is only one inference to be drawn from its absence.

As regards the plant I supposed to be *Oldenlandia Wiedenmannii* K. Schum., although naturalists of repute have been known to give two names to identical species, I naturally saw the difficulty Dr. Krause mentions, and not that only, but a further one, seeing that *O. Wiedenmannii* was mentioned in Dr. Krause’s memoir, where it is compared with another new species. *Ex descriptione* identifications must always be to some extent unsatisfactory; and I am much obliged to Dr. Krause for so promptly responding to my enquiry about the proper naming of Kässner, 653. The name, it
should be added, was purposely written Wiedemannii, although printed Wiedenmannii, because the collector’s name was said to be Wiedemann, and I therefore concluded Wiedenmannii to be a printer’s error.—Spencer Moore.]

BRITISH ROSES OF THE MOLLIS-TOMENTOSA GROUP.

By the Rev. Augustin Ley, M.A.

Much admirable work was done in this section of the genus by the great British botanists of the beginning of the nineteenth century—Sir James E. Smith and his contemporaries, Joseph Woods and John Lindley. Since their time the chief advance in this section has been made by the great Continental students of the genus, notably Déséglise and Crépin. The critical work of these Continentalists has been studied and partly reproduced in England in this Journal and elsewhere. Déséglise, Crépin, and Christ have given continual help to British workers in the study of our forms, and much good field work has been done in Britain. Its results were admirably systematized by Mr. J. G. Baker in his Monograph of the British Roses published in Journ. Linn. Soc. xi. 197–243 (1869). A revolution was effected by this publication in the intelligibility of many groups of the genus, notably the Caninae; but no great advance was attempted by Mr. Baker on his great English predecessors in the Tomentosa.

A few words may be in place here on the work of Woods, Lindley, and Sir James Smith in this group.

Woods, in his Synopsis of the British Species of Rosa (1816), divides the group into five species—villosa, scabriuscula, heterophylla, pulchella, and tomentosa. Of these, villosa = mollis Sm. Eng. Flor.; heterophylla is stated by Smith to have reverted under cultivation to mollis; pulchella was founded on a single bush, and proved to be dwarf mollis. Woods relies on the narrower leaflets, smaller, less globose fruit, and entire petals to separate tomentosa from villosa; and on the pinnate sepals to separate scabriuscula from tomentosa. He distinguishes (by letters) fifteen varieties of R. tomentosa; four of these have also names—hybrida, sylvestris, canescens, and incana. Var. γ. is undoubtedly the subcrisata of Baker’s Monograph; incana is also now placed among the Caninae; τ. is certainly R. Sherardii Davies; γ. sylvestris is the plant we still recognize under this name; the remainder of Woods’ varieties are hardly assignable with any certainty.

Lindley, in his Rosarum Monographia (1820), enumerates two species which appear to belong to this group—villosa and tomentosa. Upon examination, however, it is found that under the former name he is describing R. gracilis Woods, a plant belonging to another section. R. tomentosa he divides by three letters:

a. vera: “surculis arcuatis, sepalis compositis” = tomentosa Sm.
β. mollis: "surculis strictissimis, sepalis sub-simplicibus."

γ. resinosa: "pumila, cæsa, foliis angustis, floribus ruberimis."

*R. scabriuscula* is placed as a variety under (a.). *R. fœtida* Bat. [sic] is noticed as a "weak variety with leaves smooth above." On β. mollis there is nothing needing comment. Of γ. resinosa, which is quoted only from the South of Ireland, the following description is taken from the original specimen in Lindley's herbarium (Camb. Bot. Mus.), marked in Lindley's own writing, "β. [sic] resinosa Mon."—Stem slender, dark-coloured, flexuose; thorns long, slender, straight; leaflets 3–5, small, narrow oval to narrow oblong from a cuneate base, hairy on both sides, the under surface very hairy, eglandular, with prominent veins; petiole glandular, not aciculate. Flowers mostly single, small, petals deep rose; peduncle slender, aciculate; calyx-tube small, narrowly ovate-ellipsoid, slightly aciculate. Sepals lanceolate, nearly simple, elongate-appendicate, densely glandular-aciculate. Plant too young to admit of ascertaining direction or persistence of sepals.

It will be seen that Lindley's own description, quoted above, is excellent for this specimen so far as it goes.

The presumption arising from the single specimen before me is that we have here to deal with a plant deserving the attention of British botanists, abundantly distinct from *R. villosa* s. suberecta Woods, with which it has been identified by Deséglise (see Journ. Bot. 1867, 45), and meriting specific rank should it be rediscovered in Ireland or elsewhere. The name given by Lindley being forestalled by *R. resinosa* Lejeune (Fl. Spa. p. 96 (1811)) is not available; under these circumstances I would propose the name *R. oblita* as appropriate.

In the arrangement and in the Key this plant would probably fall under the Molles, and would have its natural position next after *R. sub-mollis*.

Smith (Eng. Flor. ii. 381 (1824)) divides the group into 1. *R. villosa = mollis* Sm. Eng. Bot. with the characters, "Fruit globose, somewhat depressed, partly bristly; calyx slightly compound; leaflets rounded, bluntish, all over downy; prickles nearly straight." 2. *R. tomentosa": "Fruit elliptic; calyx copiously pinnate; leaves ovate acute, ± downy, both surfaces usually hoary, the under ± glandular." 3. *R. subglobosa": "Fruit globose; flowers in clusters, 1–9; leaves rather broad, softly downy."

He admits under 2 only a single variety, scabriuscula, giving as characters the greener, more harsh leaves, nearly smooth except on the veins of the under surface.

No use is made by Smith of the direction, duration, or curvature of the sepals, nor of the gland-variation of the leaves, in classification, since these points would have introduced an amount of subdivision no doubt undesirable at Smith's date. In accordance with this, the sheet in Smith's herbarium marked "R. tomentosa Flor. Brit." consists of four plants: (1) with oval eglandular leaves, hairy below, curved thorns, and apparently reflexed sepals (type tomentosa); (2) with greener glandular leaves (probably scabri-
(9) a scrap which may be R. omissa Déség.; (4) another scrap which is quite doubtful. These points, however, have all been taken up by later continental students, and would appear to offer the best available means of a more elaborate classification.

In the following paper the classification of the members of the group has been based (1) on the direction, persistence, and curvature of the fruiting sepals; (2) on the curvature of the mature thorns; and (3) on the clothing of the leaves in respect of glands. The differences implied in (1) and (2) appear to be structural, and to afford reliable grounds of specific distinctions. It is doubtful how far this is the case with (3); but differences of gland development imply, in the opinion of the writer, something more fundamental than mere changes of soil, exposure, &c. While therefore it has not been thought allowable to unite in a single variety glandular and eglandular forms, they can permissibly be grouped together as varieties under a single species.

Moreover, the leaf-glands are so easily observed at all stages of the plant, that a systematist would not willingly abandon their help. No notice has been taken of the shape or curvature of the stipules, to which Crépin draws attention; these being points which need much study from the living bushes, and on the diagnostic value of which there is great difference of opinion. In this paper the shape of the leaflets is taken exclusively from the terminal one.

A few words may be allowed upon the selection and preparation of specimens. No rose specimen can be considered satisfactory, especially in this group, which does not exhibit the larger thorns of the mature branches, the shape of which is of much importance in the discrimination of the forms; also the fruit in a stage at least approaching to ripeness, so that the character of the fruiting sepals can be determined. Flowering-sprays and pieces from the vigorous shoots of the year are also desirable, but are not of primary importance; the shape of the thorns especially should not be judged of entirely from those of the first-year shoot. The character and prominence of the disk as well as colour of the petals should be the subject of a written note made at the time of gathering; and the leaves of all specimens should be so dried as to exhibit both the upper and under surface at once on the same piece.

It has been thought more in accordance with nature to treat the whole number of forms here dealt with as a single group, the members of which, exclusive of varieties, may legitimately be assumed to be of equal value and termed species; moreover, most of them were originally described as species. The arrangement into two species, molis and tomentosa, the latter with numerous varieties, melts away when the group is studied; although, as divisional names, these still remain advantageous.

The thanks of the writer are due to many botanical friends who have placed their collections at his disposal for study; to Mr. James Britten for many valuable critical hints, and to Mr. E. G. Baker for assistance without which this paper could not have been undertaken.
KEY.

1. Fruiting sepals lanceolate, convex at back ± erect and persistent until the ripening of the fruit .................................. Molles 2
   Fruiting sepals ovate or ovate-lanceolate, flat or only slightly convex at back, caducous before the ripening of the fruit... Tomentosi 13

2. Mature thorns long, narrow, straight or nearly so ........................................ 3
   Mature thorns falcate or unicinate ........................................ 9

3. Fruiting sepals truly erect, persistent until the decay of the fruit; disk 0; fruit orbicular (villosa L.) .......................... 4
   Fruiting sepals suberect, subpersistent, but falling before the decay of the fruit; disk inconspicuous .......................... 6

4. Subfoliar glands 0* ...........................................(2) mollis
   Subfoliar glands present ........................................ 5
   Fruit very large, purple-violet when ripe, subfoliar glands very few... (1) pomifera

5. Fruit moderately large, red when ripe, subfoliar glands many ................. (2 var.) recondita
   Fruit smaller, red when ripe, glabrous ........................... (2 var.) carulea

6. Subfoliar glands 0 ...........................................(3) submollis
   Subfoliar glands present ........................................ 7

7. Bracts very large, hiding the short peduncles, fruit orbicular ................ (4) omissa
   Bracts moderate, not hiding the peduncles .......................... 8
   Leaflets medium sized, ovate, fruit ovoid .......................... (4 var.) resinosoides

8. Leaflets medium sized, peduncles and fruit densely aciculate, petiole with uncinate acicles, bracts reddish .............................. (6) suberecta
   Leaflets small oblong, fruit small roundish ...........................(5) pseudorubiginosa

9. Mature thorns falcate ........................................ 10
   Mature thorns uncinate ........................................ 12

10. Subfoliar glands 0 ............................................. 11
   Subfoliar glands present, main thorns very large..... (9) Andrzejiovii (suberecta)

11. Fruit (at least the primordial) pyroid ...................................... (7) pseudomollis
    Fruits all globose ........................................ (8) Sherardi

12. Fruit (at least the primordial) pyroid .................................. (10) uncinata
    Fruits all ellipsoid ........................................ (11) Woodsiana

13. Leaflets simply serrate ........................................ (16) cinerascens
    Leaflets doubly serrate ........................................ 14

14. Styles glabrous ........................................................................ (17 var.) foetida
    Styles hairy or setose ........................................ 15

15. Thorns uncinate ........................................ (18) obovata
    Thorns falcate ........................................ 16

16. Leaflets ± hoary and hairy beneath .......................................... 17
    Leaflets greener beneath with few hairs .......................... 20

17. Subfoliar glands 0 ............................................. 18
    Subfoliar glands present ........................................ 19

18. (14) tomentosa
   Sepals spreading after flowering, peduncle naked, short, leaflets very soft ........................................ (15) farinosa

* Disregard the midrib, which in nearly every case bears a few glands.
Leaflets moderate, thorns falcate..........................(17) cuspidatoides
Leaflets large, thorns large, almost uncinate....... (17 var.) britannica
Leaflets large oblong, subfoliar glands few, fruit oblong .....................

Leaflets moderate ovate, subfoliar glands many, fruit round ..................

1. R. pomifera J. Herrm. Dissert. Rosa, 16 (1762). Habit very robust; thorns slender, straight; leaflets 5–7, large, the terminal one 1½–2 inches, elliptic-oblong, rounded or subcordate at base, hairy on both sides, the serration open; subfoliar glands often very few; "stipules glabrous above"; fruit globular or subglobular, usually densely aciculate; petals ciliate, glandular at base. The leaflets are stated by Déséglise to be eglandular below; subfoliar glands, however, are present on most of Déséglise's own specimens; and though very variable in number are never, I believe, wholly absent.

The "apple-rose" is well known as a cultivated plant; but its occurrence here and there in hedges in Britain has hitherto been thought insufficient to give it a place as a native plant. The writer has, however, a specimen gathered by himself on mountain rocks in Breconshire in 1876 in a situation in which it could hardly have been introduced. Tidenham Chase, West Gloucester, in two spots, Shoolbred! Stafford; Yorks; Roxburgh!


Abundant in the north, thinning out rapidly southwards in Britain, but extending in the central counties to Stafford and Derby, and in the west to Radnor! Hereford! Brecon! and Monmouth!

Records of R. mollis from counties south of Monmouth should be subjected to a strict examination before being accepted; in all cases which have come under the notice of the writer such records have uniformly proved to belong to one or other of the cognate species.

Var. recondita (Puget) in Déségl. Revis. 46; Aschers. & Graebn. Syn. Mittel-eur. Fl. vi. 66 (as R. pomifera Herrm. a. 1). Leaflets with numerous subfoliar glands; fruit usually larger than in type mollis, red when ripe, aciculate or naked; petals not ciliate.

Too near to R. mollis Sm., and especially to its var. caerulea Woods, to be dissociated from it. Continental authors unite it to R. pomifera Herrm.


Var. caerulea. R. villosa var. caerulea Woods in Trans. Linn. Soc. xii. 198 (1817). R. mollissima var. caerulea Déségl. Revis. sect. Toment. 38 (1866). R. mollis var. caerulea Baker ex Déségl. in
Bull. Soc. Bot. Belg. xv. 578 (1876). Differs from the type in the leaflets having subfoliar glands varying in quantity but seldom numerous; in the peduncle and fruit being glabrous; in the young branches being often glaucous; and in the fruit being smaller.

Distribution as in the type; extending southward to Montgomery! Radnor! Brecon! Carmarthen! and Cardigan!

3. R. submollis. Bush less robust than in the preceding, with strong arching surculi. Very near R. mollis, with the thorns equally narrow based but rather shorter and rather more curved; the leaflets broadly elliptic, hairy beneath; the peduncle long or short, always straight; the sepals suberect in fruit and persistent until the fruit has changed colour, but finally caducous; the fruit large ovoid, the primordial pyroid, ripening later.


4. R. omissa Déségl. in Billotia, p. 47 (1864). Habit tufted, with close-set flexuose branches; thorns long, straight, compressed; leaflets oval-elliptic, with numerous subfoliar glands; peduncles very short, entirely hidden by the large bracts; fruit obovoid pyroid glabrous; sepals suberect persistent until maturity of the fruit, then caducous; petals bright rose.


Var. resinosoides. R. omissa Déségl. var. resinosoides Crépin in Billot. Excis. 3601; Bull. Soc. Belg. xxii. 1. 98 (1882). R. omissa, A. 1, 2, resinosoides R. Keller in Aschers. & Graebn. Syn. vi. 76, 1900. Differs from the type in the thorns being unequal, straight or slightly bent, slenderer and in part acicular on the flower-shoots; in the peduncles being longer, the clusters of flower more numerous, and in the ovate aciculate fruit.


5. R. pseudorubicinosa Lejeune, Fl. Spa. i. 229 (1811). R. Arduenensis Crépin in Bull. Ac. Belg. 2, Sér. xiv. 101 (1862). Thorns long, narrow, straight; leaflets small, oval to oval-oblung, hairy on both sides; subfoliar glands numerous, the upper surface
also often glandular; sepal subsesrect, subpersistent; fruit roundly oval aciculate.

Rare, but widely scattered in Britain. West Kent! Surrey! West Lancs! Yorks! Dumfries! Mid Perth!

6. R. suberecta. R. villosa ɔ. suberecta Woods in Trans. Linn. Soc. xii. 192 (1818); ex descript. Thorns straight, sometimes robust ± falcate; leaflets oval-elliptic, ± hairy on both sides; subfoliar glands few or many; petioles very glandular, with many unequal, falcate acicles and pricklets; clusters of 1–5 flowers; peduncles moderate, these and the ovoid calyx-tube densely and longly glandular-aciculate; fruit globose; sepal considerably pinnate, appendiculate, densely glandular-aciculate, suberect and subpersistent. Petals rose; sometimes "white with purplish spot" (Marshall). Young stems, petioles, thorns, stipules, and bracts vinous red.

The above description, taken from recent British specimens, agrees so well with Woods' original description which is here subjoined, as to leave no doubt as to the identity of the plants:

"Fruit globose, that and the petiole furnished with strong setæ; flowers deep red. Stem stiff and upright; leaflets 7 sometimes 9, elliptic concave; stems, petioles, young prickles, and mid-rib of a vinous red. The general appearance of this variety is such as to make me wish to consider it a distinct species."

R. suberecta Woods varies greatly in the shape and direction of the thorns and in the clothing of the leaflets; the flowers also are sometimes white. It is, notwithstanding, an easily recognized species; the vinous colour of its younger parts seems never to be wholly absent, even in the albino variety. Endemic?


Fries's original description of his plant runs as follows:—

"Folii utrinque glaberrimis subtus glanduloso-punctatis. In maritimis Blekingie. Hanc primo obtutu R. caninum crederes, sed aculei recti teretes, foliorum serratūrae et glanduē, petala décicutāta, fructus molles precoces hispídī omnino ut in vulgāri."

Scotland: very local? East Inverness! West Inverness! East Ross!

naked; sepals nearly simple, suberect, subpersistent; clusters of 2-4 flowers; fruit roundish, the primordial always pyroid, large, late in ripening. Generally well-marked and easily recognized. 


8. R. Sherardi Davies, Welsh Botanology, 49 (1813), et in Herb. Mus. Brit.! R. subglobosa Sm. Eng. Fl. ii. 884 (1824). R. tomentosa Sm. var. subglobosa Carion, Cat. Saône et Loire, 48 (1859). Habit and thorns of R. pseudomollis; leaflets densely and softly hairy, normally narrower than in that species, subfoliar glands 0 except on mid-rib; calyx-tube usually aciculate; sepals normally suberect, subpersistent, but somewhat uncertain in direction and persistence; fruit, even the primordial, orbicular, large or small; flowers 3-9 in a cluster.


9. R. Andrezeiovii Steven ex Besser, Enum. Pl. Volhyniae, 19 (1822). "A tufted branching shrub"; thorns falcate, normally very large; leaflets broadly elliptic, truncate or emarginate at base, often overlapping, hairy on both surfaces "villocity glossy"; subfoliar glands varying in amount, normally many; calyx-tube normally hispid-glandular, ovoid; sepals assurgent, subpersistent, subpinnate appendiculate; fruit globose; clusters many-flowered (3-9). The spelling of this name has varied greatly, but the above is the original. 


Plants occur in Britain with thorns of medium size and leaflets narrower than as above described, which are probably to be referred to this species.

10. R. uncinata. R. tomentosa Sm. var. uncinata F. A. Lees in Bot. Record Club Rep. 1884-1886, 123 (1887). Bush arching; thorns all similar, strong, uncinate; leaflets oval-oblong, hairy on both surfaces; subfoliar glands varying in number, sometimes very few, usually numerous; calyx-tube glandular-aciculate; sepals nearly simple, suberect, subpersistent; petals full rose; fruit ovoid-subrotund, ripening in August or September; clusters of 2-4 flowers. Always very constant in its characters, and easily recognizable.

11. **R. Woodsiana.** *R. tomentosa* Sm. var. *Woodsiana* Groves in Bot. Exchange Club Rep. 1880, 30 (1881). Bush erect, compact; main thorns uncinate; leaves oval, slightly hairy on both surfaces, serration open, subfoliar glands few; peduncles densely glandular-aciculate; petals pale rose; fruit ellipsoid, ripening in September. Very near *R. ucinata*, to which it might perhaps be united as a variety.

Wimbledon Common, Surrey, Groves.

12. **R. scabriuscula** Sm. Eng. Bot. t. 1896 (1808). *R. tomentosa* Sm. var. *scabriuscula* Baker in Trans. Linn. Soc. xi. 217 (1869). Bush tall, arching; thorns long, narrow, slightly falcate; leaflets long-ovate-elliptic or elliptic-obovate, deeply, sharply, doubly serrate, green on both surfaces, slightly hairy, subfoliar glands few; peduncles long, glandular-aciculate; calyx-tube aciculate or naked; sepal subpinnate, long-appendiculate; uncertain in direction, slightly ascending after flowering or reflexed from the first, always deciduous before the fruit changes colour; petals light rose; clusters often 6 or more flowered; fruit ovoid, sometimes prolonged, ripening in October.

Abundant and of general distribution in England, Scotland, and Ireland; more common southwards. Sutherland, Bettyhill, Shooldred! Cornwall, Sheviock, Briggs! Wicklow, Baker! Kerry (Muckross)! A glabrous form of this rose occurs: Carnarvon, Linton! West Yorks, Dent Dale.

Another specialized form of this plant occurs at the Menai Straits, Carnarvon, very robust, with glandular aciculate petioles, large often simply serrate glabrescent leaflets, and partly sub-persistent and suberect sepalas. This plant has been attributed to *R. britannica* Déség., from which however it is very different. It probably owes its peculiarities to its robustness, joined with its maritime situation.


Distribution as *R. scabriuscula*, but less abundant. S. Devon! Kent! Cheshire! Roxburgh! East Inverness! Mayo!, Ireland.

14. **R. tomentosa** Sm. Fl. Brit. ii. 539 (1800) (ex parte). Bush arching, flexuose; main thorns long, falcate, becoming smaller and straighter on the flowering-shoots; leaves normally softly hairy on both surfaces; subfoliar glands 0; peduncles long, glandular aciculate; flowers up to 6 or more in a cluster; sepal ovate flattish, the main ones often strongly pinnate; reflexed from the first, and falling before the fruit changes colour; fruit small, normally ovate, at times subrotund or shortly urceolate, ripening in October.

As defined above, an easily recognizable and tolerably constant rose.
Distribution general; probably the most abundant species of the group, at least in Middle and South England. Glabrescent, or even entirely glabrous, forms are occasionally met with.

15. *R. farinosa* Rau, Enum. Rosarum circa Wirceburgum, 147 (1816); non Bechst. *R. tomentosa* Sm. var. *farinosa* Séringle in DC. Prod. ii. 618 (1825). Habit of *R. tomentosa*; stem and leaves glaucous; thorns long, slightly falcate, few; leaflets densely grey-downy with very open double serration; petioles whitish-downy; peduncles short, these and the calyx-tube naked; sepals with long narrow point, slightly pinnate, spreading after flowering, caducous; fruit obovoid, ripening in October.

Rare and seldom quite typical in Britain. Perth, Hailstone! Stafford! Derby! Salop! Hereford! Carmarthen! Co. Down!, Ireland.


Rare. Perth, Barclay! East Ross, Herb. Bailey! Stafford, Alstonfield and Archford Moor, Purchas! Derby, near Ashbourne, Purchas! Brecon, Craig Cille, Rüddelsdell! Radnor, Elan Valley!

All the British examples I have seen differ slightly from the foreign type in having leaves less densely grey-downy and soft.

17. *R. cuspidatoides* Crépin in Scheutz. Studier d. skand. Rosa, 37 (1872). Bush arching; main thorns falcate; leaflets oval, hairy on both sides, subfoliar glands usually numerous; peduncle and calyx-tube glandular-aciculate; sepals nearly simple, shortly appendiculate, reflexed or spreading, caducous; fruit ovoid or sub-rotund, ripening in October.


Var. *britannica*. *R. britannica* Déség. ex Baker in Journ. Linn. Soc. xi. 218 (1869). *R. Jundzilliana* Baker (non Besser) in Naturalist, i. 65 (1864). Differs from the type in the thorns being very robust, almost uncinate; in the leaflets being large, very hairy; and in the clusters being of very numerous flowers.

Rare. Cheshire, Webb! Hereford! Worcester! Flint!

Var. *fetida*. *R. fetida* Bast. Flor. Maine et Loire, Suppl. 29 (1812). Differs from the type in having glabrous styles, and in the fruit being ovoid.


Trans. Linn. Soc. xi. 218 (1869). Bush low; thorns all uncinate; leaflets small, obovate-oblong from a deltoid base; upper surface naked, under hairy and glandular*; peduncles short, naked, hidden by the bracts; calyx-tube naked; sepals very slightly glandular, nearly simple, reflexed, caducous; fruit small, oblong or sub-globose; flowers mostly single.

Rare. Yorks, Thirsk, Baker; Durham, Egglestone, Baker; Edinburgh, near Hawthornden, Webb! S. Aberdeen!

SHORT NOTES.

GLYCERIA FOUCAUDII Hackel in Hampshire.—I have come across a sheet, labelled "Glyceria maritima Wahl. Saltmarsh near Muford, S. Hants. 15, vi. 1898," and collected by Rev. E. F. Linton, who added the remark:—"Large, but I suppose ordinary?" It agrees, I consider, very well with specimens of my No. 867, from a muddy ditch on the coast near Grain, West Kent, June 21st, 1892, on which Professor Hackel wrote to Mr. Arthur Bennett in 1893 as follows:—"Glyceria Foucaudii, Hackel in litt. ad Foucaud (n. sp.). —This is a very distinct species of Glyceria, discovered last year by Foucaud in the Department of Charente-Inferieure. Foucaud himself will soon publish a description of it. It seems to be one of the Atlantic plants which reach southern England. You may distinguish it from all the congeners (it comes nearest G. maritima) by the silky pubescence of the nerves of the flowering glumes, and by the ciliated upper palea, &c." I understood that Hackel had altered his opinion as to its specific rank, and it was accordingly mentioned in the Flora of Kent (p. 405) only as a remarkably insular form of G. maritima. But in September, 1904, he named an identical grass, found that summer by Miss M. C. Knowles on Auginish Island, Foynes, Co. Limerick, as "typical Atropis Foucaudii Hack. in Husnot, Gramina, p. 49 (1896)." It certainly looks like a good species, when well developed.—EDWARD S. MARSHALL.

BRITISH RUBI.—As is well known to my friend Dr. Gilbert,—and as indeed he has plainly shown in his "Notes on British Rubi" in the April number of this Journal,—there is the widest disagreement between him and me on this subject. But the disagreement is so wide, and, in a sense, so fundamental, that I cannot think any useful purpose would be served by a detailed discussion of his views in the pages of the Journal. If such views as to variability of form and frequency of crossing between allied forms are accepted, all serious study of the genus might well be given up as hopeless and unprofitable; but most of us who have given time and patient work to the study are not in the slightest degree prepared for such a surrender, and the various vague conjectures and

* Mr. Baker writes, "not glanduloso-setose"; but all the specimens I have seen from the classical station have a few sessile or subsessile glands on the petiole.
speculations which occupy the greater part of Dr. Gilbert's paper certainly would not help us towards it. For myself I need only say that none of these suggestions commend themselves to me. They seem to me, in fact, not only unproved, but, so far as I can understand them, highly improbable and inconsistent with my knowledge of the plants in question. While far from wishing to imply that I have nothing to learn on such points as are here discussed, I shall not, I hope, be thought presumptuous if I still adhere with unbroken confidence to the line deliberately adopted in my Handbook in 1900 and in the papers which I have subsequently contributed to this Journal.—W. MOYLE ROGERS.

SPANISH AND PORTUGUESE CARICES.—Carex basilaris Jord., which Kükenthal puts as a variety of the Portuguese C. depressa Link, is not recorded for Spain by Nyman, but it is included by Willkomm & Lange in their Supplement to Prod. Fl. Hisp., on the faith of a specimen collected by Mr. J. Ball near Algeciras in Granada. I gathered it in 1903, on the picturesque range of Tibidabo, which is north of Barcelona, in Catalonia; I also met with it in 1904, near Costobelle, Alpes Maritimes. At Tibidabo it was associated with C. Linkii Schkuhr (C. distachya Desf.), the latter a new record for Catalonia. C. chatophylla Steudel, a subspecies in Nyman's Conspectus, is rightly, I think, put as a variety of C. divisa Huds. by Kükenthal. Nyman only records it from Barcelona. I saw it abundantly in grassy ground near the Escorial, and in several other parts of Spain. C. glauca Soop. var. leiocarpa Willk. (Prodr. Fl. Hisp. i. 123—"au spec. distincta?") occurred with Scilla peruviana near Algeciras; it appears to be worthy of subspecific rank. It is new to this district, and occurred at much lower elevation than previously recorded. C. divulsa Stokes, which is unrecorded by Nyman for Portugal, I gathered at Cintra in 1903.—G. CLARIDGE DRUCE.

ECOLOGY OF Montia fontana L.—While recently engaged in the study and ecology of some of our smaller streams, I was struck with the peculiarities of Montia fontana L. in its choice of position along the streams, and the apparent reasons for its choice. In the particular stream which I have selected as an example, M. fontana occurred in plenty at the source but was in scanty quantities and poorly developed elsewhere along its course. The reason for this does not seem to be very evident, unless it is caused by the stream having a too rapid fall, and the absence of boggy ground owing to the steep declivities of the banks. At the source, where it grew in large and luxuriant patches, two other reasons for its choice of sites seem to appear. M. fontana does not occur anywhere in the stream itself, neither does it occur in all the boggy slopes which surround it—in these it is only found where there is some slight flow of water, and not when the water is stagnant. The factors, therefore, which seem to be necessary for the growth of this plant appear to be a spongy bog with a very slight trickle of water. If the flow be too great there is no Montia; if the bog be stagnant there is likewise no Montia. Montia, however, grows at the side of the stream where the flow is broken and slight, and also in those bogs
in which water flows. I have observed these peculiarities in many of the streams on the Quantock Hills in Somerset, and it would seem that these two factors are and must be present wherever Montia fontana grows.—L. H. Riley.

Hypericum humifusum L. var. Liottardi Vill.—Two specimens in my herbarium, gathered by me at Darenth in Kent and at West Kirby in Cheshire respectively, agree closely with one another, but differ very considerably from the usual form of H. humifusum. Mr. Arthur Bennett kindly examined my plants, and wrote:—"The W. Kirby and the Darenth specimens seem to be the var. Liottardi Vill. described in Brébisson's Fl. de la Normandie (ed. 3, 61) as "Tige naine pauciflore; fleurs a 4 pétales." These plants are so remarkably characteristic that it seems desirable to record the fact of their occurrence in these counties.—E. Drabble.

Schistostega osmundacea.—At a recent meeting of the Liverpool Botanical Society, Mr. W. G. Travis exhibited specimens of Schistostega osmundacea which he had discovered growing in fair amount on sandstone rock. It is the more remarkable that it has so long escaped observation in this neighbourhood, seeing that it grows in fair quantity within the city boundary.—A. A. Dallman.

Sisymbrium pannonicum in Cheshire (p. 163).—Dr. Drabble's note reminded me that I observed three plants of this species in 1903, on Hilbre Island at the mouth of the Dee, only a few miles distant from that mentioned. I suppose that in both cases the plant must have spread across the Mersey from the Lancashire station, where it occurs in quantity.—A. A. Dallman.

Potamogeton salignus A. Fryer.—Probably one of the least likely places in which to look for the description of a new species would be among the addenda to the botanical article in a general county history. The Victoria County History of Devonshire (1906), the botany of which we hope to notice when space will allow, contains such a description, which we transcribe in order that it may be brought to the knowledge of botanists, especially foreign ones, who can hardly be expected to hunt through the history of English counties on the chance that a new species may lurk in some corner. The description runs:—"Potamogeton salignus, A. Fryer (probably a hybrid), differing from P. salicifolius Wolf. by the outermost vein of the leaves starting near the base of the mid-rib and not from the base of the margin of the leaves" (i. 129).

NOTICE OF BOOK.


This little volume is the first of a series of illustrated handbooks on succulent plants which M. Berger proposes to issue. It is nearly a hundred years since the publication of Haworth's Synopsis Plantarum Succulentarum (1812), and the number of
succulent plants which have become known in cultivation in the meantime is so large as to render advisable a separate treatment for different groups. The other handbooks which M. Berger has in preparation deal respectively with *Aloe* and allied genera, *Agave* and allied genera, *Mesembryanthemum* and *Portulacaceae*, *Crassulaceae*, *Cacti*, *Stapelieae* and *Compositae*.

The succulent *Euphorbias* include, in addition to the extreme cactus-like forms, a number of leaf-bearing species which are connected by a series of gradations with the small herbaceous type. They are well-marked xerophytes, found for the most part in Africa, inhabiting the deserts and steppes or dry mountain slopes in South Africa, and extending eastwards and northwards to the Red Sea. On the west they occur in Morocco, the Canary Islands, Cape Verde Islands, and the Azores, while on the east of the great centre species are found in Madagascar, Arabia, Socotra and India. Three species only have been described from America. With few exceptions only those species which are in cultivation are included by M. Berger. They number over a hundred, and are arranged in twelve sections; a description in German accompanies each species, and references are given to the original description and published figures. Each section or sub-section is preceded by a key. Several new species are described; some of these are known only in cultivation, but one, *E. Stapfiti*, is a recent discovery by Mr. Dawe, at Entebbe, in Uganda.

The book contains a number of useful figures, including many photographic reproductions of habit.

A. B. R.

*BOOK-NOTES, NEWS, ETC.*

We have received two packets (6d. each) of "The Country Press Pictorial Descriptive Postcards"—one of the boles and one of "natural figures" of British trees, with short descriptions of each by Mr. F. G. Heath. The pictures are well done and would be useful in schools: the letterpress is very brief and not equally commendable—we do not know why the name *Platanus orientalis* is replaced by the later and less familiar *P. acerifolia*, and we doubt whether the Lime was ever "called 'The Carver's Tree.'" But the pictures are worth the money.

An interesting feature of the Royal Agricultural Society's forthcoming show, to be held upon the Racecourse at Lincoln from the 25th to the 29th June next, will be the Forestry Exhibition. For competition special medals will be offered in fourteen different sections, including classes for specimen boards of various sorts of timber, specimens showing the damage done by insect pests, the comparative quality of timber grown on different soils, and the respective ages at which it reaches marketable size, the beneficial effects of pruning when well done, and the injurious effects when badly done. Plots of open ground-space will be allotted to firms of nurserymen for the exhibition of forest trees and shrubs; and
owners of forests and woodlands, and others interested, are invited to send specimens for exhibition. Forms of entry can be obtained on application to the Secretary of the Royal Agricultural Society, 16, Bedford Square, London, W.C.

If any testimony were needed as to the importance to students of Mr. Massee's Text-book of Plant Diseases (Duckworth & Co., 6s. net), it would be amply afforded by the call for the third edition, which has just been issued. There is no change in the text of the volume, but after the preface some eight pages have been interpolated, bearing on some new and serious outbreaks of disease. One on potatoes, due, the author says, to \textit{Edonomyces lepoides}, lives in the soil and causes rotting of the tubers. Another pest, also due to a fungus, of which we had something to say in our last issue (p. 168), is the famous American Gooseberry Mildew. Mr. Massee recognizes to some extent the serious nature of this disease, but still inclines to the opinion that it is no new thing. He again cites the testimony of "people in this country who state that they have known the disease for the last thirty, or even fifty, years," and their statements, he says, have not been proved to be wrong; he also jeers at the idea that the fungus had been introduced from America to the Continent, or from the Continent to this country. Mycologists on the Continent are of a different opinion; they hold, on what satisfies them as sufficient evidence, that the fungus was brought from America about the year 1900. Mr. Salmon tells us that in the district in Worcestershire where the disease has broken out, bushes had been imported from the Continent, and that these bushes were diseased, while the native-grown were healthy. Again, Mr. Massee says that in this country the disease, as a rule, confines itself to the tips of the branches; but that is certainly not the case in Ireland. From Co. Down it is reported that "the disease is very prevalent this year (1905), some growers having every bush affected, and the fruit rendered quite unsaleable." It is difficult to understand why Mr. Massee should insist on treating so lightly this very serious outbreak of disease; but we can join with him in heartily desiring that it may prove to be of but small importance, and that we may have no fear for the future safety of our gooseberries.

A short but interesting paper has just been published (in the \textit{Ohio Naturalist} for March) by R. F. Griggs on \textit{Cymathere}, a genus of \textit{Laminariacea}, which occurs on the north-west coast of America. Its only species, \textit{C. triplicata} J. Ag., grows abundantly at the Minnesota Seaside Station on Vancouver's Island, in sheltered nooks out of reach of the surge, forming in that respect a marked contrast to such genera as \textit{Postelsia} and \textit{Lessoniopsis}. \textit{Cymathere} only succeeds well in situations which are never uncovered by the tide—a fact that adds materially to the difficulty of collecting the young forms. Mature plants may reach a length of four metres and a breadth of twenty-two centimetres, though most plants are smaller than this. The sporangia occur at the base of the lamina on both sides, and they extend much further up the grooves than on the ridges of the plice. The stipe is wholly without mucilage.
ducts of any kind, but in the lamina there occurs an irregular circle of openings which may be considered mucilage ducts, although they do not possess any lining wall of special secreting cells. Indeed, these openings appear more like a breaking down of certain cells, and may, perhaps, be the beginning of degeneration. The inner cortex is developed into thick-walled strengthening tissue as is usual in the family, and it is of this tissue that the ribs on the folds are composed. In the pith-web the hyphal elements are very short, and the trumpet-hyphae are very scarce and poorly developed. The holdfast is simple, and the paraphyses are linear and unthickened, which, together with the simplicity of the structure in other ways, would point to a branching off from the main phylum of the Laminariaceae at an early date in their development. The long persistence and large size of the 1-layered primary lamina is a noteworthy feature of C. triplicata.—E. S. G.

Mr. E. J. Chittenden has published in the Essex Naturalist (xiv. 204–235) a list of The Mosses of Essex, with their distribution in the county. About two hundred species and subspecies, exclusive of Sphagnaceae, are enumerated. This total will doubtless be raised when the northern, eastern, and southern (with its chalk) parts of the county have been thoroughly searched; but the low elevation of the surface, the lack of diversity in the soil, the restricted rainfall, and the pernicious influence of London smoke are all factors which tend to diminish the moss-flora of the county. In connection with the poor rainfall the species produce fruit far less abundantly, and are less luxuriant in their vegetative growth than is the case in the moist counties of the west of England. The two chief rarities recorded for the county are Zygodon Forsteri and Grimmia communis.

We have received various suggestions concerning the List of British Seed-Plants, some of which will be incorporated in a second series of "notes" similar to those published in this Journal for March. Meanwhile Mr. Hanbury is actively engaged in the preparation of a new edition of the London Catalogue, and we understand that the Clarendon Press will publish a list drawn up by Mr. Druce, so that the nomenclature of our British species is receiving ample attention.

The Report of the Joint Meeting of Northern Literary and Scientific Societies held at Banff last summer contains what appears to be a full and careful list of the plants of the neighbourhood of Banff. We are glad to learn that its publication has stimulated the Banffshire Field Club to undertake the preparation of a flora of the county. Mr. John Yeats, Secretary of the Club, will be glad to receive any assistance; his address is 27, Castle Street, Banff.

The Report also contains a paper by Mr. William Wilson, of Terpensie, on "The Common Primrose," which is at least as extraordinary as any of those on which we have from time to time had occasion to comment—here is an example:—"Dealing now with our immediate subject, and to show the confusion which exists in standard works, we shall state that under Bentham we have a Family Primulaceae, with a number of genera, of which the second
is *Primula*. In the case of my friend Babington, again, we have the same as an Order which the other has as a Family, with Tribe number two as *Primulaceae*. The former is Family forty-six, and the latter is Order sixty-one. In the former case, again, we have the whole genus but one classed as one species, which are again divided into three races, as he calls them, of which Primrose *Primula veris* is used, while his other common species are the Mealy Primrose *P. farinosa* (Linnaeus), the Common Primrose, the Cowslip, and the Oxlip; but added to the last we have it stated that it is now generally believed that there is really a distinct species *P. clatior* of Jacquin, an Austrian botanist, and occurring in some of the eastern counties of England, but its normal features are declared to be Continental. Then as another species we have the Mealy Primrose, *P. farinosa* (Linn.), permeating all the great mountain ranges of Europe and Asia far into the Arctic regions, also in the Antarctic region of South America. In my opinion simply the formation of the plant under the conditions which it grows, and that is neither saying whether this form has developed from the normal type or that it in itself is the normal or original form from which our present day Primrose has emerged. The whole evidence seems to me to point out the one genus with so many races—that is, if following Bentham's style of classification."

By the death of Sir Thomas Hanbury, which took place at La Mortola, Ventimiglia, on March 9, horticulture has been deprived of one of its most enthusiastic and most generous votaries. The fame of his wonderful garden is worldwide, and his generosity in matters horticultural was shown in 1903 by his purchase and presentation to the Royal Horticultural Society of the late G. F. Wilson's garden at Wisley, in Surrey. He was born at Clapham, June 21, 1832. Though not himself a botanist, Hanbury did much to encourage botanical pursuits; the Istituto Botanico Hanbury in the Botanical Gardens at Genoa, founded by him, commemorates his practical interest in science. A *Flora Mortolensis*, an enumeration of the plants growing wild at La Mortola, published in 1905, was drawn up by his order by Mr. Alwin Berger, the curator of his garden.

The authorized English translation of Dr. Ludwig Jost's *Lectures on Plant Physiology*, by Prof. R. J. Harvey Gibson, of Liverpool, with 172 illustrations, will be issued very shortly by the Clarendon Press. The Press also announces the second volume of Dr. Paul Knuth's *Handbook of Flower Pollination*, translated by Prof. J. R. Ainsworth Davies, of Aberystwith, containing an account of all known observations upon the pollination of the flowers of plants of arctic and temperate zones.

The following is from *The Daily News* of April 3:—"Novelties in Orchid (sic).—Some interesting novelties were to be seen at the usual fortnightly floral meeting of the Royal Horticultural Society. The Hon. Walter Rothschild was awarded a silver Banksian medal for an especially fine specimen of the Doryanthis (sic) Excelsa. This particular plant is rarely seen in England, and is very difficult to flower. The exhibit, however, which was over 10 feet high, had a splendid flower."
Euphrasia Vigursii Davey.
EUPHRASIA VIGURSI, sp. n.

By F. Hamilton Davey, F.L.S.

(Plate 486.)

In the course of a few notes appearing in this Journal for 1906, pp. 181–2, I referred casually to a Euphrasia which I had gathered at Porth Towan, approximating towards E. Rostkoviana, but which the Rev. E. S. Marshall considered to differ materially from all described British forms. About four months after finding the plant, I sent several dried specimens to Prof. von Wettstein, at Prague, but as, unknown to me, the monographer of the genus Euphrasia had previously taken up his abode in Vienna, I have no doubt my package failed to reach him.

In September, 1906, while rusticking among the breezy uplands of the Dartmoor, South Devon, my friend, Dr. Vigurs, found an Eyebright with the same deep purplish or violet-blue flowers as my Porth Towan one, but much more slender in stem, branches, and leaves, more abundantly covered with gland-tipped hairs, and with the teeth of the leaves and bracts obviously more acute. About the same time another friend and enterprising co-worker, Mr. W. Tresidder, found in great abundance in Perranzabuloe parish, between Newquay and Perranporth, a plant in every detail agreeing with Dr. Vigurs’s. My impression was that we had two species awaiting identification, or at any rate a species and a variety; but, as the sequel shows, what we had under consideration were really only two forms of the same species. Through the kind services of Prof. Hans Schinz, of Zurich, I was able to place in the hands of Prof. von Wettstein a number of specimens of each form, and his report shows that our Euphrasia is not only new to Britain, but, as far as Prof. von Wettstein is aware, also new to science. The following is a translation of the Professor’s interesting letter:

“The plant gave me much trouble, and has forced me to go through the whole of my English Euphrasia material. The result of this exact examination is that I cannot make the plant agree completely with any one described species. It comes nearest to E. Rostkoviana, though it is not nearly so hairy, and is altogether smaller in all its parts, including the corolla. The only other Euphrasia with which it can be compared are E. brevipila and E. occidentalis Wettst. With E. brevipila it agrees in the size and colour of the flower; but it certainly is not that species, the glands of which are too characteristic and constant to be mistaken. E. occidentalis has still smaller flowers, and never such long-curved glandular hairs as the plant in question. Moreover, E. occidentalis belongs to the same group as E. curta and E. nemorosa.

“Now, how, then, shall the plant be named? To call it E. Rostkoviana is impossible; and without a knowledge of its distribution I should not care to describe it as a new form. The latter...
course is, however, more admissible than to call the plant *E. Rostkoviana*. I should probably consider it a form of *E. Rostkoviana*, and naturally leave the name-giving and publication to the discoverer. Should it be found that the plant is widespread, and takes in its distribution the place of *E. Rostkoviana*, its description as a species would be quite as admissible as that of *E. campestris* Jord.

"From typical *E. Rostkoviana* the new plant differs by its smaller flowers (at the longest 8 mm.), the darker shade of its corolla, its smaller leaves, and the slenderness and delicacy of all its parts. Some of these marks appear in other varieties of *E. Rostkoviana*, i.e. the small flowers in var. *minoriflora* Borh., as well as on some Alpine species, and the purple corolla in var. *rubra* (Baumg.); but, as I have said before, I know of no plant which combines these characters as the one under notice.

"There is another reason which makes the plant more interesting still. *E. Rostkoviana* is well-defined and constant in the centre of the district in which it is found, but it varies very much on the boundaries of that district. On the south-west border of the area *E. campestris* has formed itself; on the east and south-east border there is very often a kind which is very sparingly hairy. In the north-east of the area *E. fennica* Kihm. has formed itself out of *E. Rostkoviana*. It might be possible that in the north-west of the area of *E. Rostkoviana* such a representative plant as that now before me has been formed. This view is supported by the fact that I have several times seen extremely small-flowered *E. Rostkoviana* from England.

"Concerning the two specimens I have been dealing with, I believe them to be one and the same form, the absence or presence of gland-tipped hairs, as well as the difference in the time of flowering [June in one case, September—October in the other], being associated with certain local conditions."

It is deserving of record that, quite independently of Prof. von Wettstein's investigations, the Rev. E. S. Marshall recently arrived at the same conclusion. Writing me shortly after I had heard from the Vienna botanist, Mr. Marshall said:—"I have now your Porth Towan sheet, June 21st, 1905, and Dr. Vigurs's Roborough sheet, September 18th, 1906, side by side before me. Allowing for the difference of the season (and most of our plants flower from June to September), there does not seem to be any very material difference, except that the S. Devon plant has even the lowest leaves more or less glandular, and, indeed, the glands are more numerous throughout. ... Nor, in the specimens before me, is there any material difference in the leaf-outline; and both have very crowded leaves. ... I have always thought that these Devon and Cornwall plants came nearest to *Rostkoviana* of our forms, but were distinct from it and *brevipila*. Usually, at any rate in the South of England, *Rostkoviana* is a very well-marked and fairly uniform plant, though the size of the flowers varies (perhaps according to situation and luxuriance). As to the colour of flowers in *brevipila*, I have seen a great deal of that species, and
in N. Scotland have found it pretty brightly coloured, but I never yet came across flowers of *brevipila* with this deep violet-blue tint. . . . *E. Rostkoviana* I never yet found with decidedly blue flowers; they are normally whitish. The variation of outline in the leaves of your plant and Dr. Vigurs's is certainly no greater than in those of authentic *curta* var. *glabrescens*; I think that small early-flowering specimens tend to have them blunter than those of more developed late summer and early autumn."

I propose naming the new plant after Dr. C. C. Vigurs, who has long been an ardent student of British *Euphrasia*, and to whom, *inter alia*, we are indebted for the discovery of *Fumaria occidentalis* Pugsley.

**Euphrasia Vigursii**, sp. n. Stem erect or slightly ascending, simple or branched from or slightly above the middle, 5–25 cm. in height; branches opposite, ascending, rarely compound, covered with crisped, jointed, recurved pubescence, and (in the upper part) numerous more or less straight gland-tipped hairs. Leaves in early-flowering plants greyish-green, plicate-striate, oval-ovate, with 3–4 rounded teeth on either side; in late-flowering plants ovate, with 3–4 acute but not awned teeth on either side; all abundantly furnished with long gland-tipped hairs and numerous white setae. Bracts subopposite, or lower ones rarely opposite, upper about as broad as long with 4–5 triangular acute teeth on either side; under surface closely set with gland-tipped hairs. Spike at first short, ultimately, in typical specimens, lengthening to 15–20 cm. Calyx not enlarged in fruit, like the rest of the foliage densely set with gland-tipped hairs; teeth narrow-triangular, acute. Corolla rarely exceeding 8 mm., rich purplish violet with darker lines and three yellow spots on the lower lip, tube ultimately longer than the calyx. Capsule elliptical, about twice as long as broad, falling short of the calyx-teeth, emarginate, ciliate.

**Hab.** On killas or clay-slate in Cornwall and Devon. Cornwall (v.-c. 1): Exposed heathy slope near the sea at Porth Towan; Connor Downs. Goonhavern Moor and other places in Perranzabuloe parish, W. Tresidder. Devon (v.-c. 3): Roborough Downs, near Yelverton, C. C. Vigurs.

*E. Vigursii* differs from *E. Rostkoviana* by the more slender character of all its parts, its less-branched stem, smaller and less hairy leaves, shorter corolla, which is of a striking purplish violet instead of white or lilac; and its relatively shorter capsule. From *E. brevipila* it may be distinguished by its longer and greater abundance of gland-tipped hairs, by the teeth of its leaves being fewer and never awned, by its much deeper coloured corolla, the tube of which lengthens after the flower opens, and by its shorter and more distinctly emarginate capsule.

I take this opportunity of expressing my gratitude to Prof. von Wettstein, Prof. Hans Schinz, and the Rev. E. S. Marshall for their kind assistance.

**Explanation of Plate 486.** — 1 and 2, Early-flowering specimens of *Euphrasia Vigursii*, natural size; 3, Corolla, natural size; 4, Same, × 6;

SOMERSET PLANT-NOTES FOR 1906.

BY REV. E. S. MARSHALL, M.A., F.L.S.

My excursions in the county last season were but few; some of them were undertaken in the company of friends, to whom several of the discoveries are due. An asterisk denotes what is believed to be a new vice-comital record; districts 1, 2, 3, 4, 6 being in 5. S. Somerset, the rest in 6. N. Somerset.


Castalia alba Greene. 8. In a pond by the main Great Western line, east of Burnham.

Glaucium flavum Crantz. 2. Blue Anchor.

Fumaria capreolata L. (F. paludiflora Jord.). 2. Minehead.—F. Boreai Jord. and F. Bastardi Boreau (confusa Jord.). 2. Minehead; these are evidently, as I suggested last year (p. 116), the F. confusa and F. muralis of Murray’s Fl. Som. F. Boreai was also observed at 3. Cothelstone.

Barbara intermedia Boreau. 2. Roadside near Dunster, sparingly. 3. In considerable quantity by the road to Broomfield, north of New Cross, W. Monkton.

Brassica nigra Koch. 3. Hedges near Bathpool, W. Monkton.


Reseda Luteola L. 5. Dunball.

Viola sylvestris Lam. 1. Wood-border near Dulverton Station.

Polygala serpyllacea Weh. 2. Frequent near Minehead.


Sagina apetala Ard. 2. Dunster.—S. ciliata Fr. 3. Cothelstone Beacon (1080 ft.).


Malva rotundifolia L. 2. Washford.

Geranium Robertianum L. var. modestum (Jord.). 9. Uphill. I believe that the Cheddar plant of Fl. Som. should be referred to this rather than to var. purpureum.


Ulex Gallii Planch. 3. Near Kingston; a slender woodland state.
Ononis repens L. var. horrida Lange. 8. Sandhills north of Burnham. 9. Very scarce near Uphill, on limestone.

Medicago denticulata Willd. 5. Grassy slopes on the Lias, close to Dunball Station; evidently native here (in Fl. Som. it was classed as a colonist).

Melilotus officinalis Lam. 2. Pasture near Minehead; scarce, and perhaps only a casual.


Rubus hhamnifolius Wh. & N. 2. Common about Minehead.—R. Borreri Bell Salt var. dentatifolius Briggs. 9. Sandy coast, north of Berrow, in two somewhat different forms; named by Mr. J. W. White.—R. Koehleri Wh. & N. subsp. dasyphyllus Rogers. 2. Near Minehead; determined on the spot by Rev. A. Ley.—R. corylifolius Sm. var. cyclophylus Lindeb. 2. Washford.

Potentilla procumbens Sibthorp. 3. Cothelstone Hill.—P. procumbens x sylvestris. 2. Dunster, Ley sp. 8. Near Shapwick Station.

*Agrimonia odorata Mill. 2. Rev. R. P. Murray has lately identified as this species, not previously known for the county, a plant which he collected many years ago near Minehead.

Ilosa agrestis Savi, var. 9. On limestone, near Uphill. This appears to be the form recorded as var. inodora (Fr.) from several stations in Fl. Som. Major Wolley-Dod's note on it was as follows:—"A most interesting plant. The globose fruit at once removes it from sepium, agrestis (if they are really different), and inodora Fr., which Deséglise makes a synonym of sepium Thuill. I believe it to be the true arvatica Pug.; it belongs to the agrestis group"; though he afterwards wrote that the fruit was more ovoid in R. arvatica. I should not separate it from the sepium of Kent and Surrey as more than a variety.—R. obtusifolia Desv. 3. Between Cothelstone and Kingston.


Sedum rupestrre L. 2. The plant so named from the coast near Minehead (where it is evidently indigenous), Rev. A. Ley and I would rather refer to S. Forsterianum Sm.; we have gathered it wild, and watched it in cultivation. But it is not unlikely that both species may occur there, as I have S. rupestrre var. minus Syme from Lynton, sent by Mr. Honeybun.


Lythrum Salicaria L. 3. N. Curry.


E. Enothera. The plant long naturalized on the sandhills near Berrow struck me as being different from ordinary E. biennis L. Specimens were sent to Dr. Focke, who replied thus:—"Your Somersetshire E. Enothera indeed appears to agree with the form which I have distinguished as E. ammophila. It belongs, perhaps as a subspecies, to E. muralica, with which it has this point in common, that the leaf-rosette rises above the ground on a short stalk at the end of the first summer. In E. biennis there is no such overground stalk. In the size of its flowers E. ammophila comes midway between E. biennis and E. muralica. So far as I can see, your Somerset plant agrees in all material points with the E. ammophila which we have here; whereas I have received from the sandy Lancashire coast E. Lamarekiana, the flowers of which are larger than those of E. biennis." A note on E. ammophila will be found in Journ. Bot. 1905, p. 32. I believe that the evening primrose which grows in profusion on the Carmarthenshire sandhills near Pembrey and Kidwelly is the same thing.

Hydrocotyle vulgaris L. 9. Berrow; Weston-super-Mare.


Apium nodiflorum Reichb. fil. var. pseudo-repens H. C. Wats.

9. Damp sandy coast near Berrow. This (var. orectatum Bab., non DC.) is probably the "var. repens (Koch)" of Fl. Som.

Caulis maritimum L. 2. Two remarkably fine plants were seen on the shingly coast near Minehead Warren.

Caulis arvensis Huds. 2. Washford.—C. nodosa Scop. 3. Near Kingston.

Adoxa Moschatellina L. 1. Dulverton.


Rubia peregrina L. 2. Washford.

Galium Cruciatum Scop. 3. Cothelstone.

G. Molliago L. var. Bakedi Syme. 3. W. Monkton; named while growing by Mr. Ley, who also found it near Dunster.


Pariton.


Matricaria inodora L. var. salina Bab. 2. Blue Anchor.

S. Burnham.


Mariana lactea Hill. 2. Between Watchet and Washford; near Dunster. 3. W. Monkton (one plant, casual). 5. Abundant on the borders of a hanging wood at Dunball, where it has quite the appearance of a native on the Lias.

Hieracium Pilosella L. var. nigrescens Fr.  9. Cheddar Gorge.—Var. concinnatum F. J. Hanb. 3. Cotherstone Hill. 9. Cheddar Gorge.—H. Schmidtii Tausch. The Cheddar plant formerly so called has now been identified by Mr. Ley as his H. cyathis; the Minehead Schmidtii being referred by Rev. W. R. Linton to var. devoniense F. J. Hanb.—H. vulgatum Fr. The Cheddar plant placed here in Fl. Som. is H. sciaphilum Uechtr., a very distinct species.—H. rigidum Hartm. var. trichocalon Dahlst. 3. Hedge-banks below Buncombe Hill, Kingston. “Much like the English plant so named. The Scandinavian plant has longer, narrower leaves, less toothed, and many fine glands on the heads; so that your plant is not exactly it,” W. R. Linton, in litt. Nominally a new county record, but very likely included under H. tridentatum Fr. in Fl. Som. I greatly doubt the occurrence of true H. gothicum Fr. in this southern county, but have not seen the Ebbor plant which has been referred to it.—H. umbellatum L. Lane near Kingston; a form approaching var. coronopifolium Fr.

Leontodon hirtus L. 3. Cotherstone.

Taraxacum leviatum DC. 3. Wall-tops, Cotherstone; agrees very well with De Candolle’s description in the Prodrumus. What seems to be the same thing, dwarfed, ascends to over 1000 ft. on Cotherstone Hill.—T. palustre DC. 5. Low ground near Dunball, sparingly.—T. udum Jord. 1. Dulverton. 6. Plentiful near Chard; I saw no good T. palustre thereabouts.

Limonium vulgare Mill. 8. Bank of the Brue, between Burnham and Highbridge; locally plentiful.


Ligustrum vulgare L. 5, 8. Native on the Lias about Dunball and Puriton.

Vinea major L., V. minor L. 1. Roadside hedges near Dulverton; not native.

Blackstonia perfoliata Huds. 2. Washford.


Solanum nigrum L. 9. Coast, Berrow.

Hyoscyamus niger L. 9. Sandhills, Berrow; scarce, but probably native.


Euphrasia Roskoviana Hayne. 8. Shapwick.


Mentha longifolia Huds. 9. Roadside green near Berrow;
scarce, and probably escaped.—M. arvensis × hirsuta (M. sativa L.).
Scutellaria galericulata L. 9. Damp hollows of the sandhills, Berrow.
Lamium Galeobdolon Crantz. 3. Woods near Kingston.
Chenopodium polyspermum L. 3. Cheddon Fitzpaine; also very plentiful and fine by the roadside near Hestercombe.—C. mureale L.
9. Sandy ground near Berrow Church; scarce.—C. rubrum L.
3. W. Monkton; Cothelstone Beacon.
Beta maritima L. 2. Blue Anchor.
Atriplex dettoidea Bab. 2. Blue Anchor. 8. Burnham.—A. laciniata L. 8. Very sparingly at Burnham. This confirms the old record for the county; it was placed among "excluded species" in Fl. Som.—A. portulacoides L. 8. One fine patch on the muddy bank of the River Brue, near Burnham; very rare in Somerset.
*Salicornia stricta Dum. 8. With the last-named, near Burnham; small and poor. 9. Near the mouth of the Axe, Uphill; very characteristic, but by no means abundant. N.B.—Only aggregate S. herbacea L. is noted in Fl. Som.—*S. procumbens Sm. 8. In profusion on muddy ground near the Brue, between Burnham and Highbridge.—*S. ramosissima Woods. 8. Fine, but rather scarce, by the tidal Brue, Burnham. 9. Abundant near the mouth of the Axe, Uphill.—S. —?. 2. An interesting plant, small, branched, erect, grass-green tending to become red, was found at Blue Anchor; it is perhaps nearer to S. pusilla Woods than any other of our named forms, but tends towards S. ramosissima.
Suada maritima Dum. 9. Salt-marsh, Uphill, in great quantity.
Polygonum arviculare L. var. arenstrum (Boreau). 2. Coast near Dunster.—Var. ruviraqum (Jord.). 2. Blue Anchor, associated with var. agrestinum (Jord.).—P. Raii Bab. 8. Burnham; very scarce and local. Confirms the record for N. Somerset.
Ramex limosus Thbull. 9. Roadside green near Berrow; several plants were remarkably strong, fully four feet high.—R. pulcher L.
2. Roadside, Dunster.
8. Puriton.
Epipactis longifolia All. (pulastris Cr.). 9. Damp hollows of the sandhills north of Berrow.
Ophrys apifera Huds. 9. Berrow sandhills.
Iris foetidissima L. 5, 8. In plenty about Dunball and Puriton.
Galanthus nivalis L. 1. Native, I believe, by stream-sides near Dulverton; also at Edford Wood, near Frome (dist. 10). In both places it is associated with the daffodil.

*Allium Ampeloprasum L. 2. Minehead Warren; one good patch. It is browsed off by animals; and I only ascertained the species by digging up a few bulbs, which flowered the following summer. Certainly not an escape from cultivation in this case; I can only guess that seed may have been water-borne from Steep Holm, as it is the same form (*genuinum* Syme).


Juncus maritimus Lam. 9. Sandy coast, Berrow; I only noticed one plant, but was unaware at the time of its rarity in the county.

Luzula Forstleri DC. 3. W. Monkton; very local.

Typha latifolia L. 5. Dunball.

*Alisma lanceolatum* With. 9. In a tiny pool among the Berrow sandhills with *Chara vulgaris* L. A single fruiting specimen and several seedlings; very characteristic.

Sagittaria sagittifolia L. 3. N. Curry.

Potamogeton flabeliatus Bab. var. scoparius Fryer. 8. Brackish pool between Burnham and Highbridge, with *Zannichellia pedicellata* Fr.


Carex muralis L. 2. The large Dunster plant (Ref. No. 2925) mentioned last year proved to be only this (*C. contigua* Hoppe, *teste Kükenthal*).— *C. divulsa* Stokes. 3. Kingston; Cothelstone.—

*C. remota* × *vulpina* (*arillaris* Good.). 3. Roadside between Cothelstone and Kingston.—

*C. pumicola* L. 6. Near Chard, in plenty.—


Agrostis canina L. 2. Dunster.


Calamagrostis epigejos Roth. 8. Puriton.

Aira praecox L. 8. Shapwick.

Molinia caerulea Moench. 4, 6. Plentiful in moory ground near Chard.

*Catabrosa aquatica* Beauv. 2. Washford.

*Poa nemoralis* L. 3. Roadside between Cheddon Fitzpaine and Broomfield; Cothelstone.

Glyceria plicata Fr. 2. Washford; Dunster. 3. Trull; between Cothelstone and Kingston.—

*G. declinata* Bréb. 2. Greenaleigh, near Minehead. 6. Near Chard. Hitherto overlooked in the county, though likely to be frequent.—


Festuca Myuros L. 3. Cothelstone; Durston.—

*F. bromoides* L. (sciurioides Roth). 8. Shapwick.—

*F. rubra* L. var. *pruinosa* Hackel. 2. Coast near Greenaleigh Point. 9. Berrow; Clevedon, *Miss Livett* sp.—

*F. elatior* L. 3. Bathpool. 9. Cheddar.—

*F. arundinacea* Schreb. 2. A few plants on the pebbly beach at Blue Anchor.
ALABASTRA DIVERSA.—Part XV.

By Spencer LE M. Moore, B.Sc., F.L.S.

1. New or rare Acanthaceae from German South-West Africa.

Mr. T. G. Een's remarkable collection of Damaraland plants, acquired by the Trustees of the British Museum in 1879, has been mentioned several times in this Journal, and the recent discovery of a small overlooked bundle of Acanthaceae is sufficient warrant for the following further notice. No full list is given, but only the rarer plants are referred to, and those which seem to be new described.

Ruellioptis damarensis, sp. nov. Caule repente subtetragono sparsim albido-hispidulo mox minute puberulo, foliis oblongo-obtusis obtusiis basi in petiolum brevem angustatis subsessilibusve leviter crassiusculis pilis paucis patulis hispidis albis exemptis glabris, floribus seco ramulos brevissimos dispositis, bracteolis seu foliis floralibus lineari-oblongo-obtusis obtusiis calyci subaequilongis, calycis lobis inter se aliquanto inequalibus adusque ½ connatis linearibus obtusiusculis marginibus hispide ciliatis, corollae pro rata parvae tubo superne gradatim amplificato extus minute puberulo limbin lobis late obovatis obtusissimis, staminibus inclusis, antherarum loculis aequalibus oblongis basi mucronulatis, pollinis graminis sub-spheroideis circa 12-costatis 3-porosis, ovario late oblongo compressusculo apice microsperme puberulo ceterum glabro, stylo puberulo, ovulis qui in loculo sepissime 3, capsula oblonga juxta apicem attenuata apice obtusa.

Ranulii floriferi summum 1-0 cm. long. Internodia solemniter 2-0-3-0 cm. long. Folia 2-0 × 0-5 cm., in sicco dilute viridia; petioli lati, summum 0-3-0-4 cm. long. Bracteolae circa 1-0 × 0-2 cm., pilis hispidulis perpaucis exemptis glabres. Calycis tubus circa 0-4 cm., lobi 0-9 cm. long. Corolla extus puberula, in toto 1-5 cm. long; tubus 1-0 cm. long, basi 0-2 cm. faucibus 0-7 cm. diam.; lobi 0-5 × 0-45 cm. Filamenta vix 0-2 cm., antherae ægre 0-3 cm. long. Capsula circa 0-9 cm. long., 0-25 cm. lat. Semina quoque in loculo sæpe (nec nisi fallor sæpissime) 2, ambito oblongo-ovata, villosa, 0-3 cm. long.

Aberrant from the genus by reason of the calyx tubular below, the ovary cells with three ovules (instead of four), and the at least often 4-seeded capsules. Judging, however, from the enlarged ovules of flowers from which the corolla has already fallen, the
capsule should sometimes have six seeds, although I did not succeed in finding such.

**Petalidium damarense**, sp. nov. Fruticulosum ramulis subtetragonis his bene foliosis ut novelli arcte minuti, sumque petiolor vis oblongis vel anguste oblongo-ovatis, oblongis vis oblongo-ovatis minu nem nuncum emarginatis minute tomentosis deinde glabrescentibus, floribus in axillis solitariis subsessilibus, bracteolis ovato-oblongis obtusissimis membranaceis dilute viridibus vel fere decoloribus eleganter nuerosis extus minute sed dense griseo-pubescentibus intus dimidio abaxialii appresse pubescentibus, calyceis minute pubescentibus lobis antieis lanceolato-oblongis fere omnino coalitis lobo postico antico simili apice obtuso lobis lateralisibus reliquis fere aequalibus lineari-lanceolatis acuminatis, corollae tubo bracteolae excedente recto superne leviter ampliato ubi pubescente ceterum glabro intus in faucibus sericeo limbo bilabiato lobis obovatis obtusissimis, staminibus subincisis filamentis inferne piloso-puberulis antherarum loculis basi aristulatis, ovario glabro, stylo pubescente infra apicem glabro, stigmatic lobis inaequalibus, capsule ovoidea disperma.

Folia solemniter 1·5-2·0 cm. long., 0·5-1·2 cm. lat., in sicco viridi-lutescentia, juniora griseo-viridescentes; petioli sæpissime 0·2-0·6 cm. long., tomentosi. Bracteolae circa 1·0 × 0·6 cm. Calyceis tubus 0·15 cm., lobi laterales 0·5 cm., reliqui 0·65 cm. long. Corollae tubus 1·4 cm. long., inferne vix 0·3 cm., faucibus 0·4 cm. diam.; lobi 0·5 × 0·4 cm. Filamenta 0·3-0·4 cm. long.; antherae 0·22 cm. Ovarium 0·16 × 0·16 cm.; stylus 1·0 cm. long.; stigmatic lobus alter 0·15 cm., alter 0·075 cm. long. Capsula 1·0 cm. long., pallida, nitida.

The material consists of two small specimens, respectively 6 cm. and 8 cm. high, which appear to have been removed at their point of emergence from the soil, though certainty on the point is not possible. The only species they at all resemble is *P. physaloides* S. Moore, which, on account of its stellate hairs, is placed in a different position in the genus. Other points of difference are the narrower, greener, closely-pubescent bracteoles, the obtuse not acuminate hinder lobe of the calyx, and the longer tube of the corolla, &c.

*P. halimoides* S. Moore in *Journ. Bot.* 1880, 228.

This is the true plant (= *Barleria halimoides* Nees), and not *P. loranthifolium* S. Moore, which Mr. Clarke unites with the above, I cannot but think with insufficient warrant.

**Petalidium Eenii**, sp. nov. Fruticulosum, humile, caule e radice elongato lignoso ascendente cito ramoso ramis minute sed dense pubescentibus erubro foliosis novellis pilis simplicibus brevissimis arcte albo-tomentosis, floribus lineari-oblongis apice obtusis necnon pungenti bus basin versus in petiolum sat longum gradatim extenuata minute griseo-tomentellis, floribus in cymis paucifloris glomeratis digestis ramulorum fertillium foliis anguste linearibus acutis patule hispide ciliatis, bracteolis ovato-lanceolatis
breviter acuminatis membranaceis viridibus puberulis, calycis puberuli lobis anticus breviter connatis oblongis lobo postico lineari-lanceolato quam lateralia linearia paullulum longiore lobis omnibus acutis, corollæ tubo extus sursum pubescente bracteolæ paullulum excedente leviter incurvo superne dilatato faucibus intus pilis hispidis decurvis onusto limbo subbilabiato lobis brevibus oblongo-ovatis emarginatis, filamentis basi puberulis antheris aristatis, stylo inferne puberulo, stigmatis lobis inter se parum inæqualibus, capsula ——.

Plantula vix 10-0 cm. alt. Ramulorum sterilium folia modice 2-5-3-0 cm. long., 0-7 cm. lat.; petioli summum circa 1-0 cm. long., tomentosi; ramulorum fertile folia 1-0 × 0-1 cm., horum pili 0-1-0-2 cm. long. Bracteolæ vix 1-0 cm. long., 0-45 cm. lat., harum nervæ mediocriter promiunæ. Calycis lobus posticus 0-6 cm. long.; lobi laterales 0-55 cm.; loborum anticus pars libera modo 0-1 cm. long. Corollæ tubus 1-7 cm. long.; deorsum 0-2-0-25 cm. faucibus 0-8 cm. diam.; limbus 1-2 cm. diam.; lobi circa 0-4-0-5 × 0-45 cm. Filamenta longiora 0-5 cm., breviora 0-25 cm. long.; antheræ 0-3 cm. long. Stylus fere 1-5 cm., stigmatis lobus alter 0-125 cm., alter 0-075 cm. long.

Differs from P. Lepidagathis S. Moore, in the indumentum, the much smaller leaves of the barren shoots, the corolla-tube dilated above and closely pubescent, &c.

Blepharis grisea, sp. nov. Humilis ramis e radice elongato valido sparsissime ramuloso ascendentibus fastigiatis sursum ramulos fertiles breves foliosos minute pubescentes gignantibus et ramulos abbreviatis steriles basi spiniferos, foliis sæpissime oppositis raro approximatis et tunc vix inæqualibus linearis-oblongis obtusis apice ipso breviter spinosis vel mucronatis interdum vero inermibus basi in petiolum brevem leviter angustatis margine sparsim dentato-spinulosis vel integris subcoriaceis minuto grisseo-pubescentibus, ramulorum sterilium spinis rigidis eti attenuatis simplicibus patentibus quam folia sæpissime brevioribus, floribus in spiciis abbreviatis ramulus terminantibus pauci- (2-3-) floribus disponitis, bracteis pro spica paucis sæpissime oblongo-ovatis et foliis oppositis extimis oblongis) apice spinis 3-5 patentibus quorum laterales debiliores sunt necnon breviores quam intermedia corona-tatis decoloribus prominenter 5-nervosis minuto grisseo-pubescentibus, bracteolis anguste linearibus acutis margine ciliatis a bracteis superatis, calycis minute pubescentis lobo antico oblongo-ovato dentibus acutis quam posticus ovato-lyratus apice emarginatus breviore lobis lateralis lanceolatis acutis, corollæ calycem bene excedentis labio antico 3-lobo lobis oblongo-ovatis emarginatis adjecto utrinque dente parvo obtuso, ovario ov operative oblongo apice breviter angustato glabro, stylo inferne puberulo ubi aliquantulum incassato, capsula ——.

Planta circa spathanea. Folia 1-5-2-5 cm. long., 0-4-0-7 cm. lat., in sicco viridi-grisea; costa centralis crassa, relicque haud aspectabiles. Spinae ramulorum sterilium sæpissime 0-7-1-7 cm. long. Spica (corollis inclusis) 2-5 × 1-5 cm. Bracteae (limbus) 1-2 × 0-7 cm.; harum spina intermedia 0-6-0-7 cm., laterales
0-2-0-4 cm. long.; extimae circa 0-6 × 0-8 cm.; harum spina terminalis 1-0 cm. long. Bracteolae 0-7 × 0-1 cm., eminenter 1-nervose. Calycis lobus anticus 1-1 cm. long., ejus dentes lineari-lanceolati, 0-2 cm. long.; lobus posticus 1-7 cm. long., inferne 0-6 cm., superne 0-8 cm. lat.; lobi laterales 0-7 cm. long. Corolla 2-5 cm. long.; tubus 0-4 cm., limbus summum 1-1 cm. lat.; lobi 0-4 cm. long. Ovarium 0-2 cm., stylus 1-0 cm. long.

Recognized by the grey pubescence, the linear-oblong entire or weakly spinous leaves, the few-flowered spikes, and the bracteoles.}

**Barleria (§ Prioritis) Eenii**, sp. nov. Fruticulosa cane tetragono primo puberulo cito glabro inferne nudo superne paucifolioso, foliis parvis brevipetiolatis oblongis apice obtusis (non-nunquam emarginatis) ipso mucronatis basi paullo angustatis pilis pannis strigosis appressis costæ costulisque adspersis exemptis glabris ereberrime glandulosis in sicco viridi-lutescentibus, spinis interpetiolaribus dum adsint brevibus rectis debilibus, floribus in pseudopiscia terminali abbreviata pauciflora dispositis, bracteis calycem aequantibus vel ab iis superatis spathulato-oblongis apice obtusissimis ipso mucronatis fac. inf. costis costulisque pilis strigosis appressis copiose onustis, bracteolis lineari-subulatis bracteas sepe subaequantibus debilibus glabris, calycis lobo antico bidentato ut lobi posticus sursum gradatim attenuatus ovato-lanceolato lobis lateralibus reliquis aequalibus vel etiam paullo longioribus lanceolatis sursum attenuatis omnibus pilis glandulosis passim donatis, corollæ flavæ tubo brevi sat attenuato juxta medium paullo contracto basi aliquanto dilatato limbo subbilabiato lobo antico quam reliqui alius soluto lobis omnibus oblongo-ovatis obtusissimis, staminibus 2 exertis 2 et filamento brevi et anthera parva subrotunda sistentibus staminodio minimo, ovario ovoideo sursum attenuatum glabro, stylo puberulo, stigmatibus lobis subconfluentibus, ovulis secundi rudimento minimo.

Folia 2-0-4-0 cm. long., 1-0-1-5 cm. lat., membranacea; costæ secundariae utrinque 4, ascendenti-arcuatae, utrinsecus parum eminentes; petioli lati., fac. sup. parum excavati, circa 0-3 cm. long. Inflorescentia circa 2-0 cm. long., corollis neglectis paullo ultra 1-0 cm. diam. Bracteæ 0-8-1-3 cm. long., superne 0-5 cm. lat., dorso carinate, longitrusum 3-5-nervose. Bracteolae ± 0-5 cm. long. Calycis lobis 1-0 cm. long., vel paullulam ultra. Corollæ tubus 1-1 cm. long., basi 0-85 cm., paullo supra medium 0-2 cm., faucibus 0-3 cm. diam.; lobus anticus 1-2 cm., lobi postici 0-8 cm. long., omnes circa 0-65 cm. lat. Filamenta stam. 2 ad 0-9 cm. supra basin corollae tubi inserta, 1-6 cm. long.; antheræ 0-3 cm. long.; stam. 2 filamenta vix 0-1 cm. long., antheræ 0-08 × 0-07 cm.; staminodium 0-04 cm. long. Ovarium 0-4 cm., stylus 2-2 cm. long.

A distinct species, known by the short interpetiolar spines and the oblong-spathulate bracts, together with the small glandular calyx with its anticus lobe broader above and 2-toothed at the top.

**Barleria (§ Acanthoidea) jubata**, sp. nov.—Verisimiliter fruticulosa ramis validis crebro foliosis pilis simplicibus dense albo-pubescentibus, foliis parvis oblongis vel oblongo-obovatis apice obtusis vel obtusissimis ipso spinula rigida terminatis basi in
petiolum brevem paulllo angustatis utrinque præsertim in nervis plus minus hispidulis subcoriaceis, cymis brevibus densis paucifolis ramulis abbreviato albo-pubescentibus coronantibus, bracteis bracteolisque linearibus rarius anguste lanceolato-linearibus apice longe spinoso-acuminatis margine spinis rigidiusculis patentibus indutis utrinque pubescentibus, calycis pubescentis lobo antico postico similis sed paullulum brevire ovato-oblongo apice integro margineque valide spinoso longitrorsum nervoso lobis lateralis quam reliqui brevioribus lineari-lanceolatis acuminatis dorso pilis glandulosis simplicibus intermixtis onustis, corolla mediocri verisimiliiter corulea tubo superne pubescente paullo supra basin leviter constricto sursum paulllo dilatatato faucibus angusto lobis inter se subaequalibus obovato-oblongis emarginatis juxta basin ciliatis, staminaibus fertilibus breviter exsertis horum filamentis incrassatis deorsum pilosis, staminodiis 2 basi dilatatis et ciliatis antheris minimis cassis terminatis staminodio terto reliquis similis sed anthera orbo, ovario ovoide compresso glabro, stylo ima basi pubescente, stigmatic lobis subconficientibus.

Folia 1·2—2·5 cm. long., 0·8—1·5 cm. lat., utrinsecus cystolithis admodum perspicuis ditissime donata, in siccè dilute viridia; petioli 0·25—0·5 cm. long., dense albo-pubescentes. Cymæ circa 2·5 × 2·5 cm. Bractee bracteolaeque modice 1·8—2·5 cm. long., inferne plerumque 0·2 cm. lat., superne circa 0·1 cm.; harum spine terminalis circa 0·5 cm. long., spine laterales sepissime 0·2—0·4 cm.; costa centralis fac. inf. valde prominens. Calycis lobi antici nigræ 2·0 cm. long.; lobis posticis 2·3 cm., spinis lateralibus 0·2—0·4 cm. long. neglectis summum 0·7 cm. lat., ut antici pallidus et nervis utrobiique perspicuis percursus; lobi laterales 1·3 cm. long., intus puberulii. Corollæ tubus 1·8 cm. long., ima basi 0·4 cm. paull supra basin 0·3 cm., superne 0·45 cm. lat.; lobi circa 1·0 × 0·6—0·7 cm. Filamenta 2·0 cm. long., deorsum 0·1 cm. sursum 0·06 cm. lat.; antheræ 0·5 cm. long. Staminodia 0·35—0·4 cm. long. Discus 0·225 cm. alt. Ovarium nitens, 0·3 × 0·2 cm.; stylus fere 3·0 cm. long.

Undoubtedly nearest B. elegans S. Moore, but different in the dense pubescence, the small leaves, the narrow bracts and bracteoles, &c.

B. lancifolia T. And. in Journ. Linn. Soc. vii. 28.—This very rare plant, hitherto known only by a small scrap in the herbarium of Trinity College, Dublin, is the subject of a note in the Journal of Botany, 1902, p. 407. My satisfaction in lighting upon several good specimens undoubtedly referable to this species will readily be understood. The largest of these specimens is nearly 25 cm. long.; all of them agree excellently with Anderson’s description and my own drawing made from the type, except that the corollas are not quite so wide at the throat (0·8 cm. instead of 1·0 cm.); one specimen, however, has a corolla apparently somewhat more advanced than the rest, and of the typical dimension.

Monechma genistifolium C. B. Cl. in Fl. Trop. Afr. v. 218.—This is a species restricted to the tropical part of German South-West Africa.
Monechma eremum, sp. nov.—Caule lignoso erecto sursum ramoso deorsum nudo, ramulis patule piloso-hirsutis foliosis, foliis brevipetiolatis linearibus vel anguste lineari-oblongoellatis obtusis utrinque minute pubescentibus firme membranaceis, floribus solitariis axillaris sessilibus sepissime ex ramulorum brevium axillis superioribus ortis, bracteolis quam calyx 4-merus leviter brevioribus spatulatuis acutis ut calycis lobi anguste lineari-lanceolati acuti glanduloso-pubescentibus necnon margine ciliatis, corollae calycem breviter excedentis tubo lato superne paullulum ampliato extus puberulo labio antico amplo breviter 3-lobo quam labium posticum ovatum retusum longiore, staminibus breviter exsertis antherarum loculis inter se subaequalibus inferiore calcare debili incuro quam se ipsum breviore instructo, ovario anguste ovoideo apice piloso-puberulo, stylo superne piloso, ovulis pro loculo 2 quorum superiore casso, capsula anguste obovoidea obtusa basi compressa superne piloso-puberula 2-sperma.

Planta verisimiliter saltem bispithamea. Folia circa 1-0 cm. long. (raro 1-5 cm. aequantia), 0-3-0-4 cm. lat.; petioli 0-1-0-3 cm. long. Bracteole 0-5-0-6 cm. long. Calyx totus 0-6-0-7 cm. long.; lobi 0-45-0-55 cm. long. Corolla tota 1-0 cm. long.; tubus 0-5 cm. long.; basi 0-2 cm., faneibus 0.35 cm. diam. Labium anticum 0-5 x 0-7 cm.; lobus intermedius rotundatus, 0-175 x 0-3 cm.; lobi laterales oblongo-ovati, 0-2 cm. lat. Antherarum loculus sup. 0-075 cm. inf. 0-1 cm. long., hujus calcar 0-05 cm. long. Ovarium 0-12 cm. long.; stylus 0-45 cm. Capsula 0-6 cm. long., pars compressa sperma 0-2 cm. long. Semina subrotunda, levia, humectata paullo alta 0-2 cm. diam.

 Apparently nearest M. Nepeta C. B. Cl. (which is said in Fl. Trop. Afr. v. 219 to have five calyx-lobes, although there are only four), from which it can be told by means of the compact habit, the smaller and narrower leaves, larger corolla, longer capsule, &c.

Monecha platysepalum, sp. nov.—Caule lignoso folioso minute pubescente deinde fere glabro, foliis parvis subsessilibus oblongis utroboque obtusis (basi sepe leviter rotundatis) fere a basi 5-nervibus firme membranaceis facieibus ambabus scabriusculis, floribus in spicis axillaris admodum abbreviatis contiguiss perpauci floris dispositis, bracteolis spatulato-oblongis acutis quam calyx plane brevioribus, calycis glabri lobi 5 inter se fere aequalibus oblongo-ovatis apice breviter acuminatis ut bracteae mediocir viridibus euterum decoloribus, corollae tubo extus minute pubescente superne leviter dilatato, labio postico subquadrate apice truncato erosulo labii antici lobi lateralis anguste obovato-oblongis lobo intermedio ovoato omnibus retusis, staminibus exsertis antheris inter se aequalibus loculo inferiore calcare sibi ipsi æquilongo recto necnon obtuso instructo, ovario ovoideo sursum puberulo, stylo puberulo, ovulis quve in loculo 2 quorum uno crudo, capsula glabra inferne angustata et compressa superne ovoidea apice obtuse acuta 2-sperma.

Planta verisimiliter humilis (circiter ½ spithamea). Folia modica 1-5-2-0 cm. long., 0-6-0-7 cm. lat., in sicco lustucenti-viridia; petioli 0-1-0-2 cm. long. Spicæ corollis haud exemptis circa,
10 cm. long. Bracteolae 0.4 × 0.13 cm. Calycis lobi imbricati, 0.55 cm. long., 0.2 cm. lat. Corollæ tubus intus passim pilosopubescens, 0.6 cm. long., basi 0.2 cm. faucibus 0.3 cm. lat.; labium posticum vix 0.5 cm. long., basi 0.4 cm. lat.; labii antici lobi laterales 0.35 × 0.2 cm., lobus intermedius 0.35 × 0.3 cm. long.; palatus intrusus. Filamenta inferne pilosa, cæge 0.5 cm. long.; antherarum loculi 0.1 cm. long. Ovarium 0.175 × 0.1 cm., stylus 0.7 cm. long. Capsula in toto 1.1 cm. long., pars seminifera 0.5 cm. long.

A very distinct species, at once recognized amongst its allies by the short oblong obtuse leaves, together with the relatively broad bracteoles and calyx-lobes. It stands nearest to M. hereroense C. B. Cl. (Justicia hereroensis Engl.), a species not represented in this country, which, inter alia, has lanceolate sparsely pilose leaves, linear lanceolate bracteoles and calyx-lobes, and a considerably longer corolla, pilose outside.

M. NAMAENSE C. B. Cl. in Fl. Cap. v. pt. i. 73.—Now first admitted to the Tropical African Flora.

Megalochlamys Marlothii Lindau in Engl. Bot. Jahrb. xxvi. 345, var. ?—If this be a correct determination, the specimens are depauperate ones, their leaves, for instance, being only half or one-third as large as those of the type. But the specimens are not good ones, and I think it safer to name them as above.

2. Note on a small collection from Somaliland.

Mr. G. W. Bury, whose collection is the subject of this note, botanized at Berbera and the Wagga Mountain. Among the Gamopetala is one species believed to be new, and there are a few rarities worthy of record.

Rubiaceæ.


Plantaginææ.


Solanaceæ.

Solanum carese Dun. in DC. Prod. xiii. pt. i. 105. Wagga Mountain. (This species was also collected by Lord Delamere at Dadáro and Lé, alt. 3700 ft.)

Acanthaceæ.


Verbenaceæ.

Lantana concinna Bak. in Kew Bull. 1895, 223. Berbera.

Labiatæ.

Orthosiphon (§ Virgati) Buryi, sp. nov. Ramis foliisque pube densa griseo-brunnea obductis, foliis manifeste petiolatis parvis ovatis obtusis apice induratis basi rotundatis leviter cordatis margine crenatoserratis, spicastris racemiformibus folia longe excedentibus piloso-pubescentibus, verticillatis circa 5-floris, bracteis parvulis oblongo-ovatis breviter acuminatis extus piloso-pubescentibus coloratis diu persistentibus, pedicellis gracilibus calyci subaequilongi cito decurrvis piloso-pubescentibus, calycis parvi anguste campanularis piloso-puberuli intus calvi lobo postico ovato-rotundato acuto colorato lobis residuis linearis-lanceolatis lateralis acutis quam antici acuminati paullulum brevioribus, corollae parvae pubescentis tubo calycem fere duplo excedente superne leviter amplificato labiis latis tubum plus quam semiaequantibus postico 4-lobo lobis breviter rotundatis, staminibus subinclusis, stigmatibus angustis clavellatis.

Hab. Berbera, Somaliland; G. W. Bury. (Also at Kew, Somaliland, without exact locality; Major Appleton.)

Radix sat validus, circa 10-0 cm. long., sparsim fibrilliferus. Foliorum limbus ± 1-0 × 0-8 cm., firme membranaceus; hujus costae fac. inf. prominentes; petioli 0-2–0-5 cm. long. Spicastrum nonundum profecto evolutum 6-0 cm. long. Bracteae ± 0-2 cm. long. Pedicelli 0-3–0-4 cm. long. Calyx floresceus humectatus 0-5 cm. long., basi vix 0-2 cm. superne 0-3 cm. lat.; lobus posticus 0-2 × 0-2 cm.; lobi laterales 0-1 cm., anteci 0-175 cm. long. Corolla tubus 0-8 cm. long., basi 0-15 cm. superne 0-25 cm. lat.; labium anticum 0-5 × 0-4 cm., posticum 0-5 × 0-5 cm., hujus lobi circa 0-15 × 0-15 cm. Anthere reniformes, 0-08 cm. lat.

Near O. mollis Bak., from which it differs in the comparatively long and slender pedicels, the calyx with longer teeth, the longer corolla, &c.

The two specimens seen are both of them scraps, and without fruiting calyces.

Leucas paucijuga Bak. Berbera.

(To be continued.)

TWO NEW JAPANESE POTAMOGETONS.

By Arthur Bennett.

I have long wished I could connect my friend Fryer's name with a plant of the genus he so well understands, but the hope of doing so with British or European specimens (except hybrids) seems remote. So I here give his name to a fine species from Japan that has remained without a name because of the want of material, for the reason that as time goes on greater caution is needed in multiplying species. I am now enabled to frame a description, Dr. Rendle having sent me an example to name from Nippon, and the Abbé Faurie a good specimen from Corea. It was gathered as long ago as 1863 by Maximovicz (Herb. Baagoe!), and has passed Journal of Botany. Vol. 15. [June, 1907.]
under the name of *P. natans* L., as so many specimens of its nearest ally *P. amplifolius* Tuck. have in America. It has the extraordinary development of the stipules noticeable with the American plant; but the lower leaves are much less developed than in that species, although the plants are alike in facies.

**Potamogeton Fryeri**, sp. n. *Stems simple (?), 0·5–1 m. long, stout. Lower leaves mostly lance-linear, variable, often folded and arcuate (as in *amplifolius*), 7-veined, the central one compound with elongate-areolation, with numerous cross-veins, the outer ones often branched. Upper leaves (floating) long petioled, 1–1·5 dm. long, oblanceolate to elliptical, the blade decurrent on the petiole, without a joint, acute or subacute, 21–31-veined, connected by very numerous branched sub-veins, the whole surface of the leaf with irregular netted areolation. Stipules 5 cm.–1 dm. long, subacute, very strongly striated with numerous (31) veins with cancellate areolation between; even when the stipules are nearly decayed the thick frayed fibres are persistent. Peduncles 1–1·5 dm. long, swelling upwards, but contracted at the base of the spike. Spikes 2 cm. long, dense-flowered, sepals (perianth-segments) orbicular. Fruit (not quite mature) 5 mm. long by 2·5 mm. broad, without teeth or bosses; ventral face straight, with a subacute style (1·5 cm. long) slightly curved to the dorsal face; dorsal face rounded, central keel (carina) prominently and sharply winged, the two outer keels slightly winged. Embryo semi-annular slightly constricted in the middle, very large, almost filling up the fruit with the exception of the style-base and fruit-base.


Plant in appearance between *P. natans* L. and *P. amplifolius* Tuck., differing from *P. amplifolius* and *P. pulcher* Tuck. by the winged fruit, subacute ventral face, the embryo only semi-annular, and the much smaller lower leaves; and from all other species by the winged fruit and semi-annular embryo. When the wings are so developed it is a usual condition in the genus that they are crested or waved, but this is not so here. The stipules are remarkable for their stoutness and rigidity, with persistence of the fibrous parts; and the floating leaves for their structure, the netted areolation is very close and compact, making the leaf very strong.

The fruits are (so far as I know) very remarkable for the expanded wing of their dorsal face; this must develop very rapidly towards the maturing of the fruit, as in the earlier stages I can find no distinct appearance of it.

**Potamogeton Franchetii**, sp. n. Some time before his death Herr Baagoe, of Næstved, Denmark, sent me a drawing and specimen of a *Potamogeton* which M. Franchet had named "*P. natans* L." I at once recognized it as one sent me by M. Faurie, of which there is a poor specimen in the Kew Herbarium. We agreed it should bear M. Franchet's name, and that Herr Baagoe should describe it;
but he died before he could carry out his intention, and I am informed that no description can be found among his MSS., so it remains for me to do so.

In facies *P. Franchetii* is like large examples of *polygononifolius*, and also like some flaccid forms of *P. natans*; but the fruit and structure, &c., of the leaves are quite different. It may occur in herbaria under the name of *natans* or *polygononifolius*.

**Stems** 9–12 in. high, with moderately stout stems. **Leaves** lanceolate to lanceolate-ovate, 1 3/4–2 1/2 in. long x 3/4–1 in. broad on petioles 2 1/2–4 1/2 in. long, semi-coriaceous, without the joint at the base as in *natans* L. **Stipules** acute, 1–1 1/2 in. long, semi-persistent. **Spikes** 1 1/2 in., on peduncles 2 1/4–3 in. long, slightly diminishing upwards. **Fruit** large (three times as large as in *polygononifolius*), 1 3/4 lin. long x 1 1/4 lin. broad. Ventral face slightly rounded, dorsal lunate, shouldered so that the apex is nearly level with the style, with a sinus between. Central carina slightly produced, with a semi-acute wing, laterals nearly obsolete, base of the fruit with two non-prominent bosses. **Fruit** oblique-obovate, semi-compressed.

**Habitat.** Japan: Yososka, in orizetis inundatus (Nippon), no. 1844, 1866–1871, A. Franchet (Dr. Ludv. Savatier, Plant. japon.); Hirmnushria, Mus-aski, July, 1899, T. Makino, Herb. Zurich (Dr. Schrötzer); Dickson (1881) (unlocalized), in Herb. Kew, no. 339.

---

**NOTE ON *LYONSDA*.**

**BY JAMES BRITTEN, F.L.S.**

A comparison of the specimens of *Lyonsia* in the National Herbarium with Robert Brown's types and MSS. has led to the discovery that *L. straminea* of his *Prodromus* has been misunderstood by all recent writers, the name having been misapplied by them to a plant distinguished by F. von Mueller as *L. reticulata*.

When establishing the genus (in Mem. Wern. Soc. i. 66) Brown named no species, but in his *Prodromus* (p. 466) he added the name *L. straminea*, without description but with an indication of the localities where he had seen it growing. Alphonse De Candolle (Prodr. viii. 401), adopting Brown's species, gave a description of the plant drawn up from specimens communicated by Allan Cunningham.

In 1860 Mueller (*Plants of Expedition to R. Burdekin*, 16) distinguished a second Australian species, *L. reticulata*, which he described as having the "lobes of the corolla clothed inside entirely with reversed hair," thus differing from his notion of *L. straminea*, of which he says "flowers bearded only distinctly at the faux"—a character which he shows clearly in his figure lettered *Lyonsia straminea* R. Br. (Ic. Pl. Vict. t. 58 (1861–5)). Bentham (Fl. Austr. iv. 321 (1869)) adopts Mueller's names for the two plants, adding to *L. reticulata* the note: "This species was confounded with *L. straminea* by R. Brown and others, but well distinguished by F. Mueller. A. De Candolle's description of *L. straminea* in
the *Prodromus* is taken from A. Cunningham's specimens of *L. reticulata*.

It is however evident from the material in the National Herbarium that Mueller was incorrect in his interpretation of Brown's *L. straminea*; this of course is not remarkable, seeing that, as has already been stated, Brown published no detailed description of the species; but it is strange that Bentham, who consulted Brown's specimens—and might have consulted his MSS., though I do not think he did so—should have adopted Mueller's determination, especially as he (Bentham) had observed that De Candolle's description referred, at any rate in part, to Mueller's *L. reticulata*.

It is the specimens from Hunter's and Williams Rivers, which Bentham places under *reticulata*, that Brown himself has labelled "*Lyonsia straminea* Prodr. 466"—and it is these which he describes in his MSS. under that name. Moreover the very beautiful drawing by Ferdinand Bauer, named (doubtless on Brown's authority) *L. straminea*, is of the same plant, the characteristic clothing of the lobes of the corolla being admirably shown. An authentic specimen of Allan Cunningham's *L. straminea* also (as rightly understood by De Candolle) belongs here; and, if further confirmation be needed, it is furnished by the exact correspondence of all with specimens of Mueller's *L. reticulata* named by himself, collected by Beckler at Hastings River on the expedition to the estuary of the Burdekin.

On the other hand, Brown's specimens from Port Dalrymple, which Bentham accepts as his *L. straminea*, were never so named by Brown himself. The plant is separately described though not named in his MSS., and his label has "*Lyonsia cfr. stramineam*.

It is thus clear that the name *straminea* must stand for the plant to which it originally belonged, while that incorrectly so considered by Mueller and Bentham must receive a new name. I propose to call it *L. Brownii*, Brown having first recognized the two species. The two plants will stand as follows:—

*Lyonsia straminea* R. Br. Prodr. 466 (1810), MSS. ! et herb. !; A. DC. Prodr. viii. 401 (1844); Ferd. Bauer, Ic. Austral. 100 !


"Ad littora Newcastle Inlet and ad ripas fluv. Hunters Patersons et Williams Rivers, Nov. 1804"; R. Br. MSS. et Herb. no. 2866 ! (pro maxima parte); "Keppel Bay," R. Br. Herb. no. 2867 !

*L. Brownii* (nom. nov.).


"*Lyonsia cfr. stramineam*. In Upper Island, Port Dalrymple, Jan. 1804." R. Br. MSS. et Herb. no. 2866 (pro parte) !
A NEW BRITISH MOSS (FISSIDENS ALGARVICUS Solms).

By H. N. Dixon, M.A., F.L.S.

In 1868 Graf zu Solms-Laubach described a new species of Fissidens gathered by himself two years earlier near Silves, a town of Algarvia, in the south of Portugal, under the name of F. algarvicus. Its specific rank is maintained by Schimper in the second edition of his Synopsis, and by most recent writers, but some subsequent authors have referred it as a variety severally to F. pusillus Wils. (Boulay) and F. incurvus Starke (Husnot). Mitten (Journ. Linn. Soc., Botany, xxi. 555), referring it to F. viridulus Hedw., states that it is the same as F. intralimbatus Ruthe, but gives no reasons for that assertion. (He refers to it as "F. intralimbatus Ruthe, Hedwigia, 1870, re-described by Schimper as F. algarvicus C. de Solms; but there are no specimens so named in his herbarium," apparently overlooking the fact that F. algarvicus was originally described by Solms-Laubach himself two years prior to Ruthe's publication of F. intralimbatus.) F. Sardagnai Vent. (Rev. Bry. 1883, 93) is also compared by its author with F. algarvicus, which, however, he considers clearly distinct. Finally, Limpricht (Laubmoose... iii. 671) says of F. Orriti (Lindb.) Braithw. (referred already by Mitten to his F. tequendamensis), "Vielleicht identisch mit F. algarvicus Solms."

One need have a pretty taste in Gordian knots to attack such a problem spontaneously, and for my part its solution might well have been left to our continental confrères in bryology, but for the recent discovery of F. algarvicus in Britain. Early this spring Mr. G. B. Savery sent me a few interesting mosses gathered by himself and his brother near Exeter, and among them was a small Fissidens growing on the red sandy shale of that neighbourhood, queried as F. pusillus. A careful examination showed that it was certainly F. algarvicus Solms, of which I possessed the specimen from Cherbourg, leg. Corbière, issued in the Musci Gallici, No. 812; and I was subsequently able to compare it with an authentic specimen in the British Museum Herbarium from Solms-Laubach himself— an extremely meagre specimen, but sufficient to confirm the identity of our British plant, and rather curiously growing upon a similar deep red clayey soil. The question then arose as to the true position and relationships of F. algarvicus, as to which I must confine myself to a brief statement of the conclusions I have arrived at, without attempting to justify them with any degree of completeness.

F. algarvicus is, I am convinced, a good species, quite distinct from either F. viridulus, F. incurvus, or F. pusillus. The most obvious character, distinguishing it indeed from all our smaller species of Fissidens, is the gradually tapering, acuminate leaf-points. Other species, e.g. F. pusillus, often show a gradual narrowing of the leaves in the upper part, but the actual apex is always more or less abruptly pointed, or even subobtuse and apiculate; in F. algarvicus it tapers gradually to an acute acumen, giving a very
characteristic appearance to the plants, especially the sterile shoots. The leaves are extremely narrow. Another feature is the stout border, unusually stout indeed for the small size of the plant; not only is it of several cells in width, but it is actually thickened at times, as in the section Pachylomnidium. This, however, only occurs in the best developed leaves, and does not perhaps altogether justify its inclusion in that section. It is this stout border which prevents the leaves from curling up when dry as do most of the smaller species; they are indeed in the dry state often very little altered. A third character is the comparatively lax areolation. Schimper, indeed, describes it, "reti tenui ut in F. bryoide," a somewhat inaccurate statement, which has, I believe, led to a good deal of the confused synonymy above referred to. In both Musci Gall. 812, and in Solms-Laubach's original plant, I find the cells—as in the Devonshire specimens—conspicuously laxer and more irregular than in F. bryoide and the other species to which F. algarvicus has at times been referred. Venturi's description of the cells of F. Sardagnai exactly describe it: "Areolatio foliorum ubique ex cellulis oblique et irregulariter hexagonis, laxior quam in F. pusillo et ineuro." In the vaginant lamina especially the cells are remarkably elongated, irregularly rhomboid-hexagonal and hexagono-rectangular; in fact, altogether different in character from the usual areolation in the species of this section. The dorsal lamina gradually narrows downwards and disappears above the leaf-base. The capsule is minute, erect, and symmetrical. For other details I must refer readers to the published descriptions.

The characters enumerated will, I think, serve both to indicate the marks by which the plant may be distinguished, and at the same time to establish its title to specific rank. A word or two must now be said as to its relationship to the species referred to at the commencement of this article.

F. intralimbatus Ruthe may for our purpose be dismissed at once; it belongs to quite a different section, having the vaginant lamina alone bordered. In all probability the somewhat misleading description of F. algarvicus given by Schimper, together with a similarity in the names of the localities where the two plants were found, induced Mitten's supposition. Both were indeed found during the same year in Algarvia by Graf zu Solms-Laubach; but while F. algarvicus was gathered near Silves, F. intralimbatus was found near Tavira, at least one hundred and twenty-five miles away.

Nor can there, I think, be much question that the characters of F. algarvicus are sufficiently well defined and important to preclude its subordination as a variety to any of the three species—F. pusillus Wils., F. ineuros Starke, and F. viridulus Wahl.—to which it has been at times referred. The form of the leaf apex, together with the strongly developed and even thickened border, and the areolation, remove it in my opinion further from any of these than they in their turn are separated from one another.

The resemblance of F. algarvicus to F. Orrii Braithw. (Schistophyllum Orrii Lindb. Rev. Bry. 1880, p. 97) at once struck me.
although at the time I knew the latter only from descriptions and from Braithwaite’s figure. This resemblance I found had also occurred to Limpricht, as quoted above. *F. Orrii* is supposed to be an introduction from exotic regions, and was referred by Mitten to his South American *F. tequendamensis*, a species which I have not seen. The distribution of *F. algarvicus*, along the Atlantic from Portugal and Spain to Finisterre and the southern shores of England, would, indeed, favour Limpricht’s suggestion. I am doubtful, however, if this identity can be maintained. I have examined the specimen of *F. Orrii* in the British Museum (Glassnevin, D. Orr, 1854, herb. S. O. Lindberg), and while the close similarity between this and *F. algarvicus* is undoubted, there are points of difference which can scarcely be neglected. The nerve in *F. Orrii* is much stouter than in *F. algarvicus*, and runs out into a firm stout mucro, as figured by Braithwaite; in *F. algarvicus* the nerve usually becomes more or less evanescent at apex, and the cuspidate point is formed almost entirely by the confluent borders of the leaf. In consequence of the stoutness of the nerve, the leaves are still more rigid, and when dry less altered than in *F. algarvicus*. The capsule also in *F. Orrii* is inclined and curved. I do not feel justified, therefore, in considering *F. Orrii* identical with *F. algarvicus*, although I think it quite probable that the examination of a wider range of material might show that the above characters were less constant than they now appear, and the differences therefore less important. I am the more prepared to expect this because I find the areolation in *F. Orrii* quite similar to that of *F. algarvicus*, especially in the unusually lax and elongated cells of the vaginant lamina.

On the other hand, *F. Sardagnai* Vent. is, I am convinced, identical with *F. algarvicus*. Although I have not seen specimens of *F. Sardagnai*, the description given by Venturi is sufficiently detailed to justify an opinion being formed. The size of the spores (in *F. algarvicus* 11–14 μ, in *F. Sardagnai* 15–20 μ) and their sculpturing are the chief separating characters mentioned by Venturi. The difference in size is not, however, of any importance, for, apart from the fact that a similar range of size is found in other species of *Fissidens* (e. g. in *F. pusillus* the spore measurements, as given by Roth, are 8–12 μ or 10–14 μ, while its var. *irriguus* Limpr. has them 14–18 μ), the range in *F. algarvicus* is much greater than as described by Venturi. In two gatherings by Mr. Savery I find them range from 13–18 μ, and from 14–22 μ respectively. As regards their sculpturing, Venturi describes the spores of *F. Sardagnai* as “leniter sed grosse papillose”; in *F. algarvicus* they are smooth or almost so: but it is somewhat difficult to weigh the value of this distinction without having compared specimens. The description by Venturi of *F. Sardagnai* applies as a whole in almost every respect to *F. algarvicus*; the form of leaf, the incrassate border—on which he lays great stress—the lax areolation, all exactly agree. He compares his species with *F. algarvicus*, which, however, it is clear he only knew from the descriptions, basing the distinction on the size and sculpturing of the spores,
the leaves narrower in *F. Sardagnai*—but this is a very variable character in *F. algarvicus*—and their rigid condition when dry, which, however, as already mentioned, is characteristic of *F. algarvicus* also. Finally, he refers to the difference in areolation, but this distinction is based on Schimper's comparison of the cells of *F. algarvicus* with those of *F. bryoides*, which, as I have stated, is incorrect. There is, therefore, nothing to separate them but the sculpturing of the spores described by Venturi, and without wishing to detract from the value of this character, I do not think, at the best, it is a sufficient one on which to base a specific difference.

The synonymy would therefore stand thus:—


I desire to express my obligation for assistance to Mr. A. Gepp, Miss A. L. Smith, and Dr. G. Roth.

**CEPHALANTHERA LONGIFOLIA** Fritsch.

Assuming that the generic names *Cephalanthera* and *Epipactis* are to be retained (see p. 105), another name must replace that of *C. longifolia* Fritsch, which is chosen in the List of British Seed-plants for *C. ensifolia*. In the Abridgement of the Gardeners Dictionary (1771) Miller describes, under the ill-chosen name of *Serapias latifolium* (no. 4), a plant which is undoubtedly *C. ensifolia*; he alludes to the "spear-shaped leaves," and "the loose spike of white flowers," and localizes it "Hertfordshire," from which county it was first reported by Eales in Gibson's *Camden* of 1695 (testa Flora Herts). Therefore I contend *Cephalanthera latifolia* (Miller) must replace *C. longifolia* Fritsch. I have not been able to consult the eighth edition of Miller's *Gardeners Dictionary* of 1768, where probably the name will also be found, but the Abridgement precedes by a year Scopoli’s *Flora Carniolica*, where he names *Serapias longifolia*.

G. Claridge Druce.

When Mr. Druce sent us the foregoing note for publication, we pointed out to him the grounds on which the name he suggests is untenable, in the hope that we might avert the printing of one more useless synonym. Unfortunately, however, Mr. Druce's well-known (and to our mind regrettable) enthusiasm for new combinations had forestalled us, and the name appears in a "list of desiderata"—surely an improper place for such publication—in the Report of the Botanical Exchange Club for 1906, issued in April last. This being so, it seems necessary to prevent, as far as possible, its further circulation, by demonstrating its inaccuracy.
S. latifolia first appears in Miller’s Gardeners Dictionary ed. 8, with the diagnosis “bulbis fibrosis, nectari labio quinquefido clauso, foliis lanceolatis nervosis amplexicaulis,” followed by the synonym “Helleborine latifolia, flore albo clauso.” Ray Syn. [ed.] 2, 242,” and the locality “discovered first in Hertfordshire.”* In his English description Miller, as Mr. Druce points out, refers to the “spear-shaped veined leaves” and the “loose spike of white flowers”; this, with the absence of any reference to ensifolia, probably led him to the conclusion that that plant was intended. Against these, however, must be set the “flore albo clauso” of Ray and the “shut” flower of Miller, and the latter’s remark—“There are some other species of this genus which grow naturally in Great Britain and Ireland, but as I have not had the good fortune to meet with them, I shall not trouble the reader with an imperfect account of them from books.” It is practically certain that ensifolia was known to Miller by description, for that plant stands in Ray next to his “Helleborine latifolia flore albo clauso,” as “H. foliis praelongis angustis acutis”—an admirable descriptive phrase, unmistakeably characterizing a plant which under no circumstances could accurately be called latifolia.

A further difficulty is suggested by the locality, for C. ensifolia is not known to be a Hertfordshire plant. It was first recorded as such in R. Syn. ed. 2, 242: “eandem nuper accepi a D. Eales in Hertfordia inventam”; this is quoted in the Flora Hertfordiensis (where, by the way, the Diggeswell plant is rightly referred to C. grandiflora), and another locality, “Handpost farm, Hemel Hempstead,” is given on the authority of a Mr. Hamilton, but is stated to require confirmation, which it never received. The entry “Herts” in Top. Bot. is, as Watson’s MSS. show, based only on Fl. Hertf. In the Flora of Hertfordshire these two records are combined in an extraordinary manner,—thus: “Handpost Farm, Hemel Hempstead; Eales, Gibson’s Camden, 326”; and it is stated that search for the plant proved vain, though Opûrs muscifera had been found in the locality.

What, then, was Serapias latifolia Mill.? This can hardly be doubtful. In R. Syn. ed. 8, 384, the words “eandem cum priore” [C. grandiflora] are added to the description of “H. latifolia flore albo clauso,” and it would seem that Mr. Druce himself has until now accepted that verdict, for in his identification of the plants of the Synopsis (see The Diluvian Herbaria, p. 115) he passes this by without comment, rightly assigning the name ensifolia to “H. folii praelongis angustis acutis.” Any doubt on the matter, however, is finally set at rest by Miller’s own specimens, bearing his description in his own hand: these specimens, which we did not see until most of the foregoing note had been written, are unmistakeably C. grandiflora, under which they are correctly placed in the National Herbarium.


* The reference is to R. Syn. ed. 2, 242; “Found by Dr. Eales near Digges-Well in Hertfordshire.”
DONAX AND SCHUMANNIANTHUS.

By R. A. Rolfe, A.I.S.

When publishing his Monograph of the Marantaceae in 1902 (Das Pflanzenreich, iv. 48), Schumann had not seen a Philippine example of his therein-established genus Actoplanes:—"Findet sich nicht auf den Philippinen (sehr viele Sammler)," (p. 34). One of the species, however, does occur in the Philippines, and as its history has been somewhat confused it seems desirable to place upon record the facts discovered in comparing some material from that country.

Blanco, in 1887, enumerated Maranta arundinacea L. as a native of the Philippines, though he had some doubt about its identity, and remarked: "Será mas bien la especie Tonkat?"

Naves, in 1880, enumerated four Philippine species of Maranta, M. dichotoma Wall., M. grandis Miq., M. arundinacea L., and M. ramossissima Wall. The first and last are synonymous, and represent Donax Arundastrum K. Schum. (but not the original of Loureiro), a species which I have not seen from the Philippines; the third appears to have been correctly determined, but is not indigenous in the Philippines; while the second, which Naves suggested was rather a variety of the first, represents the plant enumerated by Blanco, though it is different from Miquel’s plant of the same name. It is well figured by Naves under the name "Maranta dichotoma L.-Blanco = ? Phrynium dichotomum Roxb."

It has since been enumerated as Clinogyne grandis Benth. et Hook. f., which arose from Bentham’s identification of the Philippine with the Sumatran plant, which proves to be erroneous.

Schumann, who pointed out that there were two species of Actoplanes, an eastern and a western, had apparently not seen a Sumatran example, and referred Maranta grandis Miq. to the eastern A. canniformis K. Schum., but authentic specimens at Kew show that it belongs to the western plant, which he called A. Ridleyi.

This discovery necessitates a rearrangement of the synonymy, but there is a further complication in the generic name. The identity of Donax Arundastrum Lour. has long been the subject of speculation. Gagnepain has pointed out that Schumann’s identification of Phrynium dichotomum Roxb. with Loureiro’s plant was probably erroneous, as the latter’s description of the fruit agrees with Actoplanes, and his inclusion of Arundastrum vel Tonchat Seytan Rumph. as a synonym of Donax is cited as confirmatory evidence. Gagnepain further redescribes Donax Arundastrum K. Schum. (non Lour.) under the name of Schumannianthus dichotomus Gagnep. A comparison of Loureiro’s type at the British Museum (which Gagnepain had not seen) confirms the view that Donax Lour. and Actoplanes K. Schum. are identical.

It is fortunate that the last element of doubt about the genus can be removed; all that now remains is to restate the synonymy of the species, for Gagnepain refers all to Donax Arundastrum Lour,
though briefly mentioning *Actoplanes Ridleyi* K. Schum. as a second species. He also speaks with great doubt about the inclusion of *Thalia cannaformis* Forst., but the type of that is also preserved at the British Museum, so that its position is not uncertain. It may be added that there is a fine original drawing of Roxburgh's *Phrynium dichotomum* preserved at Kew, with one of the allied *P. virgatum* Roxb.

The following is the revised synonymy:


   *Thalia cannaformis* Banks in Syme's Embassy to Ava, i. p. 473 (1800) cum tab.; ed. 2, iii. p. 305, t. 21 (non Forst. f.).


2. **D. cannæformis** Rolfe, comb. nov.


   *M. arundinacea* Blanco, Fl. Filip. ed. 1, p. 7 (1837) (non Linn.); ed. 2, p. 5; ed. 3, i. p. 9, t. 5.

   *Phrynium canniforme* Koern. in Regel Gartenfl. vii. p. 85 (1858).


   *Maranta dichotoma* Naves in Blanco, Fl. Filip. ed. 3, Nov. Appx. p. 228 (1880) (non Wall.).

   *M. grandis* Naves, l. c. (non Miq.).

   *M. ramosissima* Naves, l. c. (non Wall.).


Both the species appear to be common and widely diffused in their respective areas, and observation in the field may throw further light upon their geographic limits. At present, however,
D. Arundastrum appears to extend from Sumatra westward to Singapore, Malacca, Perak, Pahang, Rangoon, and the Andaman Islands; and D. cannaformis from Java, Borneo, and the Philippines, eastward to New Guinea, the Aru Islands, Admiralty Islands, Solomon Islands, and the New Hebrides. D. cannaformis is very common in the Philippines, being found in Mindanao, Palauan, Mindoro, Culion, and in numerous provinces in Luzon.

The foregoing have been so completely confused with Phrynium dichotomum Roxb., now referred to Schumannianthus Gagnep., that a revision of the synonymy of this genus also seems desirable:—


Thalia dealbata Link in Jahrb. Gewachsk. i. pt. 3, p. 21 (1820) (non Fraser).

T. dichotoma Willd. ex Link, l. c.

Maranta dichotoma Wall. Cat. n. 6614 (1828).

M. ramosissima Wall. l. c. n. 6615; et in Pl. Asiat. Rar. iii. p. 51, t. 286.


Gagnepain cites Cuming, 495, from the Philippines, as this species, but the specimens belong to Donax cannaformis.

2. S. virgatus Rolfe, comb. nov.


Maranta paniculata Moon, Cat. p. 1 (1824).


A POINT IN NOMENCLATURE.

By James Britten, F.L.S.

Attention should, I think, be drawn to a departure from ordinary practice in nomenclature—a departure which, though not new, appears to be on the increase, and which would seem to invalidate the principle of binominal nomenclature, already endangered by the American method of combining the varietal name with that of the species. An example will show more clearly and
more briefly than any description the practice against which, it is suggested, some stand or protest should be made. It does not seem to be explicitly condemned in the Vienna Rules, although Article 26 excludes it by implication.

Mr. Burkill's recent paper "On *Swertia angustifolia* Ham. and its Allies" (Journ. Asiatic Soc. Bengal, ii. no. 8, pp. 363-381, Aug. 1906) "is written to clear up a troublesome group in advance of an enumeration of all the species of Asia and a discussion regarding their distribution." Mr. Burkill has examined a vast mass of material, and the botany of his paper may be accepted as satisfactory: it is his nomenclature which is open to criticism.

In the first place, however, it is desirable to correct a misapprehension under which Mr. Burkill seems to labour with reference to Hamilton's *plants*. It does not appear that the specimens sent by Hamilton to Lambert were "duplicate": David Don describes them as "part of the fine collection of specimens made during his residence in Nepal, in 1802-3."† They were at any rate the types of the *Prodromus Florae Nepalensis*: Don in his preface, having referred to Hamilton as one "qui plures plantas detexit novas, et in herbarium siccatas collegit," continues: "Harum maxima pars extat nunc in Museo cl. Aylmer Bourke Lambert, ima cum notis sagacissimis et nominibus apud incolas vernaculis, propria manu cl. D. Hamilton scriptis. Omnes attenté observavi in Museo Lambertiano; earumque descriptiones et methodica dispositio præciquam hujus opusculi partem constitunt." In the catalogue of Lambert's sale is the entry: "This Herbarium of Hamilton's supplied the materials for Prof. D. Don's Flora of Nepal"; it was purchased for the British Museum for £9, and contained—according to a MS. note by Mr. J. J. Bennett, who incorporated it with the National Herbarium—"340 plants noticed in Prodr. Fl. Nepal. [these he indicated by 'ticks' in the margin of our copy of that work]; 105 Nepal plants not in that work; 127 Indian plants (excl. Nepal)."

Mr. Burkill does not seem to have recognized that the National Herbarium contains the type of *S. angustifolia*: he quotes the name *angustifolia* as of "Hamilton ex D. Don," and does not cite Hamilton's specimen as one that he has seen, although it is in the National Herbarium named and localized by Hamilton himself.‡ He is probably right in supposing that Don had not seen a type of Hamilton's *S. pulchella*, but Mr. Burkill himself must have done so (though apparently without recognizing it) when he went through our herbarium, where we have a specimen so named collected by Hamilton in Mysore.

* Mr. Burkill says "Francis Hamilton (afterwards Buchanan-Hamilton)," having overlooked Colonel Prain's clear demonstration that the combination of names is "erroneous and unnecessary" (Ann. Bot. Gard. Calc. x. 2, lxxv.).
‡ I note that Mr. Burkill, following the *Index Fl. Sinensis*, cites "Hance, 7561!" But the number of Hance's specimens in his herbarium—that cited by himself when establishing his *Ophiella racillans* (now referred to *S. angustifolia*)—is 11387.
There can be no doubt that Hamilton's *Swertia angustifolia*, as represented by his specimen, is the type of the species, for that specimen was the only material which Don had before him when he drew up his description of the species. Mr. Burkill retains the name, but—and this is the main point of these remarks—he places under it a vast synonymy. In his elavus the species has no diagnosis except "leaves linear-lanceolate" separating it from *S. nervosa*, all other characters being divided among various varieties, the third of which is named "var. Hamiltoniana Burkill (*S. angustifolia* Ham.)." Moreover, the specimens examined are in like manner divided among the varieties, the aggregate species being thus left destitute of description or locality. For all practical purposes, therefore, it is in this case impossible to cite a "binomial or binary name" for any individual plant belonging to the species; and the plant named by Hamilton himself *S. angustifolia* (and the type of the species) must be referred to as "*S. angustifolia* Ham. var. Hamiltoniana Burkill"!

I am of course aware that it would be easy to cite precedents for this method of treating a species: Linnaeus's *Ophrys insectifera* and *Valeriana Locusta* are instances, but in these cases the specific name has been generally abandoned, and this is in accordance with Article 51, no. 4, of the Vienna Rules. Dr. Hackel in his monograph of *Andropogoneae* and elsewhere divides his larger species into varieties, of which the first is always styled *a genuinis* and is thus apparently intended to be regarded as the typical form; but here, as in the case of Mr. Burkill's *Swertias*, it does not seem possible to cite the binomial alone for any specimen. Other instances might easily be cited; my object is not, however, to multiply instances, but to call attention to the inconveniences which must arise if this method of nomenclature should become common. It is to be regretted that the matter was not discussed at Vienna, but this and other matters will doubtless receive attention when the Congress meets again in 1910.

**BIBLIOGRAPHICAL NOTES.**

XLII.—Robert Brown's *Prodromus*.

Mr. J. H. Maiden, of the Botanical Gardens, Sydney, wrote to me lately asking me to investigate the truth of the tradition that Robert Brown had withdrawn his *Prodromus* from sale on account of a criticism which it had received, on the score of its Latinity, in a Review. This tradition, which in the form communicated to me by Mr. Carruthers will be found in this Journal for 1903, p. 252, is embodied in a remark by Martius in his *éloge* of Brown; of this a translation by Henfrey appeared in the *Annals and Magazine of Natural History*, 3rd Series, iii. 321-331 (May, 1859), which runs thus:

"While scientific men called this work a *liber aureus*, and accepted it with unmixed praise, as marking a new epoch, a critic
in the Edinburgh Review found fault with its Latinity, and the author withdrew it from circulation."

To this statement Henfrey appends the following footnote:—

"The statement here repeated by our excellent author, although frequently made during Mr. Brown's life, and vouched for by high authority, is, we have reason to believe, founded in error. The original edition of the 'Prodromus' remained for many years in the hands of the publishers; and the remaining copies were at last withdrawn from sale only because Mr. Brown was desirous of keeping them in reserve to be given as presents to those botanists to whom he thought they might be most useful."

In order to set the matter at rest, so far as the supposed criticism went, Mr. Daydon Jackson has examined not only the Edinburgh but the other Reviews of the period, and has found no notice of the Prodromus in any of them.

The real reason for the non-continuance of the Prodromus seems to be that given by Francis Buchanan (once Hamilton) in two of the letters included by Colonel Prain in his very interesting sketch of the life of that botanist issued in 1905, of which I hope to give some account later. Writing to Wallich in 1817, from Callander, Buchanan says that "in this country" there is not "at present any encouragement for works on natural history, so that the first volume of Browne's [sic] Prodromus Flores Novæ Hollandiæ, a most scientific work, finding no sale whatever, he has stopt short."

Again in 1821 Buchanan writes: "Brown's work on the plants of N. Holland, one of the most scientific that has of late appeared, would not sell in London, and he was so mortified that I believe he will publish no more of his Prospectus [Prodromus]."

Sir Joseph Hooker, commenting on the statements of Martius and Henfrey, says: "In 1856 Mr. Brown informed me that the Prodromus was printed by himself, costing him about £100, and that after about 26 copies were sold at 18s. each, he recalled all the remaining copies. I made a note of this at the time, and inserted it in a copy which he gave me in 1839."

So much interest attaches to everything connected with this "liber aureus," to adopt Martius's phrase, that the following particulars, from a memorandum in Brown's hand in the copy of the Prodromus in use in the National Herbarium may be worth printing. It would appear that the book was published early in 1810, but the date is not stated. The cost of printing 250 copies was £93 14s. 4d.; "advertizing in Morning Post and Chronicle" cost 12s., on the covers of the Botanical Magazine and English Botany a guinea each. Twenty copies were delivered in March "to Miles and Hunter formerly Johnson & Co. [whose names appear on the title-page], St. Paul's Churchyard." Nine copies were "sent to Paris to Jussieu, Desfontaines, Labillardière, Correa, Richard, Beauvois, Bonpland, Du Petit Thouars, Leschenault"; sixteen were "presented to Sir J. Banks, Mr. Dryander, Dr. Smith, Mr. Turner, Mr. Lambert, Dickson, Aiton, Ferdinand Bauer, Francis Bauer, Koenig, Linnean Society, Mr. McLeay; Mr. Law of Edinburgh, Wernerian Professor, Trinity College, Dublin, Mr.
Caley." The entry of sales is very brief: single copies were sold at 18s. each on May 11 to "Mr. M." ; May 21 to Mr. Woodward and Sir Thomas Cullum ; on July 6 to Mr. Spence.

JAMES BRITTEN.

SHORT NOTES.

BRITISH RUBI.—It may be useful to supplement Mr. Moyle Rogers's general criticism of Dr. Gilbert's position (pp. 210, 211) by a few particular examples.—*R. fissus* Lindl. This cannot be *suberectus × casius*, being abundant in some districts in Scotland from which *R. casius* is absent. The *fissus* which I have seen sparingly in Berks and E. Kent is not quite like the typical northern plant, but comes nearer to *R. suberectus.—R. Rogersii* Linton. This, again, is certainly not *affinis × nitidus*. The Scottish counties in which it is most plentiful produce neither of the suggested parents; and it has no close connection with true *R. affinis*.

—*R. holerythros* Focke and *R. rhombifolius* Weihe are suggested to be "both hybrids of *affinis* with the same or different Rhamnifolians." Now, in the heath-country between Godalming and Haslemere, Surrey, *holerythros* is locally abundant, and produces plenty of large, fine fruit (in my experience, the numerous bramble-hybrids are at least partially sterile); *rhombifolius* also occurs in some scattered spots, at a long distance from the one very limited station known to me thereabouts for *affinis*. Under such circumstances, the hybrid theory mentioned above is clearly untenable; moreover, it does not agree with the characters of *holerythros* and *rhombifolius* as a whole.—The main lesson which I draw from Dr. Gilbert's paper is that it is dangerous for "local botanists" to generalize too confidently from the special phenomena of their own neighbourhood, without due regard to wider researches.—EDWARD S. MARSHALL.

IRISH PLANTS.—In the Irish Naturalist for April Mr. Druce has some interesting notes on plants observed during his visit to Ireland last autumn. Of *Sisyrinchium californicum*, described and figured in this Journal for 1896, pp. 366, 494, Mr. Druce writes:— "In the locality where the Rev. E. S. Marshall discovered it at Rosslare, in the greatest abundance over many acres. It must be remembered that a few miles south of the station for this Western American species is Carnsore Point, on which, as my driver said, there had been more wrecks than almost any point in Ireland. It is easy, therefore, to imagine a wreck of Indian corn, as in the case of the *Polygonum sagittatum*, drifting on the coast at or near Rosslare, and in this manner bringing the seeds of the Californian species. The plant seeds very freely, and one could not walk about amongst it without scattering the seeds. Moreover, I examined several pads of earth which had been scattered from the feet of horses, and in each case saw seeds adhering, so that the animals grazing in the meadows would assist to distribute it when once established. Moreover, the locality is subject to floods, and these would also assist in its dispersal. The fact remains that the plant
is completely established, but I have no doubt in my own mind that to some wreckage containing Californian produce we must attribute the occurrence of this Western American species in Ireland." The note on Polygonum sagittatum, which Mr. Druce found abundantly in the Kerry locality recorded in Cybele Hibernica, shows how local names may originate: "By a piece of good luck I am able to throw some light on its method of introduction to the Irish flora. On my return from Derrynane, I gave a lift on my car to a man who, seeing my vessel full of this plant, said, ‘You have Dada’s Weed.’ I asked him what he meant by using that name. He replied by telling me that about fifty years ago a boat with a load of Indian corn was wrecked on the coast near Castle Cove. The corn was obtained by the man’s father-in-law, who had a mill about a mile or so up the small stream. The corn was duly ground into meal, but the next year the Polygonum began to appear, and spread rapidly, so that in time it was called by the children ‘Dada’s Weed.’ I may say it is not easy to see any trace of the mill, which has been long ago demolished. Doubtless the prickly stems led to its being conveyed by animals into the neighbouring bog, while the stream itself carried the plant, or the seed of it, downwards to its outfall into the sea. Had the course been longer, a greater extent of the country would have been occupied by this invader.” Mr. Druce’s paper also includes the description of a new variety of Agrostis canina var. laxis Hackel in litt.—"‘Differt a typo folis omnibus planis latiusculis (circ. 2mm. latis) prorsus lavisibus, paniculæ ramis spicularemque pedicellis lavisibus, spiculis majusculis.’ This grew near the summit of Brandon, and at once attracted my attention, reminding me somewhat of the variety scotica, which I gathered on Ben Eay, in Scotland, but I found differed from it in several particulars. Professor Hackel therefore names it as a new variety.”

NOTICES OF BOOKS.

SOME INTRODUCTIONS.


Mr. Henslow’s object in writing his Introduction to Plant Ecology is to introduce the subject to teachers of botany in schools. In the earlier chapters, which are addressed more especially to Journal of Botany, Vol. 45, June, 1907.
teachers, the author insists on the educational value of ecology, or "the study of plants in their native homes," as an out-of-doors object-lesson. As an introduction he takes an imaginary class out for a walk, and calls the attention of the students to the different points of interest in connection with the soil and the plant-life supported by it which arise during the walk. Ecology is in this sense indistinguishable from the "nature-study" which has come to the fore in recent years.

In discussing the value of morphology and classification in ecology in chapter iv., the author wisely insists on the importance of morphology as the basis of ecology, and strongly recommends the teacher to utilize classification as well as morphology "for sound educational purposes; since it is in the processes of weighing characters between different species, &c., that the elements of thought and judgement come into play." In another chapter (v.) Mr. Henslow complains that laboratory work is treated too independently; if the study of plant-life in nature is the ultimate object of the student, experimental and laboratory work ought to be directed to this end. The experiments in a well-known elementary work on practical physiology of plants are adversely criticised from this point of view, as also are other instances of modern methods of teaching botany.

The larger portion of the volume is devoted to a general account of the various plant-associations which are regarded as examples of the direct response of the plant to environment, and a chapter on floral ecology is introduced in which the view taken by the author in his book on the Origin of Floral Structures is maintained—the characters of the flower, form, size, scent, relative position and shape of parts being regarded as the direct results of the responsive action of the flower to the stimulating influence of the agent of pollination.

Mr. Henslow's little book will serve to give an idea of the methods of serious nature-study from the botanical side, though it necessarily leaves untouched the elaborate methods of the more advanced ecological school.

"This floral chronology by the author of those delightful volumes, 'Familiar Wild Flowers,' is the outcome of observations extending over a long duration of time, and conducted under the most favourable circumstances. Such a book will supply a very useful guide to the Nature-lover of botanical tastes. It is evident that if one would seek any particular plant by some more effective method than the hope of stumbling upon it some day by a happy chance, the when and the where of it should be considered, since they will be most potent factors. When we know the season a plant naturally appears [sic], and when we know the locality where we may reasonably expect to find it, we are far on our road to success. If, for instance, we are aware that under no circumstances shall we find a water-lily flowering on the thatch of an old cottage in January, we are at once released from what would otherwise have been an unprofitable quest, and are free to spend our energies in other and more profitable directions. It is on these salient
points—the probable time, the likely place—that the volume in question brings welcome aid."

Such is the information supplied by the publishers on the wrapper of Mr. Hulme's latest book. We ourselves should have thought that seclusion from the world in some suitable asylum would have brought more "welcome aid" than this volume could afford to the idiot (and to his friends) who would hunt for water-lilies upon cottage roofs; but the author himself tells us that the book owes its existence to a desire to provide for this class of person, which is evidently more numerous than we could have supposed. "It is borne in upon us," he says in his preface, "that some neophytes would also find a locality clue useful, thus saving them from seeking Water Lilies on the cottage roof or other unlikely spot, and that a chronological guide would be no less helpful, so that one could realize that it was a task foredoomed to disappointment to seek in sultry August for the tender flowers of the opening year, or to antedate by some few months the glorious flush of Heather crimsoning as far as eye can reach some breezy common or moorland slope." From which it will be seen that Mr. Hulme has a very fine style.

Messrs. Cassell have vast experience in catering for the public: "those delightful volumes, 'Familiar Wild Flowers'"—even modest men nowadays have ceased to be dumb concerning their own merits—have had a phenomenal sale, and this opportunity of utilizing some of the pretty if sometimes rather scrappy plates in a new form will no doubt prove attractive. It must in fairness be said that the little book is beautifully printed, attractively bound, and of a size most convenient for the pocket. If the literary part of the volume were as good as its outward appearance, we should have much to admire and little—indeed nothing—to criticize; but unfortunately this is far from being the case.

Mr. Hulme's acquaintance with his subject is manifestly but slight. For example, he recommends Hooker & Arnott's British Flora as "a most helpful book," apparently unaware that the work is obsolete and out of print, the last edition having appeared in 1860; Babington's Manual and The Student's Flora are not mentioned, and of Bentham's Handbook he knows only the illustrated edition. His knowledge of plants is scarcely more intimate—indeed, his statements are at times absolutely misleading, as when he says Sambucus Ebulus is "a similar looking tree" (!) to the Common Elder (p. 76), or that Sium latifolium has been mistaken for watercress (p. 191). What idea can be formed of Arenaria trinervia from the information—all that is given—that it "is now in these bright spring days frequently to be found, its special habitat being the woods and moist dells" (p. 39)? It cannot be pleaded that the exigencies of space have necessitated this brevity, for a large part of the book is occupied by padding such as the passage already quoted from the preface, or that (p. 126) on Erysimum orientale, which "came up once in our garden in Wiltshire, and we could only conclude that a seed of it must by chance have arrived with some flower-seeds which we had sent to us from.."
Battle. It is an interesting plant, and we were greatly pleased to see it.” Again, when speaking of Buttercups (p. 45) Mr. Hulme gives absolutely no characters for distinguishing the various species, but limits R. acris to "the hedgerow" (!), and speculates whether a Buttercup found in flower in December "was in impatient anticipation of the spring, or a laggard unwillingness to admit that that season was at last over"—in December!

It would be easy to extend this criticism, but enough has been said to show that for instructive purposes the book is practically useless. Yet we have no doubt that it will be praised in the newspaper press—indeed, the publishers already advertise that "Country-side tells you: 'This book is invaluable'"—which unfortunately too often misleading where it ought to guide, especially when science is concerned. The proofs have not been carefully read: e.g. Erythrea Centaurea (twice), Artemesia (twice in index, where one of the pages refers to Armeria vulgaris, which is omitted from the index); on p. 29 the poet "Clare" is referred to as "Clara"!

We noticed Mr. Henslow’s How to Study Wild Flowers on its first appearance eleven years ago, and are glad to see that it has arrived at a third impression. It is well-informed, instructive, and in the main accurate, and provides for the intelligent observer the kind of information in which Mr. Hulme’s pretty little book is entirely lacking. This impression contains twelve double-page coloured plates of useful plants, evidently derived from some foreign source, which do not appeal to us. There are numerous helpful woodcuts in the text; we regret, however, to see that the inaccurate naming of these, which in our former notice we ventured to anticipate would "be corrected in the next edition," continues. There seems no excuse for continuing to label as Daphne Mezereum, Gentiana Pneumonanthe, Euphorbia Peplus, and the like, figures which certainly do not represent those species, nor for retaining the erroneous derivations given for "London Pride" and "Danewort"; and such misprints as "Catsia" for "Cassia" (in the index) should have been corrected. The index hardly deserves the favourable estimate we expressed in our former notice; the Latin names are excluded from it and appear by themselves in a table at the beginning of the book; some, e.g. Linnaea, are included in neither. We hope the book will be read through for the correction of these and other errors—e.g. the Linnea is not now "represented on the wall of the staircase of the Linnean Society’s rooms" (p. 129)—which, though not of the first importance, detract from its value.


This second part of the Progressus contains three communications. Dr. L. Laurent, of the Marseilles Museum, contributes an account in French of the progress of angiospermic palæobotany
during the past decade; Mr. W. Bateson writes in English on the progress of genetics since the rediscovery of Mendel's papers; and Dr. Friedrich Czapek describes in German the progress of the physiology of plant-nutrition since 1896.

Dr. Laurent divides his subject-matter into four sections, under the titles—Investigations, Methods, Facts, Results. The regions investigated include in the southern hemisphere the extreme south of South America, where Mr. Dusen has studied plant-beds of presumed oligocene age, and Australia, where Mr. Deane finds reason to modify considerably the conclusions previously formed by Eittingshausen. M. Fliche has studied the cretaceous beds of Madagascar, and M. Zeiller the region of Lake Tchad in Central Africa; in tropical South America work has been done in Bolivia, Brazil, and Colombia, chiefly by Mr. Engelhardt, and the results indicate a great homogeneity in the flora, which resembles that of the present day. In Japan, Mr. Yokoyama has found in beds of cretaceous age plants which are a continuation of the upper Jurassic types and analogous to those found in Europe.

In discussing methods, Dr. Laurent adversely criticizes the method of the older paleobotanists in matching imprints of fossil leaves, often fragmentary or badly preserved, with those of recent plants, a practice which led to the description of numerous species of little or no value, and to general conclusions which a more careful study does not uphold. The character of the venation of the leaf remains the most important character for the worker in this field, as flowers are very rarely preserved, and fruits when found are not associated with the foliage, and the author lays stress on the importance of a careful comparative study of the venation of the various members of the same flora, and of these with known types in other floras.

As regards facts, one of the most important has been the gradual driving back of the origin of angiosperms right to the beginning of the cretaceous age. But up to the present there is no trustworthy information as to the relative antiquity of the two great divisions, Monocotyledons and Dicotyledons. The presumed ancient Monocotyledons have been based on incomplete material and yield to further study, while the Protorhipis, the presumed primitive Dicotyledons originating in the Lias, are now regarded as ferns of the Platycerium type. The question as to the former presence of Proteaceae in Europe remains still unsettled. Dr. Laurent draws attention to a remarkable point in this connection; while on the one hand a large number of leaves have been referred to this family, there is an almost total absence of fruits and seeds, though these structures in the Proteaceae are well adapted for preservation as fossils.

In discussing results, reference is made to the first appearance of Gamopetala. Facts observed prove their great antiquity, as Nerium and Viburnum are recorded from cretaceous beds; but the great majority of their representatives are unknown to us, while, on the other hand, apetalous orders are well represented in these early floras. Dr. Laurent points out that this contrast may be due to
the fewer number of woody genera in the gamopetalous as compared with the apetalous orders. This view is supported by the fact that the woody *Gamopetala* are precisely those which are represented in tertiary and cretaceous beds. The most important general results are the emphasis of the uniformity of the flora of the cretaceous period, as shown by the similarity of the types found in the old and new worlds respectively, and the indications that this period was succeeded by one of great differentiation.

Mr. Bateson’s paper is an account of the progress in the study of heredity and variation which followed the rediscovery of Mendel’s work in 1900 in the publications of De Vries, Correns, and Tschermak. The interest which this new branch of science—Genetics as it has been called—has aroused was strikingly shown in the success which attended the International Conference held last summer under the auspices of the Royal Horticultural Society. The report of the Conference recently issued by the Society shows even more forcibly than Mr. Bateson’s essay the importance of this phase of biological investigation.

Finally, Dr. Czapek’s contribution is a valuable epitome of the work done on the subject of plant-nutrition during the last ten years. The subject-matter is systematically arranged in nine chapters, and occupies more than one hundred pages.

A. B. R.

*BOOK-NOTES, NEWS, &c.*

At the meeting of the Linnean Society on 18th April, 1907, Mr. James Saunders showed a series of lantern-slides of “Witches’ Brooms,” which he explained are usually caused by one of three agents: parasitic fungi (*Ecidiium* and *Erosaeres*), parasitic insects, and gnarling. The illustrations shown were of trees affected by parasitic fungi, the mycelium of which permeates in the woody tissue of the diseased plants. They included Silver Fir, Norway Spruce, Common Elm, Hazel, Hornbeam, Birch, Elder, Hawthorn, and Wild Cherry (*Prunus aruis*). The Silver Fir was from Norfolk, but all the others from South Bedfordshire and North Hertfordshire. Mr. J. C. Shenstone read a paper “On the Ecological Functions of Stolons and Cleistogamous Flowers.” He pointed out the advantages to the plants by the colony-forming habit, such as its more certain pollination and greater power of holding its own against competitors, instancing as examples *Bellis perennis*, *Thymus Serpillum*, and *Mercurialis perennis*. Further examples were dwelt upon in the cases of *Urtica dioica*, *Adoxa Moschatellina*, and the violets *Viola odorata* and *V. canina*, where both stolons and cleistogamous flowers co-operate in keeping the colonies compact.

At the same meeting Mr. A. O. Walker introduced the subject of “The Conservation of existing Species by Constitutional or Physiological Variation giving greater power of adaptation without perceptible change of structure.” He referred to a supposed case of two healthy men going to an unhealthy climate: one proving im-
mune to the local diseases might conceivably transmit that quality to his children; the other, falling a victim to the climate, would leave no descendants. As instances he brought forward the case of *Crepis taraxacifolia*, long known in Wales as a rarity, which in 1896 onwards became extremely abundant at Colwyn Bay. He considered that this might be accounted for by a different variety, morphologically identical, yet physiologically distinct, having been introduced, and, by its ability to adapt itself to its surroundings, had rapidly extended its area of growth. Another case was of *Cardamine pratensis*, usually stated to grow in moist meadows, which is accurate as regards North Wales, but in Kent its favourite habitat is coppice woods, the second year after cutting the undergrowth. It is frequent on dry banks, on masses of roots of trees or shrubs, probably as xerophilous a station as could be imagined.

At the meeting of the Linnean Society on 2nd May, 1907, Professor E. B. Poulton exhibited the probate of the will of Richard Anthony Salisbury (1761–1829), and manuscripts of Dr. W. J. Burchell, which had been recently presented to the University of Oxford by Mr. F. A. Burchell, of Rhodes University College, Grahamstown, South Africa. The General Secretary exhibited, on behalf of the owner, two portraits of John Fraser by John Hoppner and Sir George Raeburn—the latter being the unacknowledged source of the lithographed portrait in Hooker’s *Companion to the Botanical Magazine*, ii, p. 300 (1836). A note accompanying the exhibit stated that Fraser’s herbarium was presented in 1849 to the Linnean Society, of which he was a Fellow, by his son, but was disposed of in 1863. This, however, apparently refers, not to Fraser’s own herbarium, of which nothing is known, although (see Comp. Bot. Mag. ii. 302) he evidently had one, but to the important herbarium of Thomas Walter, which was presented to Fraser by Walter, and was acquired by the Trustees of the British Museum for the National Herbarium at the sale of certain of the Linnean Society’s collections in 1863.

Last year we called attention to the very interesting series of papers on *London Botanic Gardens*, which Mr. P. É. F. Perrédès, F.L.S., was then publishing in the *American Journal of Pharmacy*. These have now been issued in a neat volume of a hundred pages, with thirty-one illustrations, as No. 62 of the publications of the Wellcome Chemical Research Laboratories. The gardens discussed are Kew, the Royal Botanic Gardens, and the Chelsea Physic Garden—the last-named, on account of its longer history and greater interest, occupying half of the book. Mr. Perrédès has brought together a great deal of interesting information about the gardens and their various curators, and his account is careful, and, as far as space will allow, complete. It is to be regretted, however, that there is nothing in the shape of an index of names of the persons commemorated—an omission which detracts from the usefulness of the book.

The first volume of the new edition of the *Imperial Gazetteer of India*, which has just been published by the Clarendon Press (price 6s.
net) contains the very interesting sketch of the botany of the Indian
Empire which was issued separately in advance in 1904 with the
authority of the Secretary of State, and from which we gave some
extracts in this Journal for that year (pp. 221–227). As we then said,
the essay gives an admirable idea of the constituents of the Flora,
which exhibits that masterly power of summary which Sir Joseph
displayed in the celebrated essay on Island Floras and in other of
his works. It is perhaps to be regretted that its publication in this
form has been delayed for three years, as in some respects this
prevents it from being quite "up-to-date," but it is and will remain
an excellent epitome of our knowledge of the subject. The same
volume contains chapters on the physical aspects, geology, metro-
ology, zoology, ethnology, languages, religions, and population—
all evidently well and thoroughly done; it contains nearly 600
pages and is cheap at 6s.

The Rev. H. J. Riddelsdell has left Aberdare; communications
should be addressed to him at St. Michael's College, Llandaff.

Referring to our note on p. 160 as to the desirability of giving
a list of members and their addresses in the Reports of the Watson
and Botanical Exchange Clubs, Mr. George Goode, the Secretary
of the former, points out that such a list is given in the "List of
Desiderata" which is sent to each member of the Club, and which
we had not previously seen.

Since the note on p. 214 was written, we have received a Memo-
randum on the American Gooseberry Mildew issued by the Board
of Agriculture, which urges upon growers the necessity of taking
every possible precaution to prevent the spread of the disease. The
statement is confirmed that the mildew has appeared in Worcestershire
and Gloucestershire, and growers are advised what steps to take to destroy the fungus, or to modify its ravages. The Board
also issues an illustrated leaflet, which is intended to assist growers
in identifying the disease.

The Liverpool Botanical Society proposes to undertake a Flora
of South Lancashire, i. e., of that part of the county south of the
Ribble. Mr. W. G. Travis, Secretary of the Flora Committee, will
be glad to receive help of any kind in the way of records, speci-
mens, &c.; his address is 107 Delamere Street, Liverpool.

The Queensland Government has issued a volume on *The Weeds
and Suspected Poisonous Plants of Queensland*, by Mr. F. M. Bailey,
"with brief botanical descriptions and accounts of the economic,
noxious, or other properties, to which are added in most instances
figures illustrating portions of the plants brought under notice." This
full title gives a good idea of the scope of the book. The de-
scriptions are based on those in the author's *Queensland Flora*, but
are not mere transcriptions; the numerous figures are small and
not very good, but should be helpful to the cultivator and stock-
holder, for whom they are principally intended. The subject is
treated in a somewhat comprehensive manner; thus *Wolfia arrhiza*
and a *Lemna* are included as being "troublesome in tubs and tanks;
set apart for the growth of ornamental aquatics."
MAXWELL TYLDEN MASTERS
(1833–1907).

(with portrait.)

Another noteworthy figure has disappeared from the ranks of British botanists in the person of Dr. Maxwell Tylden Masters, who died at his residence at Ealing on May 30, after a month’s illness. He was born at Canterbury, on April 15, 1833. His father, William Masters, was well known in that city, not only as a nurseryman but as a pioneer of social and intellectual work; he founded the city museum in 1828, and for twenty-three years was its honorary curator. His garden, of which he published a catalogue under the title Hortus Durovérii, was arranged on the natural system, and he made experiments in hybridization in various genera, including Passiflora, of which genus his son became the monographer.

Maxwell Masters was educated at King's College, London, where he took his degree of M.D., after which he became sub-curator of the Fielding Herbarium at Oxford. While here he devoted much attention to the flora of the county; a paper embodying the results of his observations was published in the Transactions of the Ashmolean Society, to which he had previously contributed, in 1857. He practised his profession at Peckham in 1856, and from 1855 to 1868 lectured on botany at St. George’s Hospital. It was while at Peckham that he became interested in Vegetable Teratology—a study in which he always took great interest and on which he published numerous papers. His book on the subject was published by the Ray Society in 1869; a German translation by Dammer appeared at Leipzig in 1886. In 1860 Masters became a Fellow of the Linnean Society, to whose Transactions and Journal he contributed many papers, among them valuable memoirs on Passifloraceae and Coniferae—orders with which his name will always be associated and in which he took a special interest. Papers from his pen appeared in numerous scientific journals—many of them in our own pages, beginning with our first volume, to which he was almost the last surviving contributor.

His chief literary work, however, was of course connected with the Gardeners' Chronicle, of which he became part editor with Thomas Moore in 1865; after Moore’s death in 1887 the Chronicle was entirely under Masters's direction. Since the paper was established in 1841, many competitors have appeared in the field, but the Chronicle has always held its own, and has been the only horticultural journal which has steadily given prominence to the scientific side of horticulture. Masters always sought the co-operation of botanists, many of whom—Mr. J. G. Baker and Mr. W. B. Hemsley, for example—published largely in his paper; for many years the portion relating to orchids was under the superintendence of H. G. Reichenbach; and the number of new species published during the seventy years of the Chronicle's existence has been very
considerable. The demands made by a weekly paper on the time of an editor who devotes himself to it as conscientiously as Masters did to the Chronicle are of course very great; and it is remarkable that he succeeded in doing so much scientific work of a high order apart from his official duties—the more so because he took much practical interest in horticultural matters of a public nature, such as the great International Horticultural Exhibition of 1866, of which he was Congress Secretary; the Quinquennial Conferences at Ghent and similar meetings elsewhere; and especially the Royal Horticultural Society, of whose Scientific Committee he was Chairman for many years before his death.

Perhaps the most striking feature of Masters's character was his extreme kindness to those with whom he came in contact. I remember being struck with this when I was first introduced to him at the Kew Herbarium nearly forty years ago. He was always especially considerate to the young men at Kew, whether in the herbarium or in the gardens, encouraging them to write and helping them in many ways: many now well known in the botanical and horticultural world made their first literary appearance in the pages of the Gardeners' Chronicle. His gentle manner conveyed the impression of timidity; and he had a strong objection to anything which in his judgement savoured of controversy. This testimony to his kindliness, of little value when stated as the mere impression of one whose relations with him were only casual and official, is confirmed by those with whom he was in daily association.

I am indebted to the proprietors of the Gardeners' Chronicle for permission to reproduce the accompanying portrait, from a photograph taken in 1897, which appeared in the issue of that paper for June 1, accompanied by another portrait taken in 1878.

JAMES BRITTEN.

NOTES ON BRITISH HEPATICÆ.

By SYMMERS M. MACVICAR.

LOPHOZIA BAUERIANA Schiffn.—Jung. Floerkiî Web. et M. var. Baueriana Schiffn. Krit. Bemerk. über Jung. collaris N. ab E. (Oester. Bot. Zeit. 1900, No. 8). Since publishing this plant as a variety, Prof. Schiffner has examined further material, which has induced him to consider it entitled to rank as a species with the other members of the barbata group. He goes fully into the question in the critical notes in Lotus 1903–1905 which accompany his Hep. eur. exs., series ii.–iv. Herr Arnell, in a valuable paper on this group in Bot. Notis., p. 145, 1906, follows Prof. Schiffner in treating it as a distinct species. It has only hitherto been published in Britain as a variety of L. Floerkii, but it appears to me, on further examination, that the view taken by Schiffner and Arnell is the more satisfactory one. Its relationship to L. Floerkii and to L. lycopodioides is given by these authors in the works referred to. It is stated by Schiffner that in Central Europe no
intermediate forms between *L. Baueriana* and *L. lycopodioides* have been found, but that such forms do occur in Scandinavia. One of these is represented in his *Hep. eur. exs.* No. 142. In a few instances in Scotland, especially from the extreme north, I have seen specimens which were difficult to distinguish from *L. lycopodioides*, while one gemmiferous plant from Windy Clough, West Lancashire, sent to me by Mr. Wheldon, closely approached *L. Floerkii*; but in the great majority of cases it can be readily distinguished from both species. As Arnell remarks, it is fortunate to have those forms which were formerly doubtfully placed to one species or to another of this group, recognized as a separate species, with the further advantage of being able to make more concise the characters which distinguish the others.

*L. Baueriana* is a very variable species; none of the characters which separate it from two above plants are constant, but they must be taken as a whole. The following points are the most useful in distinguishing it from *L. lycopodioides*. It is usually a smaller plant, the leaves are more symmetrical in shape, and more frequently only three-lobed; lobes more deeply divided, ovate instead of broadly triangular, and more frequently ending in a long bristle, sinus more often gibbose. Male plants and gemmæ are common, while both are stated to be very rare in *L. lycopodioides*. The gemmæ form red clusters on the margins and apices of lobes of the uppermost leaves, and are mostly irregularly 3–4-angled, but sometimes are ovate-oblong or oval. The distribution of the two plants in Britain is also different. So far as I have seen in Scotland, *L. Baueriana* is a subalpine species, and is almost confined to the east, centre, and north of the country, from Berwickshire to Caithness and Sutherland. It is uncommon in the South-east Lowlands and Fife, frequent north of the Tay, and rather common in parts of the East Highlands and Caithness. It does not appear to be common on the hills, but ascends to at least 2600 ft. on Ben Lawers. Among the many English specimens of this group which I have examined, there is only Mr. Wheldon’s West Lancashire plant which I would consider as belonging to this species. *L. lycopodioides* is entirely an alpine species in Britain. It is one of our rarest species, and is only known from a few localities in the High- lands. The specimens from subalpine localities which I have seen in herbaria under this name have been *L. Baueriana*, except in one case, where it was the male plant of *L. quinquedentata* (Huds.).

*L. Baueriana* differs from *L. Floerkii* in the leaves being much more frequently four-lobed, one or more of the lobes being usually bristle-pointed. There are generally cilia at the base of the postical margin of the leaf, and male plants and gemmæ are common. The leaf-lobes in *L. Floerkii* are frequently acute, but never bristle-pointed; at the base of the postical margin there is usually, though not always, only a tooth or process; male plants are uncommon, and gemmæ apparently do not occur. This absence of gemmæ in *Floerkii* agrees also with the results of my examination of the plant in Britain.

*L. Floerkii* has been found in most of the counties of Scotland.
It is common in many parts of the southern counties, especially in the central subalpine districts, and extending to both west and east sides. It is rather common over the east, centre, and north of the country to Shetland, ascending the hills to 4000 ft. It is very rare in the West Highlands north of the Clyde watershed, and is almost absent from the Hebrides. Although it has an eastern distribution, especially marked to the north of the Forth and Clyde, it is not so much confined to that side of the country as is L. Baueriana, and its wide distribution over the south of Scotland is quite different from that of the latter. It is widely distributed over the northern half of England, but I have not sufficient information to give particulars.

Lophocolea alata Mitt. ex C. E. Larter, Trans. Devon. Ass. Adv. Sc. Litt. & Art. p. 285, 1906. Mr. Mitten, shortly before his death, sent to Miss Larter some notes and drawings of this plant, with permission for their publication. I take the following notes of his from the above Transactions.—"This hitherto undescribed species has the aspect of Lophocolea bidentata, but the angles of the triquetrous perianth are all widely alate; the alae dentate." "So different in its perianth from all other British species, yet nearly allied to the L. coadunata of Swartz from Jamaica, having, like it, free floral leaves and amphigastrium oval, yet appearing different in areolation, and also in stature a little more robust." He mentions that the plant is monoicous, and refers to the var. alata of Synopsis Hepaticarum, of which "no specimens are available," and which "appeared to the authors of that work to be a monstrous variety of L. bidentata." The drawings consist of an enlarged figure of a perianth, bracteole, and piece of stem with leaves and under-leaves. Below the leaves was written: "cells all same size, twice the size of 2-dentata," but this has inadvertently been omitted in the reproduction. The locality given is Lynmouth, August, 1875, W. Mitten.

Mitten stated in a letter to Miss Larter that he only picked a small specimen of the plant "on half an inch of soil." He evidently could not know that it varied considerably in the characters which he considered to be of consequence, and this makes it necessary to reconsider its status. Since the publication of the species I have seen a number of specimens of both it and the closely related L. cuspidata Limpr. from different parts of the country, and I have especially to thank Miss Larter for much trouble taken in procuring many specimens of the former in various stages of growth, from North Devon, not far from the original locality. In judging the position of the plant, the perianth alone is not a sufficient distinction, but the combined characters of the perianth, bracts, and bracteole must be taken. In L. cuspidata one or more angles of the perianth are occasionally winged and dentate, but probably never to such an extent as is seen in well-marked specimens of L. alata, though the size of the wings varies considerably in the latter. In the former, one frequently sees only two of the angles with more than one row of cells, and all the angles are usually only obtusely keeled, while in the latter the three angles
appear to have always more than one row of cells, and one or more always winged and frequently dentate. The wing varies in size, but is often composed of a single series of 6–9 cells superimposed on an angle thickened to the extent of several layers of cells. The mature bracts and bracteole are nearly always less deeply divided, and with the cuspidate points shorter than in L. cuspidata, and form, in my opinion, a more valuable distinctive mark than does the perianth alone. The bracteole is by no means always oval as in Mitten's figure. It varies considerably in shape, and not rarely has a tooth on one or both sides, but it is nearly always less deeply lobed than in L. cuspidata. Mitten is evidently mistaken in giving the leaf-cells as twice the size of those of L. bidentata. They do not appear to be larger than in L. cuspidata. The plant is generally dark green, and with the leaves rather broader than in the most commonly pale-coloured L. cuspidata, but this is not a reliable distinction.

I sent a small specimen of the North Devon plant to Prof. Schiffner. He remarked on the variation of its characters, and that the mouth of the perianth was similar to that of L. cuspidata, of which he considered it to be only a form. He also stated that it had no relationship to L. coadunata. It appears that more than one species has been described as Swartz's plant, and it is probable that Mitten had not seen the true plant of Jamaica. The description of this by Herr Stephani in the recently published part of Spec. Hep., p. 146, does not at all correspond with L. alata, and it is mentioned that the plant which Spruce gives under Swartz's name does doubtless not belong to it. I sent a specimen of L. alata to Herr Stephani, but am doubtful if he considers it a distinct species.

Considering that the characters which distinguish L. alata from L. cuspidata are subject to considerable variation, and that such differences are only one of degree, I think that the former can hardly be regarded as of specific rank. I should feel inclined to look upon it as a subspecies of the latter. However this may be, in all the specimens which I have seen of both plants from various localities, I have rarely found any difficulty in distinguishing between them. Their distribution in Britain is also different. L. alata is more common than L. cuspidata, and to some extent takes the place of it, in some parts, at least, of the south of England, but becomes much rarer than the latter as we proceed northwards. It is evidently rare in Scotland, and has only been found, so far, in the southern counties. On the other hand, L. cuspidata is common and widely distributed throughout nearly the whole of the low-lying parts of Scotland.

L. bidentata (L.) Dum., is dioicus, and seems rarely to be found with perianths in Britain,


Scapania obliqua (Arn.) Schiffn. Martinellia obliqua Arnell in Revue Bryol. 1905, p. 1. Herr Arnell has kindly confirmed the name of a specimen of this Scapania from Ben Vorlich, Dumbartonshire, July 4, 1901. I have also found it in my herbarium from other localities. It is readily distinguished from S. undulata by its oblique greatly decurrent antical lobe of leaf. The postical lobe is also more decurrent, the margins of both lobes are always entire, and the leaf-cells are slightly thickened at the angles. It occurs on our hills in wet ground, especially in streamlets and springs, forming large swelling masses of a dark green colour, with sometimes a purplish tinge in parts of the tufts.

S. paludosa C. Müll. is at once distinguished by its highly arched commissure of the leaf. The postical lobes are also occasionally dentate, and the plant is light green.

Prof. Schifflner states in his Bryol. Frag. xxii. in Oesterr. Bot. Zeit. 1905, that S. obliqua is most nearly related to S. uliginosa, and, in fact, mentions having seen intermediate forms; but as the former retains its characters in similar places to those in which S. uliginosa is found, and as the description of the latter would have to be considerably altered to include S. obliqua, he does not consider that it should be treated only as a variety. Well-marked specimens differ from S. uliginosa in colour, flaccidity, in the larger antical lobe of a different shape and more obliquely inserted. In a packet gathered on Ben Lawers there are some stems which I should place to S. obliqua, and some which appear indistinguishable from S. uliginosa. On the other hand, a specimen from Ben Doureinn, Argyllshire, which I find to be S. obliqua, bears comparatively little resemblance to S. uliginosa.

The localities, other than Ben Vorlich, in Britain, at present known for the plant, are:—Argyllshire: Ben Cruachan, alt. 1200 ft., June 10, 1903, S.M.M.; Ben Doureinn, June 25, 1904, P. Ewing & S. M. M.; Ben Arthur, alt. 1900 ft., June 29, 1906, S. M. M. Mid Perth: Ben Lawers, alt. 2700 ft., June 22, 1901, S. M. M. West Inverness: Rosshaven, Moidart, alt. 2500 ft. June 24, 1900, S. M. M. I should also feel inclined to include a plant gathered on Snowdon, alt. 2500 ft., May, 1901, by Mr. Pearson, which was considered to be a lax form of S. uliginosa by Herr C. Müller, as Mr. Pearson informs me. Also possibly a plant found by Messrs. Wheldon & Wilson on Treby Fell, West Lancashire, June, 1901; but the specimen is too small to distinguish with certainty from S. uliginosa.

Madotheca rivularis Nees var. simplicior (Zett.) Lindb. M. simplicior Zett. Oversigt. af Kongl. Vetensk. Akad. Handl. n. 2, p. 53, 1877. M. Levierti Jack et Steph. in Flora, n. 30–32, p. 496, 1888. In characteristic specimens of this variety the mode of branching is very different from that of the plant which is usually regarded as the type. The stems are long, with a few irregular
branches, which are often elongate and simple. As has been remarked, the habit is more like that of _M. lavigueta_. It is also a larger plant than the type, and the colour is olive-green, frequently becoming yellowish green when dry, and occasionally shining. The stems have a border of 2–4 greatly thickened reddish cells, while the type has only the outermost row somewhat thickened, with the second row less so. Herr C. Müller, who has drawn attention to this character in _Beih. z. Bot. Centralb._ p. 103, 1902, appears to reverse the two plants in regard to this condition. It varies considerably, doubtless in accordance with the wetness of the locality. _M. rivicularis_ varies so much that some of its forms are difficult to place. I give the localities of the specimens in my herbarium which I should consider to be the var. _simplicior_. That it is an advantage to have the variety distinguished may be allowed from the fact that it is frequently queried or mistaken in this country for some other species of the genus.—_Lanark_: Falls of Clyde, January, 1902, _P. Ewing_. Mid Perth: Finlarig Wood, Kilin, July, 1900, _P. Ewing_; Culdees Castle, September 27, 1901, _W. Evans_; Falls of Ness, near Muthil, September 30, 1901, _W. Evans_; Buchanty, c. fr., November 5, 1903, _R. H. Meldrum_, Ireland—Down: Magheralin, April, 1897, _C. H. Waddell_. Antrim: Drumragmond Wood, Toone, July 4, 1899, _H. W. Lett_. Monaghan: Castleshane, July, 1900, _C. H. Waddell_.

_M. rivicularis_ Nees var. _faeroensis_ C. Jensen in Bot. of the Færoes, Part i., Bryophyta, p. 124, 1901. “Tufts dense, opaque, deep green or partly brownish green; plant 2–3 centim. long, gracile, irregularly pinnate, dense-leaved, branches obtuse; auricles half as broad as the stipules, decurrent, obtuse or acute, one or both margins recurved entire; leaf-cells with thin walls and distinct trigones at the angles, the interior filled with chlorophyll, upper cells 0·013–0·020 millim. broad, smaller than in the typical form, where they are 0·020–0·032 millim.” (C. Jens., loc. cit.). A plant found by Mr. Symington Grieve on “rocky banks, shores of Sandwater Loch, Bixter, Shetland, August 23, 1902,” agrees with a specimen of this variety from the Færoes, kindly given to me by Herr Jensen. The compact, partly brown tufts are very different from what one usually associates with this species, and unlike any specimens which I have seen from the mainland.

ALABASTRA DIVERSA.—Part XV.

By Spencer le M. Moore, B.Sc., F.L.S.

(Continued from p. 233.)

3. New and Rare Uganda Plants.

I now resume the task of publishing an account of Dr. Bagshawe’s Uganda _Gamopetala_. The localities of the plants to be mentioned are largely those or near those of my last paper,* to

---

which the reader may be referred, with the reminder that the districts concerned are Unyoro, Ankole, and Toro, particularly the latter.

**Rubiaceae.**

**Gardenia lancerola**, sp. nov. Fruticosa, elata, glaberrima, ramulis juvenilibus compressis mox teretibus politis, foliis oblongis vel oblongo-lanceolatis cuspidato-acuminatis basi in petiolum brevem angustatis tenuiter coriaceis utrinque subnudis in sicco olivaceis, stipulis lineari-subulatis cito deciduis, floribus pro rata mediocribus pedunculis manifestis supra-axillaris oppositis patentibus suffultis, calycis tubo (ovario) turbinato glabro quam limbus multo breviore limbo alte 4-5-partito lobis foliaceis lineari-lanceolatis acutis uninvulibus glaberrimis, corolla infundibuliformi ima basi attenuata inde gradatim dilatata lobis 4 vel 5 quam tubus multo brevioribus ovatis apice ipso acutis, antheris sessilibus infra fauces insertis, ovario 1-loculi, stylo incluso, stigmata clavato apice bidentatum, bacca calycis limbo persistente onusta anguste ovoidea in sicco brunnea nee longitumor nervosa, seminibus pluribus angulatis pulpa exigua agglutinatis.

Hab. Toro, Semliki Forest, near Baranga; *Bagshawe*, 1281.

Frutex (ex schedis cl. detectoris) biorygialis. Folia 7-0-9-0 x 2-5-4-0 cm., facie pallida; costa centralis supra plana, subtus prominens; costa secundariae planae, utrinque 5-6, aperte fornicatae, raro subrectae; petioli 0-5-0-8 cm. long., validi. Stipulae circa 0-7 cm. long. Pedunculi 0-2 cm. super axillam canli inserti, 2-0 cm. long., primo ascendentes cito patentés, sub fructu incrassati. Ovarium 0-5 cm. long. Flores primulini. Calycis limbus in toto 2-2 cm. long., lujus lobi 2-0 cm. Corollae tubus 4-5 cm. long., ima basi 0-2 cm. juxta medium 2-5 cm. faucibus 3-0 cm. lat.; lobi circa 1-5 cm. long. Antherae lineares, fere 1-0 cm. long. Stylus circa 2-8 cm., stigma 0-8 cm. long. Bacca calycis limbo exempto circiter 3-5 x 2-0 cm. Semina ± 1-2 x 0-7 cm.; testa coriacea; albumen cartilagineum.

**Gardenia pomodora**, sp. nov. Fruticosa ramis ramulisque patentibus puberulis deinde glabris, foliis ex ramulorum apicibus oriundis ibique conflertis amplis petioli ovatis vel obovato-oblongis breviter cuspidatis obtusis vel obtuse acutis basi obtusis obtusissimisve raro rotundatis papyraceis supra scabriuscule puberculibus subtus præsertim in nervis minute pubescentibus in sicco griseo-viridibus, stipulis inter se liberis anguste ovato-oblongis acutis vel breviter acuminatis membranaceis extus puberulis decorolobis, floribus ad normam generis mediocribus in corubis terminalibus brevissimis panciloris dispostitis, pedicellis incrassatis quam ovarium brevioribus minute pubescentibus, ovario cylindrico minute pubescente calycem excedente, calycis minute pubescentis limbo alte 6-lobo lobis e basi lata subulatis divergentibus, corollae sicce. atque tubo infundibulari quam lobos 6 rotundato-ovatos obtusos longiore, antheris 6 sessilibus subinclusis, disco crateriformi, stylo breviter exserto basi dilatato, stigmate fusiformi, fructus oblongo apice leviter umbonato coriaceo glabro.
Hab. Kibale Forest, Toro, 4500 ft.; Bagshawe, 1294. (Also at Kew, Entebbe; E. Brown, 363).

Foliorum limbus solemniter 10°0-16°0×8°0-10°0 cm.; costae secundarum utrunque circa 8, rauces basales subapproximatae, omnes arcuato-ascendentes, utrobiue eminentes; petioli sepissime 2-5-4·5 cm., pubescentes. Stipulae 1-0·1-7 cm. long., longitrusum striatulae. Corymbus (corollis exclusis) 2·5 cm. long. Pedicelli 0-5 cm. long.; ovarium fere 1·0 cm. long. Calycis limbus 0·2 cm., lobii 0·5-0·6 cm. long. Corolla dilute lutae rubro-lineatae tubus circa 2·5 cm. long., inferne 0·7 cm., superne 1·5 cm. diam.; limbi lobii circa 1·5 cm. long. Antherae faucibus insertae, oblonge obtuse, 1·3 cm. long. Stylus 2·5 cm. long., stigmatse 0·7 cm. hand exempto. Fructus circa 9°0×2·5 cm.

The affinity is with G. zanguebarica Hiern, but this has so many points of difference as to render details unnecessary.

Flowers fleshy, with odour of over-ripe apples, fainted yellow with red streaks. Mr. Brown's note, however, says that the flowers are "purple, spotted yellow." There is therefore some variation in this respect.

Oxyanthus oxycarpus, sp. nov. Frutex elatus, rariramosus, glaber, ramulis bene foliosis compressiusculis deinde subteretibus in nodis tumidis novellis summum leviter puberulis, foliis pro rata parvis angustse ovato-oblongis apice cuspisulatis ipso obtuse acutis basi in petiolum brevem angustatis tenuiore coriaceis, stipulis inter se liberis a basi lata subulato-acuminatis extus ima basi puberulis ceteroquin glabris, floribus medioeribus in racemis paniculifloris bracteatis admodum abbreviatis ordinatis, bracteis parvulis ovo-t lanceolatis acuminatis dorso puberulis margine ciliatis, pedicellis abbreviatis a bracteis plane superatis, calycis tubo (ovario) anguste obovavoideo quam limbus breviore limbo fere adusque medium diviso lobis inter se subequalibus lanceolatis acuminatis, corollae tubo lobos longe excedente utrinseus glabro vel fere glabro, filamentis brevibus antheris linearibus apice acuminatis loculis basi obtusis, ovario 2-loculari, stigmatse anguste fusiformi lobis oblongis prædito, bacca ovoidea sursum attenuata apice obtusa subtereti 1-loculari pericarpio coriaceo in sicco olivaceo circumdata, seminibus numerosis.

Hab. Toro, forest near the Semiliki river; Bagshawe, 1300.

Planta sec. cl. detectorem plus quam biorygalis. Folia sepissime 8·0-9·0×3·0-3·5 cm., in sicco viridia; costae secundarum utrunque 6-7, patulae, juxta marginem arcuatæ, parum proninulæ; petioli 0·5-0·7 cm. long., fac. sup. excavati. Stipulae 0·5-0·7 cm. long. Racemii 3-4-flori, ± 0·5 cm. long., crassioculæ. Pedicelli circa 0·3 cm., bracteæ circa 0·4 cm. long. Flores dilute viridescentes. Ovarium 0·2×0·175 cm. Calycis limbus 0·45 cm. long.; hujus lobi circa 0·2 cm. long. Corolla citro pansura 6·5 cm. long.; limbus 1·0 cm. long. Filamenta 0·1 cm. long., antheræ 0·35 cm. Bacca 2·5 cm. long., summum vix 1·5 cm. diam., apice sub calyce persistente ad 0·4 cm. angustata, in sicco longitrusum striatula, pallide subnitens. Semina brunnea, 0·5×0·5 cm.

Easily distinguished from O. speciosus DC. by the short inflorescences, the relatively broad corollas, and the pointed berries.
Oxyanthus Bagshawei, sp. nov. Fruticosus, glaber, ramulis compressis deinde subteretibus in nodis aliquantulum tumidis, foliis majusculis anguste ovato-oblongis apice obtusis basi oblique cordatis tenui ter coriaceis petiolis abbreviatis validis fae. sup. late canaliculatis, stipulis late oblongis obtusis mox a latere altero semissis altero omiino disjunctis firmis, floribus magnis in racemis axillaribus paucifloris ebracteatis quam folia mullo brevioribus dispositis, pedicellis patuli-ascendentibus validis calycem manifeste excedentibus, calycis tubo (ovario) subcylinrico quam limbus satis latus ore undulatus paullulum longiore, corollie tubo elongato lobos longe excedente extus glabro intus deorsum araneoso, filamentis abbreviatis authoris linearibus apice acuminatis basi sagittaltis, ovario 2-loculari, stigmate anguste fusiformi lobis lanceolatis brevi- bus, bacea ——.

Hab. Toro, forest-bank of the Semliki River; Bagshawe, 1285. Folia in sicco late viridia, pag. inf. pallidiora, adusque 20·0 × 8·0 cm.; costae secundariae utринque circa 10, basales apertissime fornicatae, reliqua patuli-ascendentes, marginem versus arcuate, omnes supra plane subus eminentes; petioli ± 0·5 cm. long. Stipulae circa 1·5 cm. long. Racemi 7-flori, validi, compressi, 3·0-3·5 cm. long. Pedicelli ± 1·0 cm. long. Flores virescenti-albi. Calycis tubus (ovarium) 0·35 cm. long.; limbus 0·3 cm. long., ægre 0·4 cm. diam. Corolla tota humectata 19·5 cm. long.; tubus 17·0 cm., lobi 2·5 cm. long. Filamenta vix 0·1 cm. long., antheræ 0·9 cm., stigma 0·7 cm. long., hujus lobi 0·125 cm.

Near O. formosus Hook., from which it differs, inter alia, in the inflorescence, the broader corollas, and the calyx.

Canthium myrtifolium, sp. nov. Fruticosum, glabrum, ramulis patuli-ascendentibus gracilibus sat crebro foliosis ad nodos tumidis, foliis submedioribus ovatis apice leviter eudipatis ipso obtusis basi obtusis rotundatisse coriaceis supra nitidis castaneis subtus opacis petiolis abbreviatis crassissulis, stipulis ima basi dilatatis inde lineari-subulatis rigidis dinoeule persistentibus, floribus parvulis 5-meris in fasciculis axillaris subulatis sessilibus paucifloris dispositis, pedicellis quam calyx plane longioribus gracilibus pube- rulis, ovario depresse hemisphericali quam calyx longiore, calycis perbrevis limbo 5-dentato dentibus triangularibus acutis margine ciliolatis, corollae parvae extus leviter glanduloso-puberula tubo brevi sat lato intus juxta fauces annulatim barbatò limbí lobis tubum breve inter excedentibus anguste ovato-oblongis obtusis cito reflexcis, staminibus subsessilibus antheris ovato-oblongis basi bre- viter sagittatis, disco glabro, stylo leviter exserto glabro, stigmate mitreformi.

Hab. Toro, forest near mouth of the Mpanga; Bagshawe, 1152.

Folia 3·0-5·0 × 1·7-3·0 cm.; costae secundariae utrinque 4, ascendentii-patule, marginem versus aperte fornicate, utróbique paulluo emíntentes; petioli 0·2-0·3 cm. long. Stipulae 0·3-0·4 cm. long. Florum virescentium fasciculi 0·7-1·0 cm. diam. Pedicelli 0·5-0·6 cm.long. Ovarium 0·1 cm., calycis limbus 0·075 cm. long. Corolla in toto 0·45 cm. long.; tubus 0·2 cm. long., ima basi
0·125 cm., faucibus 0·175 cm. diam.; lobi 0·25 cm. long. Filamenta 0·1 cm., antherae 0·15 cm. long. Stylus 0·4 cm., stigma 0·12 cm. long.

This can be at once distinguished from C. Schimperianum A. Rich. by the smaller leaves, the fewer-flowered fascicles, the short pedicels, and small corollas.

**Pavetta graveolens**, sp. nov. Fruticosa, elata, ramulis rigidi bene foliosis cortice sordido cito circumdatis glabris novellis minute griseo-pubescentibus, foliis petiolatis ob lanceolatis vel ob lanceolato-linearibus acutis vel breviter acuminatis nonnullum obtusum basin versus gradatim attenuatis coriaceis glabris eximie nervulosis in sicco nigrescentibus fac. sup. nitidis ie. aliquando griseo-viridibus, stipulis deorsum dilatatis sursum angustatis extus minute puberulis, floribus in corymbis terminalibus brevibus pedunculatis sublaxifloris griseo-pubescentibus digestis, bracteis parvis subnulatis minute pubescentibus, pedicellis calycem aequantibus vel quam is brevioribus, ovario ovoideo calycis limbo fere æquilongo minute pubescente, calycis limbo anguste cannamulato ad ¼ in lobos triangulare-deltoides acutos diviso, corollae parvulae tubo calycem breviter excedente latiusculo uniformi lobis 5 oblongis obtusis cito reflexis tubo duplo longioribus, filamentis corollæ ori insertis antheris expartis acutis, stylo breviter exserto pilosi usculo, stigmatæ anguste fusiformis apice bifido.

Hab. Toro, forest near mouth of Mpanga; Bagshawe, 1173.

Folia modisce 8·0-10·0 × 2·5-3·0 cm., paucæ juveniliae ± 6·0 × 0·15 cm.; costæ secundariae utrinque 9-10, ascendentes, juxta marginem leviter fioricate, ut costulæ elegantulæ utrobique eminentes; petiolis adusque 1·5 cm. long. vel etiam paullo magnis; stipulae 0·5-0·6 cm. long., diusculæ persistentes. Corymbi 5·0-8·0 × 4·0-5·0 cm. Bractæ inferiores circa 0·3 cm. long., superiores inimincæ. Pedicelli separissimæ 0·1-0·2 cm. long. Flores albi, graveolentes. Calyx totus 0·2 cm. (ovarium 0·1 cm., limbus 0·1 cm., lobi 0·05 cm. long.). Corolla in toto 0·6 cm. long.; tubus 0·2 × 0·14 cm., ima basi levissime coarctatus; lobi 0·4 cm. long. Stylus 0·5 cm., stigma circa 0·3 cm. long. Bacca sphæroidea, microscopice puberula, calycis limbo persistente ouusta, 0·4 × 0·4 cm.

In general appearance resembles P. neurophylla S. Moore from Rhodesia, but the flowers are different in several respects. The very short corollas are a prominent feature of the species.

**Pavetta albertina**, sp. nov. Verisimiliter fruticosa ramulis validis glabris cortice albido mox circumdatis novellis puberulis, foliis pro rata parvis lanceolatis vel lanceolato-oblongis obtusis basi in petiolum brevem cuneatim attenuatis membranaceis glabris in sicco viridibus, stipulis a basi latae diusculæ persistente in appendicem brevem lineari-subulatum deciduam subito excurrentibus extus puberulis iutus basi hirsutis, floribus mediocribus tetrameris ad apicem ramulorum validorum brevium vel perbrevum dense umbellatis, pedicellis abbreviatis puberulis, calycis puberuli tubo (ovario) subsphæroidea quam limbus paululum breviori limbo adusque medium in lobos triangulares obtuse acutos diviso, corollæ glabræ tubo angusto uniformi quam lobi oblongi obtusi duplo...
longiore, filamentis corollæ ori insertis, antheris exsertis, stylo longiusculo exerto puberulo, stigmate anguste clavato integro. 

Hab. Near mouth of Mizizi, south-east of Lake Albert; Bagshawe, 1318.

Folia solemniter 4·0–6·0 cm. long., 1·5–2·0 cm. lat.; costae secundariae utrinque 4–6, ascendentes, parum aspectabiles; stipulae circa 0·3 cm. long. Umbellæ pluriflore, circa 3·0 cm. diam. Pedicelli 0·1–0·2 cm. long. Flores albi. Calycis tubus (ovarium) 0·1 cm. long.; limbus totus 0·15 cm., lobi 0·08 cm. long. Corolla in toto 1·7 cm. long.; tubus 1·1 cm., lobi 0·6 cm. long. Filamenta crassiuscula, 0·15 cm. long.; antheræ anguste lineares, apice apiculata, 0·5 cm. long. Stylus 2·2 cm., stigma circa 0·25 cm. long.

Evidently not far away from *P. lasiopeplus* K. Schum., which is described as having smaller leaves, bimicrulate stigmas, flowers on longer pedicels in umbels with a number of bracts at the base, calyx-limb divided nearly to the base into subulate lobes, &c. It is also near the plant called by me *P. grumosa*, another of Dr. Bagshawe's discoveries; but this, besides drying black, has a different calyx among other points.

(To be continued.)

HYBRIDS AMONG BRITISH PHANEROGAMS.

BY THE REV. E. F. LINTON, M.A.

Some years ago there were those still among us who doubted the occurrence of hybrids among plants in a state of nature, and in a paper on the subject one might have been expected to furnish proof of their being naturally produced. There is no need of this now; rather the danger is the other way of too much being made of hybrids, and hybridity being set up as the chief factor of variation in all genera where great variety occurs. There are some cases that support such a view, notably the genus *Salix*. But to argue from the particular to the general is an old fallacy. In the case of *Salix* we certainly have an instance in which many forms have been mistaken in the past for species which were of hybrid origin. All these being apparently fertile (if female), there was some reason for the botanists of a generation or two ago regarding them as species or varieties. Now we know, from observation and experiment combined, that the large majority of these forms were produced by hybridization.

In the genus *Mentha*, also, several forms have been published and repeatedly described as species or varieties which are hybrids; in this genus the hybrid resultants are sterile, and the form is preserved and spread by strong, rapidly-increasing suckers.

This difference between the cases of *Salix* and *Mentha* brings me to one object I have in preparing this paper. I wish to suggest a line of observation which may not only be of some interest, but
also redeem the subject of it from a charge of barrenness. While in *Salix* hybrids we find fertility the rule, and in *Mentha* hybrids sterility, there are genera in which it is not quite clear what the rule is: do we, for instance, know the habits of *Rose* in this respect? The testimony is somewhat conflicting; and this may suggest another question wanting solution: whether the rule of sterility or the reverse always holds good throughout a genus, or an order? Then there are genera where it is still in question whether some of the forms are hybrids or species, as in *Pyrus* (*Sorbus*). Such as these stand in need of experimental treatment rather than observation.

I am inclined to think with regard to hybridity in plant life that we must not expect to be able to reduce all cases to one rigid rule; and therefore we must not draw inferences as to the habits of one genus from the habits of another. The botanists of the earlier half of last century either refused to believe in natural hybrids (as Sir J. E. Smith with the Willows), or held that, while the cross-offspring of varieties was fertile, the cross-offspring of species was always sterile. They were too servile to the idea of uniformity in nature; and these prejudices long stood in the way of progress being made in understanding the habits of hybrids and the part they have played in the economy of nature.

The last edition (ninth) of the *London Catalogue of British Plants* made an attempt to distinguish the forms which were accepted as hybrids with a × placed between the names of the parent species; but there was no consistency of method; the work could not be called up to date; many hybrids still stood in the list numbered as species, and some few were lettered as varieties. In the next edition (tenth) it should be possible to make some advance towards a complete enumeration of British hybrids, and a consistent method of exhibiting them in the list.

With this object in view, as well as that mentioned above, I propose to catalogue here all the phanerogams which are known or believed to be of hybrid origin in this country, and some others which have been under suspicion or question, so far as I am acquainted with them, in the hope that other observers may supplement the list, remove queries, and record fertility or sterility where that character is not ascertained.

No attempt is made in this paper to represent the geographical distribution of the hybrids that have been recorded for Britain. Localities are referred to chiefly when only one or two are known to me, or when it is doubtful whether they have been published. I have to thank several friends who have given me help, especially the Rev. E. S. Marshall for very numerous comments and criticisms, and for all the observations here quoted from Dr. Focke’s *Pflanzenmischlinge*; the Rev. W. Moyle Rogers for a list of Rubi; Mr. Alfred Fryer for a valuable letter on Potamogeton; Mr. Arthur Bennett for a most helpful list of hybrids in the same genus; also the Revs. A. Ley and W. R. Linton, and Mr. G. C. Druce.

**Ranunculaceae.**—*Thalictrum*. Rouy & Foucaud (Fl. de France) report that Dr. Focke derives *T. odoratum* G. & G. from *T. foetidum*
and T. minus. From limestone rocks, W. Yorks, Mr. A. E. Bradley sent me a series of specimens, some of which were T. collinum Wallr., some T. odoratum, and one was a near approach to T. fieli-
dum; but I am not sure of the latter for Britain yet.

Ranunculus Bandoti × Drouetii, R. Bandoti × heterophyllus, R. peltatus × trichophyllus, and R. peltatus × Lenormandi are given by Messrs. H. & J. Groves in Bab. Man. ed. ix.; and the last-
named is said to be partially fertile (Journ. Bot. 1901, 121).

Papaveraceae.—Papaver dubium × Rhaes was once issued by Mr. G. Nicholson, if I remember rightly, the name being based on the shape of the capsule mainly. I remember seeing P. Rhaes forms with similar intermediate capsules in Norfolk, but did not arrive at any conclusion.

Fumariaceae.—Fumaria densiflora × officinalis is reported (p. 120) by Mr. C. E. Salmon from near Wendover, Bucks, who says the plants were apparently quite barren, as well as intermediate in character.

Cruciferae.—Cardamine pratensis × flexuosa was reported from between Kew and Mortlake by Mr. George Nicholson, and issued through the Botanical Exchange Club (Rept. 1879, p. 5) as var. Hayneana Welw. A similar plant was found in Shapwick by Rev. W. R. Linton, which we regarded as this hybrid without any doubt. On growing a root at Bournemouth for two seasons, it proved per-
flectly sterile.

Cochlearia. Mr. Marshall once reported a hybrid from his garden at Milford, but he tells me he is not sure that any have occurred wild.

Cistaceae.—Helianthemum Chamacistus × polifolium (H. sulphu-
reum Willd.), Purn Hill, Bleadon, N. Somerset; referred to in the

Violaceae.—Viola hirta × odorata, local, but not very rare; according to my experience, sterile; Rouy & Foucaud say, sterile or with 2-6 seeds.—V. silvestris × Riviniana has been detected by the Rev. W. R. Linton at Shirley in the garden and neighbourhood, and is sterile.—V. Riviniana × ericetorum, more widely distributed than the last. I have met with it three times at least in Dorset; always sterile.—V. ericetorum × lactea was sterile near Bourne-
mouth, and probably elsewhere.—V. ericetorum × stagnina was, I believe, sterile on Holme Fen. To these, Mr. Marshall tells me, may be added V. lactea × Riviniana, discovered by Dr. W. A. Shoolbred on Tidenham Chase, v.-c. 34, W. Gloster. Dr. Focke says this hybrid (V. lancifolia Thore × Riviniana Rchb.) is alleged to have been observed in France.—V. arvensis × tricolor, which I have put on record for Dorset, produced what looked like good seed and capsules well-formed; it is doubtful whether there is specific difference between these. I have also seen in Dorset both V. arvensis (Baileygate) and V. tricolor form (Blandford) crossed by some garden pansy.

Caryophyllaceae.—Silene. Darwin (Origin of Species) says that, while several hybrids have been made between species of Dianthus,
none have been produced in this genus, though often attempted. One was formerly reported between *S. anglica* L. and *S. quinquevulnera* L., but withdrawn in the last *London Catalogue*. I cannot say whether it was right. Rouy & Foucaud do not give it, but they give (*Fl. France*, iii. 107) *S. inflata × maritima* as the solitary case in the genus; this hybrid I have formerly published from near Cheddar, and Major A. H. Wolley-Dod from Woolwich Arsenal, and both plants seem to me rightly diagnosed. There are several *Dianthus* hybrids reported in the *Flore de France*. *Lychnis alba × dioica* has been occasionally met with. Rouy & Foucaud report its occurrence here and there in France with the parents; and Dr. Focke says it has been found in many parts of Germany. Mr. Druce tells me that it is fertile.

**Hypericaceae.** — *Hypericum humifusum × linariifolium*. Miss Dawber sent a plant to the Waterloo Botanical Exchange Club in 1888-89 from St. Catherine's, Jersey, labelled *H. linariifolium* Vahl, which Mr. Bennett said, in the *Report*, was nearer *H. humifusum* L., questioning whether it was not the plant Syme referred to (*Engl. Bot. vol. ii. p. 156, 1864*) as strangely intermediate between these two species, some specimens approaching to the one parent and some to the other. My specimens of the gathering were *H. linariifolium*, but there seems good reason to believe that Syme, and perhaps Miss Dawber, had lit upon the hybrid.

**Leguminose.** — *Medicago silvestris* Fr. Nyman supposes this to have sprung from *M. sativa* L. and *M. falcata* Fr., and to have become fixed nearer the latter. Rouy & Foucaud (*Fl. France*, t. v. pp. 12, 13) recognize the hybrid, and call it *pseudo-falcata* Rouy & F., but place *M. silvestris* as a variety under *M. falcata* Fr.

**Rosaceae.** — *Rubus*. The hybrids which have been observed in this genus are fairly numerous, even in this country, where no great amount of attention has been paid them. They were not placed in the *London Catalogue* (ed. 9), though several had been ascertained by the Revs. W. Moyle Rogers, A. Ley, W. R. Linton, R. P. Murray, and myself previously to its issue. Those now given are a limited list which the Rev. W. M. Rogers has kindly supplied, and which he considers may be relied on, having seen most of them in the living state, and had them all in his herbarium: — *R. holerythros* F. × *Sprengelii* Weihe; Surrey. — *R. Lindleianus* Lees × *radula* Weihe; Derbyshire (I add Dorset). — *R. rusticanus* Merc. × *R. affinis* Wh. & N. var. *Briggsianus* Rogers; several localities in Devon and Cornwall. — *R. rusticanus × corylifolius* Sm.; Dorset; probably frequent. — *R. rusticanus × leucostachys* Sm.; many localities in Dorset, Hants, Glamorgan, Hereford, Worcester, Derby (I add Suffolk, E.). — *R. rusticanus × holerythros*; Surrey. — *R. rusticanus × argenteus* W. & N.; Somerset. — *R. rusticanus × mutabilis* Genev.; Surrey. — *R. rusticanus × Lindleianus*; Surrey. — *R. leucostachys × foliosus* W. & N.; Kent. — *R. leucostachys × imbricatus* Hort.; Surrey. — *R. leucostachys × pulcherrimus* Neum.; Surrey. — *R. leucostachys × Sprengelii*; Derby. — *R. leucostachys × Marshalli* F. & R.; Surrey. — *R. mueronatus × infecundus* Rogers; Here-
ford.—*R. anglosaxonicus* Gelert × *rudis* W. & N.; Derby.—*R. casius* L. × *idaeus* L.; Dorset, Hants, Surrey, Staffs (I add Sussex). These are sufficient to show that a fair number of British hybrids exist, and are certified by Mr. Rogers; I do not wish to throw doubt upon others that have been recorded by omitting them here. They may be perfectly barren, as I have seen a large bush of *R. leucostachys* × *rusticanus* in Suffolk, or with a few perfect drupes which may contain fertile seeds; *e.g.* the Rev. E. S. Marshall and I saw a large colony of *R. casius* × *idaeus* north of Arundel in 1901, and could only find one single drupe each in the whole lot. It is not unlikely that some of the numerous *R. dumetorum* forms are hybrids or of hybrid origin. I have seen one of these in large quantity on Breamore Down, Hants, entirely barren, and judged both by Dr. Focke and myself to be a hybrid.

*Geum intermedium* Ehrh. The plant I am familiar with in Dorset and Wilts is undoubtedly *G. rivale* × *urbanum*, and this is no doubt the common view. Mr. G. C. Druce assures me that it is fertile, and its seed is offered by the Cambridge Botanic Garden. *Potentilla* produces in this country the three hybrids between *P. procumbens*, *reptans*, and *silvestris*. Mr. Marshall thinks that some of those that have been met with may be secondary crosses with the parents, and quotes Focke to the effect that fruit is produced, though sparingly, in this group of hybrids.

In the genus *Rosa*, M. Crépin held distinctly that some forms were of hybrid origin, notably the groups of *R. involuta* and *R. hibernica*. The latter name has been given to forms of *R. spinosissima* × *canina* or × *glauca*; while *R. spinosissima* hybrids with *R. mollis* and *tomentosa* vars. have given us *R. involuta* and many of its varieties. There is recorded besides *R. pimpinellifolia* × *rubiginosa* from Kent and Perth; and Mr. Marshall also tells me that Major Wolley-Dod has found a rose which seems to be *R. tomentosa* × *tomentella*, and that Mr. Rogers considers *R. pseudo-rusticana* to be *R. arvensis* × *systyla*. With regard to fertility or otherwise, Mr. Marshall has noticed the fruits falling off before maturing in some *R. involuta* forms; Rev. W. R. Linton has noticed *R. mollis* × *spinosissima* in Chee Dale quite sterile. On the other hand, Mr. Baker describes the fruits of several *R. involuta* varieties; Mr. Druce believes *R. mollis* × *spinosissima* produces fertile seeds. My own impression is that some rose hybrids at least are fertile. Lord Penzance has produced several striking hybrids between *R. rubiginosa* L. and sundry old-fashioned garden roses; and Messrs. Keynes, Williams & Co., of Salisbury, who deal largely in these interesting products, have written in answer to my question that these "Hybrid Sweetbriars produce fertile seed in abundance, but the seedlings produced by it nearly all partake of the Sweetbriar, very few of them indeed showing any tendency to produce plants like the parents: many of the other Hybrid Roses produce seed more or less freely, but their offspring is very erratic and uncertain." It seems to follow from the evidence that, while some hybrid rose-bushes have been observed not bearing perfect fruit, the contrary
is frequently the case with wild roses, and usually so with those which are under cultivation.

**Pyrus Aria** Ehrh. has long been supposed by some botanists to produce hybrids with **P. Aucuparia** Ehrh. and **P. terminalis** Ehrh. Prof. Koehne is an advocate of several forms in this *Sorbus* section resulting from hybridity. Dr. Focke says (p. 145), "*P. Aucuparia × scandica* Bab. is *Sorbus hybridra* L., one of the few hybrids which were rightly determined by Liné"; and he gives other examples. The Rev. A. Ley, who knows the British forms in the field better than any of us, holds, on the contrary, that none of our *Sorbus* forms are real hybrids, adducing the fertility of our various plants as conclusive evidence. Judging, however, from what is stated above with reference to hybrids of *Geum* and *Rosa*, we must not assume the fertility of a plant to be conclusive evidence against a hybrid origin; and, on the whole, I am inclined to believe that some at least if not all the forms which have been put under *P. pinnatifida* Ehrh. are hybrid forms of which *P. Aucuparia* is one parent, and that some of the plants which are called *Sorbus latifolia* P. are *P. Aria × terminalis*. Perhaps some botanic garden will experiment. *Cratagus oxyacantha × monogyna* is only a cross between varieties.

**Droseraceæ.**—*Drosera anglica × rotundifolia* (D. obovata Mert. & Koch), produced only on very soft boggy ground in my experience. It is remarkable that *D. rotundifolia* L. and *D. intermedia* Hayne should produce no hybrid, though often growing abundantly together.

**Onagraceæ.**—*Epilobium* has produced numerous combinations which are correctly stated in the London Catalogue, ed. 9. *E. hirsutum* L. crosses with *E. lanceolatum*, *montanum*, *obscurem*, and *parviflorum*; *E. parviflorum* Schreb. with *roseum*; *E. montanum* L. with *E. obscurem*, *palustre*, *parviflorum*, *roseum*; *E. lanceolatum* Seb. & Maur. crosses with *E. montanum*, *obscurem*, *parviflorum*, and *roseum*; *E. adnatum* Grischach with *E. Lamyi*, *montanum*, *obscurem*, *palustre*, *parviflorum*, and also, as a garden hybrid at Milford, Surrey, with *E. lanceolatum*; *E. obscurem* Schreb. crosses with *E. palustre*, *parviflorum*, and *roseum*; *E. Lamyi* F. Schultz with *E. lanceolatum*, *montanum*, *obscurem*, and *parviflorum*; *E. palustre* L. with *E. parviflorum* and *roseum*; *E. alsinfolium* Vill. with *E. anagallidifolium*, *montanum*, *obscurem*, and *palustre*; *E. anagallidifolium* Lam. with *E. obscurem* and *palustre*. Mr. Marshall has no additions to make to this list, and he tells me that he believes *Epilobium* hybrids to be, as a rule, completely sterile. Mr. G. J. Druce states very positively that they are fertile. I must confess that I am rather puzzled by this statement, for I incline to Mr. Marshall's view. I have seen few in the right condition for forming an opinion, but those few appeared to me to be producing no seed.

**Rubiaceæ.**—*Galium Molliusg × verum* has occurred in several places, and is, I think, our only hybrid in the genus. M. Rouy (Fl. France, viii. 19, &c.) gives *G. ochroleucum* Wolf. ap. Schweigg et Koertse Fl. Erlang. (1811) as the name for an aggregate hybrid between forms of these two, with many named varieties. He also

**Journal of Botany.**—Vol. 45. [July, 1907.]
records *G. boreale × verum*. I see no reference to fruit in the brief descriptions.

**Composite.**—Erigeron acer × canadensis, reported by Rev. E. S. Marshall (p. 164), does not appear to be known for France, but is given by Focke for several places in East Germany.—Senecio vulgaris × squalidus is perfectly fertile, and has become something of a weed in the Cambridge Botanic Garden; so I learn from Mr. R. I. Lynch, who adds that he believes *S. albescens* (*S. cineraria × Jacobaea*, see Journ. Bot. 1902, 401) to be also quite fertile.—Carduus crispus × nutans (*C. Newbouldii* H. C. Watson), occurring here and there with the parents, is sterile in my experience.—Cnicus palustris × pratensis (*C. Forsteri Sm.*) was sterile in Westmeath.—*C. heterophyllus × palustris* (*C. Wankelli Reich.*) is given by Nyman for Saxony, Bohemia, &c.; and as *C. Carolorum* Jenner by Dr. Focke for England, E. Germany, Styria, Bohemia, and Russia.—*C. acaulis × arvensis* (*C. Clarkei H. C. Watson*) and *C. acaulis × pratensis* (*C. Woodwardii* H. C. Watson) are recorded as British.

Hieracium in the London Catalogue has two hybrids indicated in the usual way, viz., *H. anglicum × hypocharoides* and *H. boreale × sciaphilum*. Of the latter I know nothing, but understood that it was found growing with the supposed parents, and judged by Mr. F. J. Hanbury to be a hybrid. The former (*teste* W. R. Linton) cultivation has proved to be a mistake, and it has been named *H. hypocharoides* Gibs. var. *lancifolium* W. R. Linton. The Rev. A. Ley writes to me that he has found undoubted wild *H. corymbosum × boreale*, and one or two hybrids have come up in his Hawkweed garden spontaneously; but I have no particulars of these. Under cultivation Mendel and Schultes have raised hybrids in this genus; but neither the Rev. W. R. Linton, nor Rev. E. S. Marshall, nor Mr. F. J. Hanbury, nor myself, who have all cultivated large numbers of different species in close proximity at the same time, have been able to detect any hybrid among the numerous seedlings which were allowed to flower; we are none of us opposed to the theory of hybridity accounting for the multitudinous forms, if the evidence prove favourable; but in our several experience the supporting evidence has not been forthcoming.

**Ericaceae.**—Vaccinium *Myrtillus × Vitis-Idaea* (*V. intermedium Ruthe*) I believe has not been reported from any but the original station.

*Erica ciliaris × Tetralix* (*E. Watsoni Bentham*). I did not examine this plant for fruit when I had it, but assumed its sterility (perhaps too readily); it produced no seedlings during the years it was in cultivation with me, and in a native station near Parkstone, Dorset, I observed the plants of the hybrid continuing to flower some time after *E. ciliaris* had entirely ceased; *E. Tetralix* had stopped still earlier. *E. Mackaii* is, says Focke (*l. c.,* p. 232), "evidently a hybrid of *E. Tetralix* L.; the other parent is probably *E. cinerea* L. (or *E. mediterranea* L., or *E. ciliaris* L?)." I do not think, nor does Mr. Marshall, that anybody who has gathered *E. Mackaii*, or seen it fresh gathered, as I have done, would agree that any of these suggestions hits the mark.
E. Stuart Linton was described in *Ann. Sc. Nat. Hist.* 1902, 177, as being derived from *E. Mackati* and *E. mediterranea* (*Journ. Bot.* 1902, 363).

**Plumbaginaceae.**—Limonium vulgare Miller × *L. humile* Miller (*Statice Limonium × variiflora*) was reported by me from Bosham, Sussex (*Journ. Bot.* 1902, 41), and agreed to by Mr. Marshall, who gathered it with me, and by Mr. C. E. Salmon.

**Primulaceae.**—Primula vulgaris Huds., *P. elatior* Jacq., and *P. veris* L. form hybrids each with the others. Mr. Marshall quotes Lloyd (*Fl. de l'Ouest*, p. 255, ed. 3) as saying of these three species and *P. variabilis* Goupil: “Ces plantes cultivées ensemble produisent des hybrides à l'infini”; but he thinks that in a wild state the hybrids are usually sterile, if not invariably. The *Polyanthus* of the garden is prolifically fertile; but though I have long grown *P. acaulis × veris* on light soil and heavy, I do not think seedlings have ever sprung up round these, as they do about *Polyanthus* and primrose. Mr. Druce, however, tells me that this hybrid is fertile. *Anagallis arvensis × caerulea* has been brought to mind recently by an interesting paper, showing much acumen, by Mr. James Edwards (*Journ. Bot.* 1906, 368), who referred to Mr. Trimmer’s experiment (*Fl. Norfolk*, p. 117-118), long familiar to me; Mr. Trimmer crossed the two, and “raised a few plants which bore dark purple flowers, but yielded no perfect seed.” Gaertner also crossed *A. arvensis* and *caerulea* several times, and found them absolutely sterile (Darwin, *Origin of Species*, chap. ix.). This evidence as to sterility will serve, if the hybrid should be observed in Britain.

**Gentianaceae.**—*Gentiana Amarella × germanica* (G. Pamplini Druce (*B. E. C. Report*, p. 879 (1892), and *Fl. Berks*, p. 345)), described from Berks specimens, and reported also by Mr. A. B. Jackson from Hants (*B. E. C. Report*, 1895, 490, and 1897, 557).

**Boraginaceae.**—Pulmonaria angustifolia L. from the New Forest and *P. officinalis* L. from West Suffolk produced a hybrid in Mr. Marshall’s garden at Milford; but their areas do not overlap in this country, so the hybrid cannot be expected to occur in Britain.

**Scrophulariaceae.**—Verbascum Thapsus L. has been known to cross spontaneously with *V. Lychnitis*, *V. nigrum*, and also in my garden (at Bournemouth) with *V. pulverulentum* Vill. The latter appeared to be perfectly sterile. Darwin credits the hybrids of *Verbascum* with remarkable sterility. We have two more hybrids occurring in this country, which *V. nigrum* makes with *V. Lychnitis* L. and *V. pulverulentum* Vill. Dr. Focke’s testimony is on the side of sterility in this genus, instancing *V. nigrum × Blattaria*, *V. Lychnitis × Blattaria*, and *V. virgatum × nigrum* (artificially produced by Gaertner) as all being sterile. He mentions that Darwin found *V. Thapsus × Lychnitis* which he planted in his garden to be “quite infertile when left alone; but when fertilized by the pollen of a parent, it produced a few capsules with 2-5 seeds, whereas the capsules of *V. Thapsus* contained over 700 seeds.” Similarly he
states that \textit{V. Thapsus} \(\times\) \textit{nigrum} is "completely sterile; small abortive capsules occur through fertilization with one of the parents." Sterility, therefore, may be regarded as the rule in this genus. \textit{Linaria repens} \(\times\) \textit{vulgasis} is said by Mr. Druce to be fertile.

\textit{Euphrasia.} Mr. F. Townsend published the following hybrids at the close of his monograph on the genus (\textit{Journ. Bot.} 1897, 321, &c.):

- \textit{E. Rostkoviana} \(\times\) \textit{nenorosa} Towns. (\textit{E. glanduligera} Wettst.);
- \textit{E. Rostkoviana} \(\times\) \textit{brevipila} (\textit{E. notata} Towns.);
- \textit{E. gracilis} \(\times\) \textit{brevipila} (\textit{E. difformis} Towns.);
- \textit{E. occidentalis} \(\times\) \textit{brevipila} (\textit{E. pratiuscula} Towns.);
- \textit{E. brevipila} \(\times\) \textit{scotica} (\textit{E. renusta} Towns.); and
- \textit{E. scotica} \(\times\) \textit{gracilis} (\textit{E. electa} Towns.).

The Rev. E. S. Marshall adds, from Mr. Townsend's MS. note-book, \textit{E. brevipila} \(\times\) \textit{cuta}, from Carnarvon, Kincardine, Aberdeen, W. Inverness, &c., and

\textit{E. brevipila} \(\times\) \textit{stricta}, from Carlow, Kilkenny, Dublin, Tipperary, as having been entered without a query; and believes that he has himself gathered \textit{E. brevipila} \(\times\) \textit{foulaensis} on Ben Laoghal, W. Sutherland.

\textit{Labiate.}—\textit{Mentha.} In this genus we have owed so much occasional help to M. Ernest Malinvaud in determining British forms, and not least by his brief paper in this Journal (1900, 171), that I feel I cannot do better than present his views here, to which I am more or less prepared to assent. With him there are five cardinal species, viz., \textit{M. rotundifolia} Huds., \textit{M. longifolia} Huds., \textit{M. viridis} L., \textit{M. aquatica} L., and \textit{M. arvensis} L.; he omits \textit{M. Pulegium} L. as a distinct genus or sub-genus. \textit{M. rotundifolia} and \textit{M. longifolia} cross freely in France; \textit{M. viridis} crosses with \textit{M. longifolia} too, and we have the resultant in gardens and ground that has gone out of cultivation. "A portion of its characteristics is found in \textit{M. rubra}, \textit{M. piperita}, \textit{M. gentilis}, &c." \textit{M. aquatica} crosses on the one hand with \textit{M. longifolia}, giving us \textit{M. pubescens} Willd. and on the Continent some allied forms; and on the other with \textit{M. arvensis} L., producing the \textit{M. sativa} group. I should have been inclined myself to range \textit{M. gentilis} under this latter combination, and also \textit{M. pratensis} Sole. Hybrid mints are usually sterile, probably always; and owe their extension and permanence to the strong underground suckers they freely send out. To this we may attribute a certain stability of character, greater than we should expect in plants of hybrid origin, which has led to certain hybrid forms passing so long for species.

\textit{Sentellaria} \textit{galericulata} \(\times\) \textit{minor} I believe is sterile.——\textit{Stachys palustris} \(\times\) \textit{sylvatica}, long known as \textit{S. ambigua} Sm.——\textit{Lamium hybridum} \(\times\) \textit{purpureum}, which I have been inclined to take as identical with \textit{S. decipiens} Sond. There is, however, a form of \textit{S. purpureum} with more deeply-cut leaves which is not the hybrid; and I do not feel positive which is \textit{S. decipiens}.

\textit{(To be concluded.)}
FORMS OF SALSOLA KALI.

By C. E. Salmon, F.L.S.

In this Journal for 1904, p. 26, Mr. G. C. Druce mentions that he found S. Kali var. tenuifolia Moq.-Tand. at Southwick, Sussex, in 1900, growing with Atriplex rosea, and considered that both were introduced plants. This was undoubtedly the case as to the latter, which was found there many years ago (see Arnold, Fl. Suss. 67, 1887), but Mr. T. Hilton, who accompanied Mr. Druce when the plants were found and knows every inch of the coast between Shoreham and Brighton, thinks the localities are confused in Mr. Druce's notes. A. rosea grew near the harbour, Shoreham, amongst rubbish, and has since disappeared; but the Salsola occurred in quite a different spot, and was not associated with aliens or other rubbish-heap undesirables.

As I wished to see more of the plant than dried examples offered, I paid a visit to the locality in August last with Mr. Hilton and Rev. E. Ellman. We were pleased to find the variety mentioned by Mr. Druce growing in some plenty with the type, from which it appeared to differ in being softer to the touch, in its long slender leaves (an inch or more), and in being apparently uniformly glabrous or nearly so. There seems no reason whatever to doubt its being just as much a native as the Atriplex laciniata with which it was associated in sandy ground.

It is not easy to find a satisfactory name for the specimens gathered, owing to the divergence of opinion existing in books.

Looking up first Mr. Druce's suggested name, "Var. tenuifolia Moq.-Tand.," the original description in DO. Prodr. xiii. part 2, 188 (1849), is as follows: "Suberecta, aspera ant glabra, viridis, foliis longis tenuibus subfiliformibus, alis brevibus pallide roseis—Folia interdum 4 poll. longa." This diagnosis does not seem to fit our plant very satisfactorily, as the leaves, though narrow, can hardly be called "subfiliform," but it fits uncommonly well the plant distributed by the Watson Exchange Club in 1900, and recorded in the 1899–1900 Report, p. 18, as "S. Kali L. var. Tragus DO. Waste ground west of the Docks, towards Hessle, Hull, E. Yorks, v.-c. 61. Identified at Kew. Oct. 1899. C. Waterfall."

The original description of S. Tragus L. (L. Sp. Pl. ed. ii. 322 (1769)), "foliis spinosis lævibus," agrees with the Sussex plant; it is placed by Moquin under his S. Kali Ten. β Tragus—"suberecta glabra viridis, alis subbrevibus subroseis vel roseis (S. Tragus L.).—Interdum alæ dilatatæ et brevissime in eodem caule (var. mixta Koch)."

The common form of S. Kali in Britain appears to be scabrid. Syme (Eng. Bot. ed. 3, viii. 4) says, "Plant (in the form which occurs in Britain) with the stem and margins of the leaves clothed with cartilaginous spreading hairs"; Hooker says (Stud. Fl. 348), "pubescent or scabrid"; and Babington (Man. 351), "minutely hairy." This would seem to be the S. Kali Ten. a hirta Ten.
(Moquin, l.c.), "procumbens vel ascendens hirta aspera viridescens, alis dilatatis vix coloratus. (S. Kali L.)"

Grenier & Godron (Fl. de France, iii. 32) complicate matters by retaining S. Tragus L., and placing under it S. Kali \( \gamma \) tenuifolia Moq.

Reichenbach (Fl. Germ. Excurs. iii. 583, 1832) may be consulted as to the forms of S. Kali, and also Koch (Syn. Fl. Germ. et Helv. ed. 3, ii. 521, 1857), who bases his varieties upon differences in the perigonium, and ignores hairiness or leaf form.

Richter (Fl. Europ. ii. 165, 1899) gives the following synonymy for S. Kali L. var. Tragus (L.). Moq.:—

- **S. spinosa** Lam. Fl. Fr. iii. p. 240 (1778).
- **S. controversa** Todaro, Fl. Sic. Exs. n. 1088.
- **S. Kali \( \beta \) calvescens** Gren. et Godr. Fl. Fr. iii. p. 81 (1855).

The extensive distribution given does not include Britain, but embraces France, Holland, and Germany.

This note may call attention to the fact that S. Kali is a plant that shows interesting variations, and I hope that British botanists, when gathering Salicornias (to which a good deal of attention has been given lately), will not omit to examine and report upon the neighbouring Salsolas.

S. Kali var. Tragus will probably be found to occur in other places upon our shores and in various herbaria.

---

**SHORT NOTES.**

**Gymnadenia \( \times \) Le Grandiana G. Camus.**—In this Journal for 1899 (p. 360) I drew attention to a plant found by me on the chalk escarpment north of Sevenoaks, which appeared to Mr. F. J. Hanbury, as well as to myself, to be a hybrid between *Gymnadenia conopsea* and *Orchis maculata*. In the Journal for 1902 (p. 297) the Rev. E. F. Linton mentions specimens in his herbarium from Bangor and Oswestry which he identifies with this hybrid. I am also informed that a similar plant has been found in the extreme north of Scotland, the *Orchis* parent in this case being *O. maculata* subsp. *ericetorum* Linton. This year, having obtained three specimens of the Sevenoaks plant in a living state, I took them to the Botanical Department of the British Museum, where I was enabled to consult what had been published on the subject. The plant was described and named by M. E. G. Camus in Bull. Soc. Bot. de France, xxxvii. 215 (1890), in an account of plants found by him at Neuvy-sur-Barangeon (Cher), almost in the centre of France. He describes two new hybrids, one being \( \times \) *Orchis Sausaiana* (O.
coriophora × O. latifolia) and × Gymnadenia Le Grandiana (G. conopsea × O. maculata). The following is a translation of his description of the latter: "Discs of the pollen-masses free, not enclosed in a pouch. Tubercles of the root two-lobed. Stem slender, leafy, two decimetres in height, not hollow. Leaves linear-lanceolate, somewhat channelled above, obscurely spotted only at the top; bracts reddish, one-nerved, about as long as the ovary. Flowers few, in a short spike, lilac-coloured. Upper perianth-leaves equal, lanceolate-acuminate, the two lateral ones patent, ascending, not spotted. Lip oblong, three-lobed, the middle lobe entire, rather longer but narrower than the lateral lobes, with streaks and spots symmetrically arranged. Spur filiform, at least as long as the ovary, and pointing downwards. Plant exhaling a faint odour of vanilla." The Sevenoaks plant, if some allowance is made for the well-known variability of hybrids, agrees fairly well with the above description. The number of flowers and length of spike obviously depend on the luxuriance of the individual; the lateral sepals are usually rather horizontal than ascending, and are spotted. The ground colour of the flower resembles that of G. conopsea, the markings being only slightly darker. The spur is certainly much less filiform than in G. conopsea, and I have found no trace of free nectar. The odour is that of G. conopsea, but somewhat fainter, and under some conditions hardly perceptible. The whole upper surface of the leaf is spotted, but more faintly than is usual in O. maculata. It may be of interest to note that the viscid matter of the discs seems hardly fluid enough to insure the easy removal of the pollen-masses. This is not surprising, as it is not protected by a pouch, as in O. maculata, and is much more exposed than in G. conopsea. The ovaries readily swell if pollen, even that of Habenaria chloroleuca, be applied, but I cannot say whether good seed was formed. I am persuaded that a careful search in places where both parents occur would often be rewarded by finding the hybrid, and possibly this remark applies also to the hybrid between G. conopsea and O. latifolia, which is found on the Continent.—Henry Peirson.

[Mr. Peirson's specimen, with enlarged drawings of the flowers, is exhibited in the public gallery of the Department of Botany.—Ed. Journ. Bot.]

Cephaloziella patula (Steph.) Schiffn. in Britain. — When botanizing in Crete in the spring of last year I gathered a Cephaloziella with abundant perianths, which Prof. Schiffner kindly identified for me as C. Baumgartneri recently described and figured by him in Verh. der K.K. Zool.-Bot. Ges. in Wien, 1906, p. 273. Prof. Schiffner has subsequently shown (in Oesterr. Bot. Zeit. 1907, 48) that this species is the same as Cephalozia patula Steph. in Bull. Soc. Bot. Ital. 1905, 210, and this latter specific name consequently has the priority. Shortly after I had received this identification, I gathered an hepatic on a very familiar part of the chalk downs close to Lewes which appeared to be identical with the Cephaloziella from Crete, and which identity Mr. S. M. Macvicar

Digitized by Microsoft
and Prof. Schiffner himself have since fully confirmed. It is a little curious that I should have first gathered in Crete a plant which grows within ten minutes' walk of where I have lived for years. *C. patula* is closely allied to *C. integerrima* (Lindb.) Warnst., recently recorded as British by Mr. S. M. Maevicar (Journ. Bot. 1907, 66), and like that species has very highly connate bracts. It differs from it, however, in the larger and generally more incassate cells, the more pointed lobes of the leaves, and in the more pointed and more frequently denticulate pericharial bracts. The margin of the leaves and bracts is, moreover, always erect in *C. patula*, while it is not infrequently recurved in *C. integerrima*. *C. patula* appears to be a truly calcicolous plant, and generally reaches its best development near Lewes when growing directly on blocks of chalk, and it has its headquarters in the Mediterranean regions, where it is widely distributed. *C. integerrima*, on the other hand, grows on damp clay or sand, and although it has been found as far south as Italy it appears to have its headquarters in northern Europe, being recorded from several localities in Scandinavia. In the original description, *C. patula* is said to be dioecious; while Prof. Schiffner describes his *C. Baumgartneri* as pseudo-dioecious, a term which he uses to cover those cases where a monoecious plant, by the subsequent separation of the male and female stems, presents the appearance of being dioecious. I found comparatively little difficulty in proving the Lewes plant to be monoecious by examining young material in the autumn, but when the young perianths are fully formed in the spring, the character becomes more difficult to ascertain. *C. patula* will probably be found over a considerable part of the chalk and limestone districts of the South and West of England where suitable conditions occur. The locality near Lewes is a steep estuarine cliff, where the solid chalk protrudes here and there through the turf. It is associated here with *Seligeria calcarea*, various species of *Weisia*, and *Lophozia turbinata*. In Crete, where it grew on the limestone, it was generally associated with *Weisia calcarea*, *W. verticillata*, *Lophozia turbinata*, and *Mesophylla stillicidiorum*.

**Ononis reclinata** L. in Glamorgan.—Through the courtesy of Professor Seward we have had an opportunity of looking through a number of letters addressed to the late Professor Babington by various botanists and others, which are preserved in the Botany School at Cambridge. Among them is one from Joseph Woods, dated December 1855, in which the following passage occurs:—"I find on looking over my plants that I have a specimen of *Ononis reclinata*, gathered at Port Eynon many years ago." Woods's herbarium came into the possession of the late Mr. Frederick Townsend, who bequeathed it to Mr. Hume for the Botanical Institute which he is proposing to establish in South London. Mr. Hume has kindly lent us the specimen in question. It is labelled "*Ononis*, "on rocks at Port Eynon, Glamorganshire, 18 Sept. 1828" to which Woods has added, "reclinata?" the collector's name, "D. Sharpe," and the following note:—"Cal equal Corolla-segments
lin. lance. subacute. Stalk shorter than L. without marked difference in upper part & without Bract or Awn. L. obovato cuneata. Stip. obscurely dentate. Leg. equal Calyx. I think this rather to be mollis though the seeds are somewhat different." When he wrote to Babington, Woods had evidently come to the conclusion that the plant was *O. reclinata*. The specimen is an unusually branched and spreading one, and the calyx is rather longer in proportion to the pod than in most of our specimens, but we do not feel any doubt that it is correctly referred to *O. reclinata.*—H. & J. Groves.

**Hypnum riparium** L. in New Zealand.—*Sir J. D. Hooker* (Handb. New Zealand Flora, p. 482, footnote) writes: "The European *H. riparium* is stated (Fl. N. Z., ii. 109) to be possibly a native of New Zealand from very imperfect specimens collected at Hawkes Bay by Colenso. I do not now find the specimens, which were very small and incomplete, and I think that the identification is better suppressed." The occurrence of *H. riparium* in New Zealand has apparently not been confirmed since; Paris (Index) does not include New Zealand in its distribution; while Cardot (*Mousses de l'île Formose*, 1905) gives the distribution thus: "Toute l'Europe et l'Amérique du Nord. Asie: Japon, Tonkin, Thibet. Afrique: Algérie et îles atlantiques. Indiqué aussi en Australie, à Cuba et à l'île Kerguelen." It may therefore be interesting to record its collection in November, 1905, on mud at the bottom of a creek, alt. 800 ft., near Hunterville, north of Marton, North Island, by Mr. Chas. J. Burgess. It was sent me by Mr. W. H. Burrell, with some other New Zealand mosses from Mr. Burgess, and, though the nerve is rather weak for *H. riparium*, there can be no doubt of its identity. It is one of the aquatic forms, resembling var. *longifolium* Schimp., except in the less finely acuminate leaves; possibly var. *elongatum* B. & S. There are specimens in the Herb. Mus. Brit. from Swan River, Australia, coll. Drummond, and from Kerguelen Land.—H. N. Dixon.

**Seed-dispersal in Euphorbia Chamæsyce** L.—Kerner, in his *Natural History of Plants*, gives Euphorbia as an example of a genus in which the seeds are forcibly expelled, but I do not know if the process has been noted in the smaller species of the genus. *E. Chamæsyce* is a small prostrate annual very closely allied to our *E. Peplis*. I grew it last year in my garden, from seed of specimens gathered in 1904 by the Amphitheatre of Verona. Wishing to collect some seed for sowing, I brought a plant or two indoors and placed them on a table with their roots in water, and next day found the seeds and capsule-valves strewn for some distance round the plants. Observation showed that this was due to the expulsive action of the capsular walls, and I found on measurement that the seeds reached distances varying from fourteen to twenty-five inches. As the seeds are extremely small and light, measuring just 1 mm. in their longest diameter, the whole capsule rarely exceeding 2 mm. in diameter, this implies a high degree of mechanical energy, taking into account the size of the structure involved; the more so
as, in the conditions obtaining, the plant was probably considerably less vigorous than it would be when undisturbed and in its normal habitat.—H. N. Dixon.

Ecology of Montia fontana (p. 211).—In Mr. Riley's note on this plant, the kind of habitat is excellently described, and I might add that in the very many situations where I have seen it in numerous counties, when growing well, it always occurs in very well-aerated watery places. Mr. Riley, however, says:—"The factors, therefore, which seem to be necessary for the growth of this plant appear to be a spongy bog with a very slight trickle of water." Montia does not grow in bogs.—Wm. West.

Ophrys muscifera var. virescens.—A living specimen of a clear green variety of the Fly Orchis has been given to Kew by Mr. H. Walker, 2, Brownswood Park, Green Lanes, N. It was found in a small copse at Wye, near Ashford, Kent, by Mr. G. W. Harris, the joint discoverer with Mr. Walker of the rare Ophrys hybrida Pokorny in Britain two years ago. In the normal form of the species the antecne-like petals and the entire lip, with the exception of a white glaucous blotch in the centre, are dark purple; but in the variety this pigment is entirely suppressed, leaving these organs light emerald-green in colour, rather more yellow than the sepals, which are in their normal green state. There are parallel cases in Odontoglossum and other genera, where the suppression of dark brown markings leaves the flower yellowish green in colour, and these forms remain constant from year to year. In this case the peculiarity is probably permanent, and as the tuber has been left it may be possible to ascertain this next season. The variety seems exceedingly rare, only a single record having been discovered; this relates to a greenish form recorded as having been found in Switzerland by Hegetschweiler (Fl. der Schweiz, p. 874). The Wye specimen is preserved at Kew, together with a coloured drawing of it.—R. A. Rolfe.

NOTICES OF BOOKS.


The contents of this excellently-printed volume are sufficiently indicated by the title-page here transcribed; but this, full as it is, gives an inadequate notion of the trouble and care which has been spent upon the book. Of this the lion's share—as indicated by Prof. Vines in the interesting introduction in which he gives an estimate of the work of Dillenius and of the place which he occupies
in the history of British Botany (or more accurately of Botany in Britain)—has fallen to the lot of Mr. Druce, who, with characteristic industry, has throughout given the modern synonymy of the plants mentioned by Dillenius in his correspondence or described in his published works, as well as of the plants preserved in the University Herbarium: this must have involved a vast amount of labour and seems on the whole to be very carefully done. He has also indicated what appear to be "first county records"—a matter for which compilers of county floras will be grateful to him, although it might perhaps have been left to them in the first instance. If, indeed, the book is open to criticism, it is on the somewhat uncommon ground that it contains too much rather than too little; e. g. we cannot but regret that Mr. Druce has been unable to resist the temptation which so easily besets him, and has taken the opportunity to publish a number of new combinations, some at least of which cannot stand.

The earlier portion of the book, after an excellent biography with notes, contains a hitherto unpublished account of a journey from London to North Wales in 1726, selections from MS. descriptions of British plants, and copious extracts from Dillenius's correspondence, including the letters to Samuel Brewer preserved in the library attached to the National Herbarium, to which attention has more than once been called in these pages, and letters from Littleton Brown, Richardson, and Haller. Mr. Druce refers to but does not describe six letters in the Sloane MSS. addressed by Dillenius to Sloane, Scheuchzer, and Brewer; he will find one to Peter Collinson in Hortus Collinsonianus, p. 35.

The identification of the plants in Dillenius's (the third) edition of Ray's Synoptis follows the correspondence; in this Mr. Druce acknowledges the help of specialists, but the bulk of the work so far as the phanerogams is concerned is his own. The identifications are of course based on the Dillenian herbarium, except for the fungi, which are not represented therein; these are named from Dillenius's drawings. It is in this part of the work that we find the new combinations to which we have referred, some of which we think have been printed without due consideration. For example, on p. 115 we find five new combinations under Helleborine—a name adopted for Epipactis, as Mr. Druce informs us by letter (there is no explanation in the book) on the supposition that Hill employed the name for the genus as restricted by post-Linnean authors. But a reference to the British Herbal (p. 477) shows that Hill merely restores the name for the plants to which Linnaeus applied the name Serapias—"he takes away the received name and calls it serapias," are his words; and although it happens that the British species described by Hill all belong to the group subsequently segregated as Epipactis, Hill had no intention of so restricting it, but used it as synonymous with the original Serapias of Linnaeus. This is the more apparent because when Hill intended to differ from the Linnean conception of a genus he made his intention perfectly clear—thus under Radiola he says "Linnaeus makes this a species of linum or flax, though it cou-
It seems a pity to have retained and so to have given further currency to the untenable name *Kaleria splendens* Druce (see Journ. Bot. 1906, 104), and it might have been mentioned that the unpublished engraving was reproduced in this Journal for 1905, t. 471. But as a whole there is much to admire in the thoroughness and care with which Mr. Druce has executed this part of the work, and British botanists will find it valuable as a means of connecting pre-Linnean nomenclature with that now in use.

The plants of the *Hortus Elthamensis* are next identified: we note that the "Spermacoce verticillis globosis" from the Gambia which is here assigned to *S. verticillata*, is more generally referred to *S. globosa* Schum. & Thonn. (see Fl. Trop. Afr. iii. 240 and Bull. Herb. Boiss. 1907, 379, where Mr. F. N. Williams says it "is the first plant from the colony to have been put on record"). Finally we have an identification of the herbarium of the *Historia Muscorum*—algae, mosses, lichens, &c. Of this work the original drawings are in the National Herbarium, except the last six, two of which are only represented by proofs, while four, as a note in the volume tells us, were "not drawn but were etched and engraved immediately upon 3* copper plates." Mr. Druce says (p. xxxv) "The original drawings were said to be among Sir Joseph Banks's collection, but see note 27," which states that they were "bought at the sale of Robert More." There is no discrepancy in the two statements, as the volume was bought by Banks at More's sale and became no. 56 of his collection of MSS.

The book concludes with an index of the names of the plants mentioned; there is no list of the various persons referred to, and its absence constitutes the only defect in the volume. We are surprised that the Clarendon Press should have omitted so important a feature in a book of which the biographical interest constitutes an important portion of the usefulness and value. Such an index is the more necessary because the table of contents is, for a work of the kind, regrettably meagre.

---

*Cytological Studies in Cyanophyceae.* By Nathaniel Lyon Gardner.
University of California Publications. Botany. Vol. ii. No. 12,

In the hope of discovering some clue to the origin of the cell-nucleus, cytologists have lately manifested much interest in the *Cyanophyceae*, there being a controversy as to the presence of a nucleus, its structure and functions, as to the structure of the cytoplasm, the presence of chromatophores, and the nature of the granules. In his recently published *Cytological Studies in Cyanophyceae*, Dr. N. L. Gardner has done much towards settling these contested questions, and to this end he collected and studied over one hundred species of *Cyanophyceae*. One of the chief difficulties which he had to overcome was the elimination of the sand that adheres to these small algae; and the various methods by which he effected this he describes in detail, as well as the methods of killing,
fixing, and staining which he found to be the most successful. By prolonged experimentation he at last discovered a method of differentiating by staining-reagents the granules from the chromatin, thus avoiding what had been a source of much confusion to previous authors. The very best differential chromatin-stain proved to be Ehrlich's haematoxylin, freshly prepared, made from Gribler's haematin. With this it is possible to stain the chromatin without affecting the granules.

An excellent summary and digest of previous work on Cyanophyceae cell-structure is given, special attention being devoted to the recently published views of Kohl, Phillips, and Olive. A brief comparative analysis of the conflicting conclusions of these authors on the respective points at issue is added. The lack of unanimity in their results is shown by Dr. Gardner to be due to their failure to differentiate the structures present in the cell, and their eagerness to recognize a complicated mitotic nuclear division. Dr. Gardner's own study of the protoplast of the Cyanophyceae-cell has convinced him of the constant presence of the following three structures: (1) a cell-nucleus more or less sharply delimited; (2) the cytoplasm, extending from the nucleus to the cell-wall, and containing (3) the granules. He treats of each of these structures in detail. The nucleus, being large, has its shape influenced by that of the cell. And the author shows that in the Cyanophyceae a series of nuclear structures is revealed—passing by very gradual steps from a simple scarcely differentiated form of nucleus, which divides by simple direct division, up to a highly differentiated form, which in dividing shows a primitive type of mitosis, and approximates in structure to the nucleus of the Chlorophyceae and the higher plants. A new type of nuclear division has been discovered by Dr. Gardner in Dermocarpa, in which the nucleus breaks up simultaneously into a large number of daughter nuclei by a process of amitosis. Cell-division is completed in the filamentous forms by the gradual ingrowing of the ring-shaped cell-wall. In some cases the division of the chromatin seems to precede the ingrowing of the cell-wall; in others it accompanies and keeps pace with it; and in still others it is, as it were, passively constricted and cut in two by the ingrowing cell-wall. In its structure the nucleus consists of granules, chromatin, and an achromatic ground substance in which the two former substances are imbedded. The author demonstrates two kinds of granules in the cell—one associated with the chromatin in the nucleus, and never found in the mature spore; and the other (probably food material) often present in the vegetative cell, but always present in the mature spore. One of the products of assimilation is glycogen. No definitely organized chromatophore is found, the cytoplasm holding the colouring matters. No protoplasmic continuity between the vegetative cells appears to exist.

It is impossible in so limited a space to render an adequate account of the results set forth by Dr. Gardner in this important and illuminating addition to our knowledge of the minute structure of the Cyanophyceae.
BOOK-NOTES, NEWS, &c.

At the Anniversary Meeting of the Linnean Society on May 24—the two hundredth anniversary of the birth of Linnaeus—the Secretary laid before the meeting a copy of a letter from Linnaeus to Professor Pietro Arduino at Padua, with an introduction by Dr. G. B. De Toni, and a paper by himself on a MSS. List of the Linnean Herbarium prepared by Linnaeus in 1753–5 with a Catalogue of the genera now existing in the Herbarium. The Linnean Medal was awarded to Dr. Treub, of the Buitenzorg Garden.

At the meeting on June 6, Dr. Carruthers, the representative of the Society at the recent Linnean celebrations in Sweden, gave an account of the proceedings, beginning on the 21st May at Lund, the excursion by special train to Råshult, the return to Elmhult for supper, the further journey south to Hessleholm to meet the train from Malmö, and the subsequent night journey to Stockholm and Uppsala. Next he described a special journey to Linné’s Hammarby with his travelling companion Mr. B. Daydon Jackson, and Lieut.-Colonel Ptain. The events of the two following days were set out, including the celebration in the Aula of the Uppsala University, where he presented the Linnean Gold Medal and the Society’s Address. On Friday, the 24th, the University conferred various degrees upon the distinguished visitors; the botanists honoured were Mr. Carruthers, Mr. B. D. Jackson and Mr. F. Darwin, who were created Doctors of Philosophy: a laurel crown, made of leaves from a bay-tree planted by Linnaeus, was placed on the heads of the newly appointed doctors. Mr. Jackson also received the Order of the Polar Star. Early on Saturday the delegates left for Stockholm, but the special train was too late to permit of the Bergelund Botanic Garden being visited; at two the event of the day took place at the Kungl. Musikaliska Akademi, where Count Mörner, President of the Kungl. Svenska Vetenskaps Akademi, after eulogising Linnaeus, spoke in English and announced that the Bicentenary Medal of the Academy had been awarded to Sir Joseph Hooker.

On Friday, 7th June, the President and Council held a reception in the rooms of the Society. Nearly three hundred guests were present, amongst them being His Excellency Count Wrangel, the Swedish Minister, and other members of the Legation, and several Swedish visitors. A special feature of the exhibition was a display of manuscripts, books, personal relics, medals, &c., of the great Swedish naturalist, which belong to the Society.

In connection with the Linnean Bicentenary an exhibition has been arranged in the Central Hall of the Natural History Museum, comprising an interesting series of portraits of Linnaeus, a number of autograph letters and original MSS., together with specimens of animals, plants, and books from his own collection at the Linnean Society and the Department of Botany.

We beg to offer our respectful congratulations to Sir Joseph Hooker on the completion, on the 30th ult., of his eighty-ninth
year. Sir Joseph, we are glad to know, is in the enjoyment of excellent health and is still at work.

Herr Döfler (III Barichgasse 36, Vienna) has issued two more fascicles of the admirable series of Botaniker Porträts, of which we last year commended the earlier instalments. Nothing could be better than these reproductions, printed as they are on card with facsimiles of signature, and accompanied by a short but excellent biography. Each fascicle (of ten) costs 5 marks; single portraits cost 1 mark each. The third part contains two of Rudbeck, four of Linnaeus (with facsimile of his writing), Hailer, Scopoli, N. J. Jacquin, and Allioni; the fourth, Wulfen, Ingen-Honsz, Hedwig, Gaertner, Kükreuter, Schreber, Pallas, Ehrhart, Thunberg, and Lamarck. The excellence of the work is as remarkable as its cheapness.

Messrs. Routledge send us an extremely pretty little Garden Anthology, beautifully printed, elegantly got-up, and of just the size for the pocket. The selection of extracts, in prose and verse, many from unhackneyed sources, made by Miss Rose Gardner, is so good that one is sorry it is not better; but there are serious omissions—e.g., there is nothing from Mr. Robert Bridges, although some of his verses, such as "The pinks along my garden walks," are eminently fitted for inclusion; while we could well have spared such early Victorian affectations as "Dora Waiting," by Mrs. Meredith, better known by her maiden name (Louisa A. Twamley) under which she published much verse, some of it quite pretty. The appearance of the book is slightly marred by placing "by permission of," &c., at the foot of so many extracts; the usual method of acknowledging these en bloc in the preface is to be preferred. But the book is cheap at half-a-crown, and will give pleasure to many garden-lovers when the weather will not allow them to enjoy their gardens. There is a curious misprint on p. 125, where "Nowhere" should read "Now here."

Messrs. Dulau and Co. publish a shilling volume of Lectures to Sugar Planters, containing a summary of seven lectures "delivered by the officers of the Imperial Department of Agriculture at Barbados seven years ago." They deal with the natural history and cultivation of the sugar-cane, and its insect pests and fungoid diseases. Three are by Prof. J. P. D’Albuquerque, and one each by Sir Daniel Morris, and Messrs. J. R. Bovell, H. Maxwell-Lefroy, and A. Howard.

The new edition of the late Rev. M. H. Arnold’s Flora of Sussex, which we mentioned (Journ. Bot. 1906, 289) as in preparation, has appeared, and realizes the forebodings we then expressed as to its unsatisfactory nature. As we pointed out (op. cit. 135) when criticizing his contribution to the Victoria County History of Sussex, Mr. Arnold had in no way kept himself au courant with our knowledge of the botany of the county, and this is evident throughout the new edition of his Flora. With competent editing it might have been made a useful book; as it is, it can only be regarded as a prelude to a satisfactory Flora of the county. In the
short prefatory note written just before his death, Mr. Arnold, we think rightly, protests against "the growing practice" of including easnals in our lists; but when he adds, "I exclude them altogether," one wonders why such things as *Melirotus parviflora* and *Brassica monensis* have been added to this edition, and why *Thlaspi perfoliatum* is retained on the faith of an introduced specimen from Newhaven in Borrer's herbarium. There are numerous omissions—e.g. *Vicia gracilis* and Henopodium hybridum—and many strange entries—e.g. *Ranunculus intermedius* and *R. butarius* appear as two species, as do *Malva borealis* and *M. pusilla*; "Fumaria Borae var. Borae"; *Montia vulgaris* is "rapidly becoming naturalized." The Appendix, showing in tabulated form the non-Sussex species that occur in Hants, Kent, and Surrey, is absolutely useless, as no attempt has been made to bring it up to date since 1887. It is much to be regretted that the Miss Arnolds, who have produced the book, did not submit the proofs to some botanical expert; the three plates contributed by one of them cannot be considered satisfactory. The book (pp. 154) is published by Messrs. Mitchell & Co., Arundel, price (to subscribers) 4s. 6d.

Alexander Somerville, who died at his residence at Hillhead, Glasgow, on June 5, was born in that city in 1842. After a business career in Glasgow and Calcutta, he returned to Glasgow and graduated B.Sc. at the University. His love for natural history led him to take up the study of the mollusca, after which he turned to botany, to which he devoted himself with much energy, especially in its topographical aspect. He conducted botanical classes for ladies, and had a large herbarium; he was an amiable and generous correspondent, and sent out admirable specimens. Most of Somerville's work was published in the Transactions of the Glasgow Natural History Society, in which body he took much interest and was at one time president; other papers appeared in the Transactions of the Botanical Society of Edinburgh, and notes from his pen will be found in this Journal; he was treasurer of the Watson Botanical Exchange Club from 1900 until his death. He became a Fellow of the Linnean Society in 1881.

Sir Dietrich Brandis, whose important volume on *Indian Trees* we noticed on p. 36, died at Bonn (where he was born on March 31, 1824) on the 28th of May. He was educated at the Universities of Copenhagen, Gottingen, and Bonn, and in 1856 was appointed Superintendent of Forests in Pegu; prior to this he had published papers on strychnine and other subjects in German periodicals. From 1864 to 1883 he was Inspector-General of Forests to the Indian Government. His work, he tells us in the book already referred to, was purely practical, and never left him "leisure for collecting systematically or for working out scientific problems"; nevertheless, by his knowledge of the literature of the subject and of the material accumulated by others, he was enabled to produce the volume which may be, looked upon as his most important memorial, as, apart from his official reports, he did not contribute largely to botanical literature. He became a Fellow of the Linnean Society in 1860 and was knighted in 1887.
THE GENUS CRATÄEGUS IN NORTH AMERICA.

By Prof. C. S. Sargent, F.L.S.

Fifteen years ago American botanists recognized fourteen species and a few supposed varieties of North American Crataegus. These, with a few exceptions, had been described in Europe, and chiefly from cultivated plants; and the arrangement of the species published in 1838 by Torrey and Gray in their Flora of North America has been practically adopted in subsequent publications on the American flora. In 1882 Engelmann, however, described C. brachyacantha, a blue-fruiting species of Louisiana and Texas, first collected many years earlier by Drummond; in 1892 Chapman described two species which he had found at Rome, in northern Georgia; and in 1896 Green published his very distinct C. saligna of the Rocky Mountains. About this time our interest at the Arboretum in the genus was roused by the fact that plants raised here from seeds collected in various parts of the country differed constantly from any of the described species. It was soon seen that different plants which it had been supposed belonged to one species differed in their time of flowering, in the number of their stamens, in the color of their anthers, in the time of the ripening of their fruit, and in the nature of the fruit and the form of the nutlets, and that these characters were constant and could be depended on as distinguishing characters.

Following up the investigation, it was found that these seedling plants in the Arboretum were identical in all these characters with the wild plants from whose seeds they had been raised. These facts led to a more careful study of the genus in several States, with the result that about five hundred species have been described in the last eight years. It is not surprising that botanists, looking at the genus through the eyes of Torrey and Gray, or reaching their conclusions from the study of the scanty and generally incomplete material found in herbaria, have regarded the makers of all these species with pity, and have tried to throw ridicule on this investigation and its results. To those persons, however, who examine the plants in the field even casually, the fact is soon apparent that the genus contains many very distinct forms, whether these are to be called species or not.

These distinct forms or species fall into twenty natural groups, and the plants of these groups can be recognized at a glance. For botanists with broad ideas in regard to the limitation of species the twenty groups may represent twenty species, under each of which can be grouped a number of subspecies and varieties, while other botanists may consider it more convenient to treat all distinct forms as species. The Pruinosæ group, based on a cultivated plant described by K. Koch in 1854, and until recently entirely overlooked by American botanists, will serve perhaps to illustrate the varieties which are now known to occur in one of the large groups. The Pruinosæ are distinguished by their late-ripening, often green, sometimes angled and generally pruinose fruit, large flowers, and
long-petioled leaves sparingly glandular only towards the apex. In this group eighty species have already been described. These fall into two secondary groups: first, those having flowers with twenty stamens; and, second, those having flowers with ten stamens. The plants of these secondary groups are further distinguished by the colour of the anthers, some of the plants in each having rose-coloured or pink anthers and others pale yellow or nearly white anthers. A further subdivision is possible from the fact that some of the plants in each of these subdivisions have few-flowered corymbs and others many-flowered corymbs, and that in both the few-flowered and in the many-flowered divisions some plants have thick leaves and others thin leaves; in some of the plants with thick and with thin leaves the leaves are perfectly smooth, even when they first appear, while in others they are setose on the upper surface, in some species becoming quite glabrous before midsummer, while in others the leaves remain scabrate throughout the season; in some species the leaves are yellow-green and in others blue-green. Characters are found also in the fruit, which in the different species is globose or short-oblong, or often broader than high, or occasionally pyriform. All such characters are constant from year to year, and so far as it is possible to judge at this time they are transmitted to seminal offspring.

The origin of these many forms I cannot pretend to account for. The theory that they are hybrids of recent origin, however, can hardly be accepted. All the forms are constantly and abundantly prolific, and the seedlings that have been raised at the Arboretum in the last few years show none of the tendencies to variation usually found in the offspring of recent hybrids. Unlike the seedlings of *Malus*, *Rosa*, and other *Rosaceae*, the seedlings of any of these supposed species of *Cratagus* do not vary, either in foliage, flower, or fruit, and I have never seen what seemed to me to be a hybrid *Cratagus*.

It is interesting to find that the principal groups of the genus are often confined to distinct geographical sections. For example, the largest group of the north-eastern States, the *Tenuifolia*, does not occur in the southern States, except at high altitudes, or west of the Mississippi River. The *Flave* group is found only in the south-eastern States, and the *Virides* group in the States adjacent to the lower Mississippi River, with occasional representatives in the south-eastern region. The *Pruinosa* is mostly northern and extends to beyond the Mississippi, while the *Microcarpa*, *Estivales*, *Triflora*, and *Bracteata* groups are exclusively southern. On the other hand, a few groups like the *Crus-galli*, the *Punctata*, and the *Molles*, are widely distributed from the valley of the St. Lawrence River to Texas, while the *Tomentosa*, which is distinguished by the longitudinal cavities on the ventral faces of the nutlets, and which is principally a northern group, extends to the Rocky Mountains and the northern Pacific States where *Cratagus* is represented by only a few species. Many of the groups, however, occupy promiscuously the same territory, and in the north especially representatives of several of them may often be found in a comparatively
small area, while individuals of allied species may frequently occur within a few feet of one another.

While *Crataegus* is certainly common in eastern North America, its distribution is by no means general. Colonies occur, as at Buffalo and Niagara Falls in New York, where in areas of a few acres fifteen or twenty distinct forms, belonging perhaps to four or five of the primary groups, grow together with many individuals, while outside of such great colonies it is often difficult to find a single plant over large adjacent regions. It is probable that the plants have largely increased in numbers since the general settlement and clearing of the country, for *Crataegus* is not a true forest plant and thrives and spreads only in open situations. That they are not more abundant and more generally distributed, and that the large colonies are frequently found on the waste ground in the neighbourhood of towns is due, no doubt, to the fact that farmers, especially in the northern States and Canada, consider the presence of thorns on their land as indicative of bad farming and cut them down as fast as they appear.

The study of the genus presents many difficulties. Herbarium specimens, unless they can be made in both spring and autumn from the same plant, and unless they are accompanied with accurate notes on the colour of the anthers, have no practical value. Many of the species look so different in the spring and in the autumn that it is essential to number carefully each plant from which specimens are taken. Collectors willing to undertake such troublesome work are not to be found in much of the vast region over which *Crataegus* is scattered; and the blooming period of the different forms which may occur in any given region may extend through several weeks, and as each species remains in flower for only a few days, such a region must be visited several times in order to secure the flowers of all the forms; while in the autumn the ripening of the fruit in any given locality may extend from August to November. Many visits have to be made, therefore, to a station before sufficient material for the description of all the forms which may occur there can be obtained, and the number of such stations that one observer can visit satisfactorily in one season is necessarily small. The difficulties are increased, moreover, by the fact that *Crataegus* does not flower every year, and that the fruit is sometimes destroyed by insects or disease. Much work has already been accomplished, but much more remains to be done. The plants growing in only a few small regions have been critically studied, and there are still thousands of square miles in the United States and Canada where *Crataegus* is known to exist, and where no systematic collections have been made. In every township of half a dozen States it is more than probable that forms exist which differ from those that have already been described, and many years will be needed to elucidate the characters and distribution of the genus in this country.

The investigation at best can only be carried on slowly and with full knowledge of all the characters of each plant described. The importance of deliberation has already been shown, and the dif-
culty of this investigation has been immensely increased by the publication by different authors of the same plant under different names, and of nearly one hundred species based on inadequate material, which can probably never be determined. Much information about the genus and its species will ultimately be obtained, it is believed, however, by the systematic cultivation of these plants at the Arboretum, although preliminary studies must be made in the field.

Since the autumn of 1899, 2469 lots of Crataegus seeds have been planted here. Careful records are kept of each sowing, and herbarium specimens are preserved, taken from the plant from which the seeds of each sowing were gathered. About five hundred lots of these seedling plants have now been permanently planted out, but among these are many representatives of widely distributed species raised from seeds gathered in different localities, in order to show the existence of any variation that may occur in such species. A comparative study of these cultivated plants when they are old enough to flower and produce fruit should make it possible to distinguish the different forms, and to determine the value of the fieldwork which has been done in this genus.

PLANTS OF E. PERTH AND S. ABERDEEN.


These notes are the outcome of a week's work at Blairgowrie (E. S. M.), a week at the Spittal of Glen Shee, and nearly a fortnight at Braemar in July, 1906. In such well-worked districts we could not expect to find many novelties, apart from critical forms; for help in working out these we are indebted to Mr. Arthur Bennett, Rev. E. F. Linton, Rev. W. R. Linton (who saw most of the hawkweeds), Rev. A. Ley, and others. Supposed new vice-comital records are starred. 89 = E. Perth; 92 = S. Aberdeen.

Ranunculus Drouetii F. Schultz. 89. The plant at New Mill, Lunan Burn, mentioned in Fl. Perth, is not this species, but R. heterophyllus, which also occurs in Fingask Loch. — R. Lingua L. 89. Stormont Loch; locally abundant.

Radicula Nasturtium-aquaticum Rendle & Britten var. siifolia (Reich.). 89. Near Ardablair Loch.—R. palustris Moench. 89. A form with remarkably cut leaves, growing by Stormont Loch, may be var. pinnafida Tausch; but we have seen no description.

*Barbara intermedia Boreau. 89. In fair quantity and fruiting well by the Shee Water, below the Spittal, so that it bids fair to become established; we do not know of any previous occurrence in Scotland.

Geranium sylvaticum L. 89. Near the Spittal we found growing with the type a few specimens which appear to agree with var. Wanneri Briquet, a new variety for Britain, excepting the foliage. In Rouy's Flore de France, iv. 81, it is thus described: "Feuilles
de la var. $\gamma$ [angustisectum Beck], ou même plus étroites, presque semblables à celles du G. rirulare; fleurs médiocres, a pétales d’un rose pâle veinés de rose foncé; pédoncules glanduleux.” The flowers are much like those of G. versicolor L.

Iosa mollis × spinossissima. 92. Left bank of the Clunie, near its junction with the Dee; flowers white, sparingly produced.

_Pyrus Aria_ Ehrh. 92. An old tree, growing out of the rocky bank of the stream below the Linn of Quoich, looks truly native.

_Galium erectum_ Huds. 89. Native in a pasture near the Lornny Burn, about three miles from Blairgowrie. — _G. sylvestre_ Poll. 92. On the old coach road, near the top of the Cairnwell Pass, growing on limestone at 2000 ft.

*Hieracium Pilosella L. var. nigrescens Fr._ 89. Glen Shee.—_H. gracilectum_ Backh. 92. High rocks in Corrie Kander, Glen Callater; a form with pure yellow styles.—_H. chrysanthum_ Backh. var. microcephalum Backh. 92. Scattered among the heather, descending from Lochnagar to the Dhu Loch, at 2600 to 2800 ft.; usually small and one-headed in this station.—*H. nigrescens_ Willd. var. commutatum Lindeb. 89. Lochy Burn, Glen Shee. 92. Glen Callater. Very scarce in both places. —*H. submurorum_ Lindeb. 92. Stream-side (1800 ft.) in Glen Callater; leaves not quite typical. — _H. lasiophyllum_ Koch. 92. Fine and plentiful on slate rocks near the shooting-lodge, Glen Slugain.—_Var. euryodon_ F. J. Hanb. 89. Sandstone rocks by the Erich at Craighall, Blairgowrie.–*H. caledonicum_ F. J. Hanb. 89. Shee Water.—_H. Sommerfelftii_ Lindeb. 92. Abundant and well distributed in the neighbourhood of Braemar. —*H. sylvaticum_ Gouan var. microcaladium Dahlst. 89. By the Erich, near Craighall; near Spittal of Glen Shee.—_H. aggregatum_ Backh. 92. Stream-side (1800 ft.) in Glen Callater; scarce. — _H. cartilcolor_ Dahlst. 92. Glen Ey; also _H. Pictorum_ Linton, and a form of *H. sublatidens_ Dahlst.—_H. crebidens_ Dahlst. 92. Glen Clunie, a mile or two above Braemar.—*H. rieae_ F. J. Hanb. 89. By the Erich, near Craighall; a peculiar form, tending towards _H. Pictorum_ in some respects. —*H. petrocharis_ Linton. 89. Lochy Burn, Glen Shee. *92. Glen Ey.—_H. sagittatum_ Lindeb. var. subhirtum F. (1800 ft.) Hanb. 92. Glen Clunie.—*Var. philanthrax_ Dahlst. 89. Coolah Burn, Glen Beg, and streamlets in Glen Shee (1200 to 1500 ft.).—*H. sarcohphylum_ Stenstr. 89. Coolah Burn; the form near _expallidiforme_ and _acrogynnon_, mentioned in W. L. Linton’s _British Hieracia_, p. 55.—*H. dissimile_ Lindeb. 89. Rather frequent in Glen Shee and Glen Beg; not quite typical, but like the form of the Killin district. —*H. porrigens_ Almq. 89. Glen Shee; named by W. R. Linton with some little doubt, as being perhaps too near another plant, which is certainly _H. diaphanum_ Fr.—*H. vulgatum_ Fr. var. _sejunctum_ W. R. Linton. 92. Near the Linn of Corriemulzie.—*H. pinnatifidum_ Lönnr. 89. Shee Water; very scarce. —*H. acroleucom_ Stenstr. var. _dadalolepium_ Dahlst. 89. Abundant on shingle by the Shee Water, a mile and a half below the Spittal; not previously recorded from Scotland. A striking plant; the coriaceous leaves being beautifully tinged with violet-purple, especially beneath. Flowers deep golden-yellow;
ligule-tips glabrous.—*H. diaphanoides* Lindeb. 89. Shee Water and Lochy Burn (the type is new for Scotland).—*Var. apiculatum* Linton. 89. Lochy Burn; very rare.—*H. barbareafolium* Löngr. 92. By the Clunie, just below Braemar. W. R. Linton writes that this is characterized by narrow, deeply-cut stem-leaves; heads like *H. scaphifolium*, but with glabrous ligules. Our plant usually has petioled, very truncate-based stem-leaves, strongly and deeply dentate below with about three pairs of teeth, and triangular-oblone in outline. Styles greenish livid.—*H. sparsi folium* Lindeb. var. *placero phyllum* Dahllst. 89. Rocks by the Erict, near Craigall; this variety was not known before from Scotland.—Var. *longiciliatum* F. J. Hanb. In two Glen Dee localities, as well as a new one in Glen Clunie; it clearly belongs to *H. sparsi folium* rather than *H. rigidum*. Styles yellow or greenish yellow.

*Rhinanthus monticola* Druce. 92. Plentiful in dry, grassy ground, Glen Dee, near Allan-a-Quoich.—*R. borealis* Druce. 92. Rocks in Glen Callater, at 2500 ft.

*Melampyrum pratense* L. var. *hians* Druce. 92. Frequent near Braemar.

*Mentha aquatica* L., var. 92. A mint found growing on the stony bed of a backwater of the Clunie, a little above Braemar, has the very sweet scent of *M. citrata* Ehrh., but lacks its numerous glands; the calyces are also pubescent, and the leaves have scattered hairs on the upper surface. Mr. C. E. Salmon refers it to var. *subglabra* (Baker). It is near a cottage, and may have escaped from cultivation.

*Betula intermedia* Thomas (*B. nana*, male, × pubescens, female). 92. One fine tree, by the Callater Burn, at 1700 ft., comes very near the form originally found in the same glen (1886), which grew higher up. Two smaller trees in Glen Slugain are probably the same combination, but decidedly approach *B. pubescens*. A very curious little shrub occurs at about 2800 ft. in wet, peaty ground on the descent from Lochnagar to the Dhu Loch. Habit creeping-rooting; hardly 6 in. high; leaves small, nearer to *B. nana* (which is, no doubt, the female parent), varying in shape from broader than long or suborbicular to ovate, bluntly toothed, more or less hairy; without inflorescence. It differs greatly from *B. alpestris* Fr., and may be an undescribed form of the hybrid.

*Salix cinerea* L. 89. Ascends to 1700 ft. by the Lochy Burn. Unlike *S. aurita* and *S. caprea*, this is usually quite a lowland species.—*S. lapponum* L. 92. A large bush, about 10 ft. by 8 ft. across, and with very white foliage, grows at 2400 ft. by the Allt-Lochan-nan-Eoin, Ballochbuie Forest; it is probably the form which Smith called *S. Stuartiana*.—*S. aurita × nigricans*. 89. Near Spittal of Glen Shee.—*S. aurita × phylicifolia*. 89. Two female bushes by the Lochy Shee, at 1200 or 1300 ft.—*S. caprea × repens*. 89. By a streamlet in Glen Shee, at 1250 ft. An erect bush, about 4 ft. high, much nearer to *S. caprea*; but the silky pubescent foliage is smaller, and has *repens*-like serration. *S. repens*. 92. By the Callater Burn, at about 1750 ft. A procumbent plant, approaching *S. repens*, which was probably the female parent. The
Armadale (W. Sutherland) willow, so named by Dr. Buchanan White, is certainly S. cinerea × repens, as Messrs. Linton have stated.—S. herbacea × lapponum. 89. Lochy Burn, at 1400 ft.—*S. herbacea × nigricans. 89. Rocky bank of a streamlet in Glen Shee, at 1500 ft.; a trailing bush in fine fruit. The foliage blackened much in drying.—*S. herbacea × repens. 89. Not uncommon in Glen Shee, between 1200 and 1500 ft., with the parents; more or less intermediate, but varying a good deal in foliage. It might easily be passed by as a Vaccinium. 92. Between Loch Callater and Lochnagar, at 2500 ft. We also gathered Mr. Linton's original S. cernea on the Little Craigindal.—S. lapponum × repens. 89. The plant published under this name in 1893 was cultivated, and proved to be only S. lapponum; but we found two specimens of the hybrid by the Lochy Burn, so the record can stand.

Juniperus communis L. 92. A procumbent bush on the rocks of Little Craigindal has the foliage of this, but fruit more like J. nana Willd., and is probably var. intermedia Nyman.

*Orchis latifolia × maevulata. 89. One specimen occurred with the parents in Glen Shee.

[Allium Schenoprasum L. 92. By the Clunie at Braemar; certainly an outcast or garden escape.]

Juncus castaneus Sm. 92. One fine plant, high up in Corrie Kander.

Scirpsus Tuberumontani Gmel. 89. Locally plentiful on the north-west side of Fingask Loch; a rare species inland.—S. jfluitans L. 89. In the Lunan Burn, near Marlee Loch.

Carex remota L. 89. Marlee.—C. helvola Blytt. 92. The locality for this on Lochnagar, at 3500 ft., agrees very closely with Balfour's original one for C. Lachenalii Schkuhr (lagopina), as described by Syme; but we failed to find the latter after a careful search. However, we were fortunate enough to detect C. helvola at 3800 ft. in the northern corrie, close by a fine patch of C. Lachenalii, and associated with C. curta. We have no doubt that it is C. curta × Lachenalii; and Herr Kükenthal names good specimens from both stations "C. canescens × lagopina; very characteristic." Rev. E. F. Linton has cultivated roots received from Mr. F. C. Crawford, which remained sterile. The pale yellow colour of the spikes is well-marked, especially in dried specimens.—C. curta Good. var. fallax F. Kutz (under C. canescens L.). 92. By Lochan-nan-Eoin (2500 ft.), Lochnagar. "Differs from var. robusta Blytt (= dubia Bailey) by its slender habit and small spikelets," Kükenthal in litt. (Fries gives Blytt's variety as robustior). Herr Kükenthal also places here a sedge sent by Mr. C. P. Hurst, gathered on Ben Lawers, at 2900 ft., which matches specimens distributed by Mr. Druce as C. helvola, var.—C. aquatilis Wahl. 89. Near Spittal of Glen Shee; a form intermediate between type and var. virescens And. 92. Corrie Kander, on wet slopes at about 2800 ft.; a small state, which is named forma angustifolia Kükenthal. intd.—*C. aquatilis × Goodenovii. 89. Near Spittal of Glen Shee, with the parents.—C. Goodenovii J. Gay. 92. A strict,
sleender, narrow-leaved plant, growing in a pool near Lochan-nan-Eoin, is called by Herr Kükenthal var. recta (Fleischer), which appears to be the same as var. recta Aschers. & Graebn.; but we cannot see how it differs from var. juncella. He names a black-spiked plant from the banks of the Clunie, Braemar, "forma fuliginosa R. Br. = C. melano Wimm."—*C. Goodenovii × rigidula.

92. Lochnagar, in two places, with C. helvola; also with C. vari-flora Sm. (remarkably fine) in a swamp, at 2800 ft., descending to the Dhu Loch. Determined by Herr Kükenthal, who writes that Dreyer’s C. infuscata is merely a narrow-leaved, dark-spiked form of C. rigidula.

Arena pratensis L. var. longifolia (Parn.). 92. Glen Ey.

Poa Balfouri Parn. 92. On exposed rocks by the Clunie, Braemar, at about 1100 ft.

*Glyceria fluitans R. Br. var. triticea Fr. 89. Ardbair Loch; Stormont Loch. *92. Marshes in Glen Dee, near Allan-a-Quoich.—*G. declinata Brêb. 89. Muddy ground near Fingask Loch.

Lycopodium alpinum L. var. decipiens Syme. 92. Lochnagar; Little Craigindal.

Chara aspera Willd. 89. Black Loch, near Blairgowrie.

Nitella opaca Agardh. 89. Abundant in a mill-lead between White Loch and Fingask Loch.

HYBRIDS AMONG BRITISH PHANEROGAMS.

By the Rev. E. F. Linton, M.A.

(Concluded from p. 276.)

Polygonaceae. — Polygonum. Mr. Marshall reminds me of P. minus × Persicaria and P. mite × Persicaria (B. E. C. Rpt. 1892, p. 381), the latter "testa Lange," and probably the former also, collected by Mr. Druce from Abingdon, Berks, September, 1892. I have many specimens of hybrids from Germany, &c., but have not detected any in Britain. The P. minus × Persicaria which I issued from a gathering at Wareham, September, 1891 (B. E. C. Rpt. 1891, 343), I proved to be P. minus; so elongate in the wild state that Mr. Ar. Bennett thought it a variety. My specimens of Continental hybrids show great sterility. Dr. Focke says on P. minus × Persicaria, "very floriferous, but sterile or very slightly fertile."

Rumex conglomeratus × maritimus, Worthing, Sussex; "seems to be fairly fertile," Dr. Focke. Rev. A. Ley’s Hoarwithy plant is, I think, rightly named R. conglomeratus × sanguinens (R. Rhunheri Haussknecht). R. conglomeratus × obtusifolius I gathered at Witley many years ago, and think that the R. sylvestris Wallr. from Kew riverside, though I have only a poor specimen, is this same hybrid; my specimens from Witley were rather sterile. R. conglomeratus × pulcher (B. E. C. Rpt. 1872-74, p. 34). R. conglomeratus × crispus,
gathered at Witley in company with Mr. Marshall.—R. pulcher × rupesbris (B. E. C. Rpt. 1876, p. 31).—R. obtusifolius × pulcher, West Head, E. Cornwall (B.E.C. Rpt. 1877-78, 18.).—R. crispus × domesticus.—R. crispus × pulcher.—R. crispus × sanguineus I have not seen, but I have sheets of R. crispus × viridis from Malvern, Worcestershire, and Radnor.  
R. crispus × obtusifolius (R. acutus L. R. pratensis M. & K.) is the most widely spread of our Dock hybrids, and is said by Mr. J. W. White, in the Flora of Somerset, to fruit freely in that county; the Rev. R. P. Murray, however, thinks it fruits only sparingly, and Dr. Focke says, “fruits mostly imperfect.”  
R. domesticus × obtusifolius (R. conspersus Hartm.) is also said to be fertile like R. pratensis in the B. E. C. Rpt. 1872-74, p. 36, where some good notes on Rumex by J. Boswell Syme occur.

**Thymeleaceae.**—Daphne Laureola × Mezereum was recorded by Mr. Marshall from Sussex in 1903 (Journ. Bot. 1903, 230), and he has happily been able to confirm the record of the hybrid by discovering a better intermediate, near Somerton, in which the leaves are more or less evergreen, though like D. Mezereum in shape and veining.

**Amentaceae.**—Betula pubescens × verrucosa (B. odorata Bechst.,?).  
To this hybrid Mr. Marshall refers specimens of his own gathering from Lawers, Mid-Peith, and Blair Athol, Perthshire, and of my gathering from Breamore, S. Hants. He also informs me that we have three hybrids of B. nana × pubescens:—1. B. intermedia Thomas (nana, male × pubescens, female); 2. B. alpestris Fries (nana, female × pubescens, male); and 3, a dwarf plant which appears to him a new form. Mr. Marshall tells me that the late Prof. Babington wrote to him about 1889 that B. intermedia formed quite woods in Iceland; so he infers it is probably fertile [see p. 294].

**Salix.** In Journ. Bot. 1902, p. 330, the following sentence occurs: “Now, according to Wichura, the hybrids of Salix reproduce themselves like pure species”; and the inference is drawn that Hieracium species have become multiplied and established in the same way. I have already shown how unsafe it is to apply the rule of one genus to another in respect to the characters of hybrids. But the above dictum, attributed to Wichura, is far too general a statement, and can easily be rebutted. Not to rely too much on the well-known variability of some willow hybrids, such as S. viridis Fr. or S. lutescens Kerner, I have myself crossed the two sexes of S. aurita × Lappounum, and reared the offspring, only to find the greatest variability in the results of one sowing. The hybrids which occur spontaneously in Britain may be shown most clearly by enumerating the unions which each species has been known to make:—

- S. pentandra hybridizes with fragilis and alba (?).
- S. triandra with fragilis, alba, and viminalis.
- S. fragilis with pentandra, triandra, and alba.
- S. alba with pentandra? and triandra and fragilis.
- S. purpurea with viminalis, aurita, cinerea, phylicifolia and repens.
S. viminalis with triandra, purpurea, Caprea, aurita, cinerea, and repens.

S. Lapponum with Caprea, aurita, cinerea, phylicifolia, Arbuscula, repens, lanata, Myrsinites, and herbacea.

S. Caprea with viminalis, Lapponum, aurita, cinerea, phylicifolia, nigricans, repens, and Myrsinites.

S. aurita with purpurea, viminalis, Lapponum, Caprea, cinerea, nigricans, phylicifolia, repens, Myrsinites, and herbacea.

S. cinerea with purpurea, viminalis, Lapponum, Caprea, aurita, nigricans, phylicifolia, and repens.

S. nigricans with Caprea, aurita, cinerea, phylicifolia, Arbuscula, Myrsinites, and herbacea.

S. phylicifolia with purpurea, Lapponum, Caprea, aurita, cinerea, repens, Arbuscula, Myrsinites, and herbacea.

S. Arbuscula with Lapponum, nigricans, phylicifolia, and herbacea.

S. repens with purpurea, viminalis, Lapponum, Caprea, aurita, cinerea, phylicifolia, and herbacea.

S. lanata with Lapponum, herbacea, and reticulata.

S. Myrsinites with Lapponum, Caprea, aurita, nigricans, phylicifolia, and herbacea.

S. herbacea with Lapponum, aurita, nigricans (?), phylicifolia, Arbuscula, repens, lanata, Myrsinites, and reticulata.

S. reticulata with lanata and herbacea.

Besides, a few triple hybrids have been noticed, such as S. purpurea × aurita × phylicifolia (S. sesquiteria B. White), S. lutescens × nigricans, and S. aurita × cinerea × repens, which Mr. Marshall has recently reported to me. The hybrids in this genus are fertile, and have been crossed with one another for the sake of experiment. In this way Max Wichura blended six strains of willow in one.

Populus canescens Sm. has been reckoned a hybrid, and is given in De Candolle’s Prodromus as very probably produced by P. alba × P. tremula.

Orchidaceæ appear to resemble Salices in their great freedom of intercrossing, and in the fertility of the hybrids. Mr. F. J. Hanbury tells me that in the cultivated species many of the hybrids are just as fertile as the original species. All do not equally well produce good pollen-masses, but many hybrids will cross with other hybrids, so that you may have four or more species blended in one. I have no evidence to show that British hybrids are fertile; as a rule they have only been found very sparsely, and the natural inference would be that they do not reproduce themselves.—Epipactis atrorubens × latifolia, one plant on limestone near Tongue, W. Sutherland, 1900, with the parents, F. S. Marshall; not rare, according to Focke, in Europe, where the parents grow together (Germany, Russia).—Orchis incarnata × latifolia, Mr. Marshall believes, is recorded from Sussex; and it occurs in the Avon Valley near Christchurch, where both species are rather abundant, and some plants intermediate.—O. latifolia × maculata occurs. I have gathered it near Odiham and near Milford in Hants. — O. latifolia × ericetorum grows in a wet meadow in Edmondsham, Dorset. —
O. maculata × Habenaria conopsea was observed near Sevenoaks by Mr. Henry Peirson in 1898, and described in an interesting note in this Journal (1898, 360). — O. ericetorum × H. conopsea has been gathered by Mr. Marshall in W. Sutherland, 1900, and at Clova, Forfar, 1904; also in Berwickshire by Mr. G. C. Druce (Ann. Scott. Nat. Hist. 1907, 100). Another Habenaria hybrid is H. albida × conopsea, first published for Britain in this Journal (1898, 352), and previously recorded from the Austrian Alps. Specimens from Arisaig, W. Inverness, were submitted to Mr. Rolfe and myself by Major A. H. Wolley-Dod, and we both arrived at the same conclusion independently. I grew my root and flowered it for three years, and noted that it matured no capsule; from which sterility might be inferred, or the absence of the right moth. Since that date this hybrid has been gathered by Mr. Marshall at Tongue, and at Scullomie, W. Inverness. — Ophrys apifera × Arachnites, O. apifera × aranifera, and O. Arachnites × aranifera are recorded in the Flora of Kent (1899), with full particulars and comments. In 1905 a presumed natural hybrid between O aranifera and O. muscifera was found on Wye Downs, Kent, and described and figured in the Orchid Review (1905, 239) and in this Journal (1906, 347). Found long ago in Germany, and figured by Reichenbach.

Juncaceae. — Juncus effusus × glaucus (J. diffusus Hoppe) has long been known, and is recorded from thirty-six vice-counties. I have always found it sterile. — J. conglomeratus × glaucus was found by Rev. W. R. Linton and myself twenty years ago in two parishes in E. Norfolk; this, too, was sterile. The Rev. E. S. Marshall once gathered in Kent what he believed to be this hybrid, as both supposed parents were present; and J. effusus was absent. The inflorescence in the Norfolk specimens was almost as much condensed as in J. conglomeratus. — J. acutiflorus × lamprocarpus is on record, by Mr. W. H. Beeby; my Norfolk specimens seemed quite sterile. — Luzula Forsteri × vernalis (L. Borreri Bromf.), which forms large tufts at Symond's Yat, and is more conspicuous than either parent there, and has a fairly wide distribution, is completely sterile.

Typha latifolia L. var. media Syme may be a hybrid between our two species. At any rate, I have long believed specimens I gathered in the railway pool near Bletchley Station and called media to be the hybrid.

Naiadaceae. — Potamogeton. In this puzzling genus hybridity is believed by our best judges to have played an important part in producing what are now well-established forms or “species.” The hybrids are usually sterile, setting it may be an occasional fruit (I found only two in a large number of specimens of P. salicifolius the Rev. A. Ley and I gathered in the Wye); and Mr. A. Bennett tells me of a fruiting P. decipiens Nolte from near Burwell, Cambs, as a very exceptional case. The following notes on this genus are from what Mr. Bennett has furnished me with, unless Mr. A. Fryer, who has also contributed several valuable notes, is quoted by name. — P. natans × lucens (P. fluittans Roth). — P. natans × Zizii (P. crassi-
folius Fryer). — *P. sparganiifolius* Bab. non Laeestad. (P. Kirkii Syme) is believed by Fryer to be probably *P. natans × polygonifolius*. — *P. Griffithii* Bennett is certainly a hybrid, *fide* Fryer (*P. polygonifolius × ?*); it is *P. alpinus × pralongus* according to Ascherson & Graebner (Syn. Fl. Mitteleurop. 1. 1897, p. 817), but Mr. Bennett still holds it to be a species, remarking that *P. pralongus* is not known for Carnarvon, and has only one station in Anglesea. — *P. Drucei* Fryer (*P. natans × alpinus*?). — *P. heterophyllus × P. coloratus* (*P. gracilis* Wolfgang). — *P. lanceolatus* Sm. On this Mr. Fryer writes to me: "Certainly a hybrid. No two forms of this from different localities are alike. Our Cambridgeshire form is *P. heterophyllus × Friesii*, and deserves a segregate name. Smith's plant (i.e. the Anglesea plant) is evidently *P. heterophyllus × pusillus*. I am inclined to assign the same origin to the Irish form. And he adds that he is strongly inclined to think that local peculiarities in a parent plant are imposed on its hybrid offspring. — *P. rivicolaris* Gillot (*P. heterophyllus × pusillus*?), *fide* A. Bennett, who gives me *P. lanceolatus* Sm. as = *P. heterophyllus × Friesii*? — *P. heterophyllus × natans* (P. Tiscelli Richter). — *P. falcatus* is put to *P. heterophyllus* (subgramineus) × *nitens* falcatus by Asch. & Graebner (l. c. p. 328). — Mr. Fryer, who does not offer this or any other solution, remarks, *in litt.*, "It has kept its characters for many years in the original locality, and also under cultivation until it fruited." — *P. nitens* Web. Mr. Fryer considers to be always a hybrid of varied parentage, and questions whether it ever bears more than an occasional perfect fruit, never a fruiting-spike. Mr. Bennett ascribes it to *P. heterophyllus × perfoliatus*. — *P. lucens × pralongus* (P. Babingtonii Ar. Benn., *P. longifolius* Bab. non Gay). — *P. lucens × perfoliatus* (*P. decipiens* Nolte). — *P. decipiens* Nolte var. *ajfinis* Ar. Benn., Mr. Bennett now thinks is probably *P. decipiens × nitens = P. Brotherstonii* Ar. Benn. MS., but he adds Asch. & Graebner (p. 330) place it under *P. perfoliatus × lucens* (*P. decipiens* p. pte.). — *P. salicifolius* Wolfgang (the Herefordshire form) is thought by Mr. Fryer to be a hybrid of unknown origin. Mr. Bennett believes Wolfgang's plant to be *P. alpinus × lucens*. — *P. augustifolius × heterophyllus* (*P. varianis* Morong ex Fryer). — *P. augustifolius × coloratus* (*P. Billupsii* Fryer). — *P. pralongus × polygonifolius* (P. Macvicarii Ar. Benn. Ann. Scott. Nat. Hist. 1907, 106). — *P. crispus × perfoliatus* (P. Cooperi Fryer and var. Jacksonii Fryer). — *P. crispus × pralongus* (*P. undulatus* Wolfgang), see paper by Ar. Bennett (Ann. Scott. Nat. Hist. 1907, 104). — *P. crispus × obtusifolius* (P. Bennettii Fryer). — *P. crispus × Friesii* (P. Lintoni Fryer). I have remarked above on the general sterility of the hybrids of this genus. It is not impossible that sterility is the universal rule here, and that the exceptions are due to fertilization by the pollen of one of the parent plants. For Mr. Bennett on this point observes that "in many (hybrids) the flowers do not open, and in others, when they do, the pollen is bad." If this is always the case, we cannot attribute fertilization to the hybrid, and can hardly do otherwise than fall back on a parent plant for the male element.
Cyperaceæ. — *Scirpus carinatus* Smith is reputed a hybrid between *S. triqueter* L. and *S. lacustris* L., being found in tidal estuaries where these two both occur. The absence of any modern description of the nut (see Bab. Man. ed. ix.) points to its probable sterility.

*Carex paniculata* × *remota* (*C. Boenninghanseniana* Weihe).—*C. paniculata* × *vulpina*, discovered by Rev. E. S. Marshall in Surrey, and determined by Pfarrer Küenthal, with whose naming I agree. —*C. muricata* × *remota* is said by Mr. Marshall to have been collected by Mr. Druce, and he tells me that Focke calls it "perhaps the commonest Carex-hybrid," which of course is not the case with us. Possibly Focke follows Nyman in identifying this hybrid with *C. axillaris* Good. (as also Hooker, Stud. Flora). But this hybrid is so scarce, almost unknown, in fact, in Britain, that it is more probable those of us are right who identify *C. axillaris* Good. with *C. remota* × *vulpina*, which is perhaps the commonest sedge-hybrid with us. — *Carex muricata* × *vulpina* is my solution of a sedge gathered by Mr. Marshall in 1892 at Clymping, W. Sussex, and issued by him as *C. muricata* L. I suggested *C. axillaris*, which Mr. Marshall was inclined to accept, till under cultivation it produced a shorter spike, more like a vigorous *C. muricata*. Pfarrer Küenthal named it later *C. vulpina* L. var. *nemorosa* Rebert., calling it a shade form. The plant is, however, wanting in some of the chief characters of *C. vulpina*, and in these respects it approaches *C. muricata*, which parent it most resembles of the two. — *C. remota* × *vulpina* is what I regard as *C. axillaris* Good.; in this Mr. Marshall concurs. — *C. divulsa* × *vulpina* was originally found by Mr. R. F. Townsrow at Newland, Malvern, Worcestershire, in 1889; one plant only, which died out. It did not attract much attention, perhaps through Babington referring it (Wats. B. E. C. Report) to *C. divulsa*, of which he said it had the nut. (With one of my specimens a piece of *C. divulsa* was attached, and this may have happened with the sheet submitted to the Professor.) I have many specimens of this gathering, and fertile nuts are by no means easy to find. But there is very clear evidence of *C. vulpina* in the fruit. This hybrid was gathered later, in July, 1902, Pontskewett, Monmouth, by Messrs. Marshall and Shoobred; and the specimens, though rather immature, are borne out by Mr. Townsrow's gathering.—*C. helvola* Blytt is in the London Catalogue list as a species; was thought by some to be *C. curta* × *echinata*, but is now more usually regarded as *C. approximata* × *curta*. The evidence is very strong in favour of the Lochnagar plant being *C. helvola* Blytt in the latter sense. I have vigorous plants of it in cultivation, whose compact spikes, now flowering (early May), recall *C. approximata*, which was present in the original station. The hybrid proved sterile last year.—*C. curta* × *echinata*, as represented by Mr. Druce's gathering of August, 1897, from Ben Lawers, differs from the last, though equally sterile. The nut is sufficiently formed to show an ovate acuminate shape, such as might be expected to result from *C. echinata* and *C. curta*, but would be a very surprising result from *C. approximata* and *C. curta*, both of which
at the same stage have narrow oval or elliptic nuts with no acuminate beak. The spikes are lax, with the lower spikelets remote, differing obviously from the Lochnagar plant in this; and as yet I believe _C. approximata_ has not been found on the Breadalbanes.—*C. acuta × Hudsonii*? Specimens sent me by the Rev. H. J. Riddelsdell from Crymlyn Bog, near Swansea, may be this, unless it is merely _C. Hudsonii_ Ar. Benn. starved into sterility by the poisonous fumes of chemical works. I also am inclined to believe that a plant from which Mr. R. A. Phillips sent me specimens labelled _C. stricta_ from Castle Connell, Co. Limerick, is _C. acuta × Hudsonii_. — _C. acuta × Goodenowii_ occurs just north of the railway, Christchurch, S. Hants, and at Wareham, Dorset, and I have seen specimens from other localities; Mr. R. A. Phillips sent it me lately from Banagher, King’s County.—*C. trinervis_, from Ormesby Common, Norfolk, E., was sterile in its native locality and affected with _Puccinia_, and continued so in my garden. I have long entertained the suspicion that this plant is not _C. trinervis_ Degland, but _C. Goodenowii × flaccus_.—*C. aquatilis × Hudsonii_ (C. _hibernica_ Ar. Benn.). See Journ. Bot. 1897, p. 250. —*C. aquatilis × rigida_, moorland near Clova, Forfar.—*C. aquatilis × Katteyatensis var. salina_ (C. _Grantii_ Ar. Benn., l. c. p. 250).—*C. aquatilis × Goodenowii_, known from Clova, Forfar, Caithness, and Spittal of Glen Shee, E. Perth (B. E. C. Rpt. 1906, 246).—*C. Goodenowii × rigida_ has been gathered by Mr. Marshall from the White Water, Forfar, 1904, and so named by Pfarrer Kükenthal “in spite of its apparent fertility,” and also on Lochnagar, 1906; and by myself and the Rev. W. R. Linton in Glen Doll, Forfar, 1890, near the Din Loch, S. Aberdeen, 1889, and on Meall nan Tarach, Mid-Perth, 1891. I agree with the naming of the first-named gathering, but demur to the supposed fertility; my specimens show flat unfertilized nuts.—*C. fulva_ Good. is stated to be a hybrid of _C. flava_ and _C. Hornschuchiana_. Mr. Marshall reports three hybrids of this group: _C. lepidocarpa_ Tausch., _C. Ederi_ Retz. and its var. _adocarpa_, each crossing with _C. Hornschuchiana_, and he considers the last to be the most frequent. — _C. acutiformis × riparia_ ought to occur frequently, if proximity of the parents favoured union. But I have not seen or heard of it till the Rev. H. J. Riddelsdell sent me specimens from Peterston, Glamorgan, labelled _C. riparia_ L., which I have no doubt are this hybrid. This led me to recognize the same hybrid with much probability in specimens I had laid in from Brandon, Norfolk, as _C. acutiformis_ Ehrh. var.— _C. acutiformis × rostrata_—so I interpret a puzzling plant gathered by Mr. C. Waterfall near Tewkesbury, Glos., in 1902, and labelled _C. acuta_ L., which it somewhat resembled.— _C. rostrata × vesicaria_ is believed by Mr. Marshall to be the solution of _C. involuta_ Bab.; and Messrs. Groves (Bab. Man. ed. ix.) allow it as possibly correct. The form of the hybrid I have gathered at Wareham, Dorset, is not identical, and seemed to me peculiar in having its stigmas included; it was, of course, sterile. Specimens have been sent me as crosses between _C. flava_ aggret. and
C. pulla Good., but so near one parent or the other that I have not been fully satisfied.

**Graminaceae.** — *Alopecurus geniculatus × pratensis* (A. hybridus Wimmer) from near Kenilworth, Warwickshire; named by Hackel, to whom Mr. A. B. Jackson sent it, and from Armitage, Staffs. (Journ. Bot. 1901, 254; B. F. C. Rpt. 1900, 650).—*Polypogon littoralis* Sm. is, I think, undoubtedly *Agrostis palustris* HUDS. × *Polypogon monspeliensis* Desf. I have seen it with these supposed parents at Porchester, S. Hants, and also at Littlesea, Dorset. From the latter locality I grew a root for three years in the garden, and as no seedling occurred, I assume it is sterile.—*Ammophila baltica* R. & S., Norfolk and Northumberland, has long been regarded by German botanists as *Ammophila arundinacea* Host × *Calamagrostis epigeios* Roth. Focke (l. c. pp. 408–9) writes: “*Calamagrostis arenaria* Roth × *epigeios* Roth occurs sporadically on the coasts of the North Sea and the Baltic, everywhere sparingly. Habit of *C. arenaria*, but recalling strong *epigeios* by the loose, brownish inflorescence. Occurs by the North Sea on islands from which *C. epigeios* is now absent, but probably grew formerly. Is totally sterile. *C. arenaria* = *Psamma arenaria* R. et Sch., *Ammophila arenaria* Link, &c.” The seeds of seaside grasses can be carried about in so many ways, by gales, tides, and wading birds' muddy feet, that the hybrid's occurrence, where one of the parents is absent, is easily accounted for.—*Poa*. Mr. Marshall writes to me that Mr. H. Fisher determined some years ago two grasses which he collected in Corrie Ardran, Mid-Perth, as *P. annua × pratensis*, n. hybr. and *P. annua × glauca*, n. hybr.; and a third, from Ben Creachan, Argyle, as probably *P. nemoralis × pratensis*. He believes that these solutions, or, at any rate, the first two, are correct.—*Glyceria fluitans × plicata* (*G. pedicellata* Townsend) is perfectly sterile, *vide* Rev. W. R. Linton. Mr. Marshall tells me that Mr. Townsend from the first suspected hybridity, and latterly was convinced of it.—*Festuca loliacea* HUDS. stands in the London Catalogue as *F. elatior × Lolium perenne*. I think the hybrid, as I have found it, has usually been *F. pratensis × L. perenne*.—*Triticum acutum* DC. (*Agropyron acutum* R. & S.) is given by Messrs. Groves in *Bab. Man.* without note of hybridity, but we have for some years been tending to the view that most of our plant, so-called, is *T. junceum × repens*. “It has received many names by botanical writers, and is the *T. acutum* for the greater part of our British lists,” writes Mr. Druce, who, however, thinks it needs one more, and denominates it “*A. Hackelli mihi, A. repens × junceum forma cristata* Hack. in litt.” (B. E. C. Rpt. 1906, 252).

To this paper on Hybrids among Phanerogams, I add such few notes as have reached me on Hybrids among the Cryptogams at the end of the London Catalogue.

**Polypodiaceae.** — *Asplenium Trichomanes × Ruta-muraria* (A. Clermonta Syme).—*A. germanicum* Weiss has been thought to be A. *Ruta-muraria × septentrionale*, a view held strongly by the Rev. R. P. Murray. “A. Kerner has suggested that it may be a hybrid which has become fixed” (Focke). — *Lastrea remota* Moore has been
suspected of being L. Filix-mas × spinulosa. "Occurs sporadically and sparingly in various districts" (Focke). Syme (Eng. Bot. ed. 3, vol. 12, p. 82, 1886) has a remark to the effect that he suspected L. glandulosa to be a hybrid = L. spinulosa × dilatata; L. uliginosa to be L. cristata × spinulosa; and L. remotata to connect L. spinulosa (more probably L. dilatata) with L. Filix-mas. The Rev. A. Ley wrote on L. glandulosa: "It does not seem reasonable to attribute it to L. spinulosa × dilatata, although I have never seen it growing except where both these species are present within a short distance" (B. C. F. Rpt. 1899, p. 616). I have not had much opportunity of studying these supposed Lastrea hybrids.—Polypodium vulgare var. serratum Willd. is, according to Timbal-Lagrange, P. vulgare × Aspidium aculeatum; and P. cambricum L. was considered by him to be P. vulgare × Pteris aquilina (Focke); and Mr. Marshall, who gives me this information, thinks the latter at least not very unlikely, as it seems always to be without fructification. I do not feel inclined at present to express an opinion.


NOTE ON ROSA HIBERNICA.

By James Britten, F.L.S.

In the Index Kewensis the publication of Rosa hibernica is given as "Sm. Engl. Fl. ii. 393" [391] (1824). This is odd in view of the numerous earlier references given for the plant in the English Flora—Engl. Bot. t. 2196 (1810), Smith's Compendium, ed. 2, 78 (1816), Woods in Trans. Linn. Soc. xii. 222 (1817), and Lindley's Monograph, 82 (1820); to which may be added Ait. Hort. Kew. ed. 2, iii. 261 (1811), and Smith in Rees's Cyclopædia (1814–15). The name is usually attributed to Smith, who in his first publication of it in Engl. Bot. says:

"Discovered many years ago in the county of Down, about Belfast harbour, where it grows abundantly, by our often-mentioned friend John Templeton, Esq., who consequentely found himself entitled to the reward of 50l. so liberally offered by the patrons of botany at Dublin for the discovery of a new Irish plant. We adopt the name by which Mr. Templeton has communicated wild specimens to us, for the singularity of the anecdote, and that we may not rob him or his countrymen of a particle of their honours."

From the above quotation it is clear that the name was suggested by Templeton, but it seems to have been generally overlooked that he actually published it, with a full description and an excellent figure, in vol. iii. of the Transactions of the Dublin Society, pp. 162–164, where he says: "As it has not been before described,
I may perhaps be allowed to give it the name of Rosa Hibernica."

The authors of the *Cybele Hibernica* seem to have overlooked this sentence, for (p. 119) they give "R. hibernica Smith" as the name of the plant, and say:—"First published in the *Dub. Soc. Trans.* iii. p. 162 (1802) [1803] and afterwards named *R. hibernica* by Smith in 1810."

The "reward of £50" is more correctly stated in the *Cybele* to have been "five guineas, Irish currency"; the entry in the Dublin *Transactions* (iv. 199) runs:

"For producing Native Plants of Ireland not hitherto described.

<table>
<thead>
<tr>
<th>R. Scott, Esq., M.D., Professor</th>
<th>Three new species of Mosses.</th>
<th>£  s.  d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>of Botany, T. C. D.</td>
<td></td>
<td>17 1 3</td>
</tr>
<tr>
<td>John Templeton, Esq.</td>
<td>A new species of Rose.</td>
<td>5 13 9</td>
</tr>
</tbody>
</table>

The fruit on the E. Bot. figure of *R. hibernica* is from a drawing sent by Templeton to Sowerby with a letter, preserved in the Department of Botany, which is printed in the Supplement to this Journal for 1903, p. 64.

Scott published two of his mosses in the same volume of the *Transactions*, p. 158, with a figure of each, but these seem to have been entirely overlooked. The species—*Grimmia maritima* and *Dicranum Scottianum*—are usually cited as of Turner from his *Muscologia Hibernica Specimen* (1804), which is dedicated to Scott. It would appear however that the former should be attributed to Smith, to whom Scott sent it and who "aptly named it *Grimmia maritima*." The *Dicranum*, "to which the partiality of my ingenious friend Mr. Turner has affixed the trivial name *Scottianum*," was sent to Turner. The references to the species should therefore be:

*Grimmia maritima* Sm. ex Scott in Trans. Dublin Soc. iii. 158 (1803).

*Dicranum Scottianum* Turn. ex Scott, l. c.

Scott's third plant is altogether doubtful; it may as he suggests be a *Ricatoria*.

Turner (op. cit. vi.) makes special acknowledgement of the help he received from Scott and Templeton, to the former of whom he dedicates his book, which he says was begun at his suggestion:—

"Viris amicissimis, Roberto Scott, M.D. Botanices, Eblanse, Professori, W. Stokes, M.D. Sacro-Sanctae Trinitatis Collegii Socio, Historiae Naturalis cultori indefesso, et Johanni Templeton, Arm. qui, Hiberniae septentrionalis incola, regionem illam montosam et nature opibus abundanter labore improbo indagavit, et a quo Flora Hibernica mox est expectanda, summas et habeo et ago gratias."

---

Journal of Botany.—Vol. 45. [August, 1907.] 2
SHORT NOTES.

Fertility of Senecio albolescens (S. Cineraria x Jacobaea). —In the Rev. E. F. Linton’s valuable paper (p. 274) the fertility of Senecio albolescens is set down as unproven. Mr. Linton has overlooked the following passage on page 113 of the Flora of County Dublin, published three years ago, where the question is set at rest:—"The Killiney Bay hybrid produces perfect fruit in small quantity. Of five plants which I have grown from its seeds, gathered on the sea-cliffs near Vico in 1902, one retained all the prominent characters of the hybrid, while the others approached in varying degrees more closely to S. Jacobaea." In further proof of the fertility of this natural hybrid between a native and an alien species of Senecio it may be of interest to mention that I have produced a second generation of the plant. Seeds gathered in 1905 from a hybrid grown in my garden, and itself the product of seed taken from a hybrid parent in its natural station at Vico, have proved fertile, and produced one strongly marked hybrid plant. This, unfortunately, died after reaching a height of three inches, so that I have been unable to raise a third generation of the hybrid.—Nathaniel Colgan.

Ecology of Montia fontana L. (p. 211).—Although the habitat of this widely diffused plant is typically as Mr. L. H. Riley has described it above, yet, in its two forms, minor All. (erecta Pers.) and major All. (rivularis Gm.—repens Pers.), it is able to live and maintain itself in many varying conditions of dryness and moisture. The enumeration of the following localities from my own herbarium should suffice to confirm this statement. 1. Swampy place on a common, Staffordshire; 800 ft., in shallow stagnant water. 2. Edge of a small pond on the top of the cliffs of Moher, 500 ft., Co. Clare; swampy pond-edge, with Peplis portula. 3. Edge of a pond, Aldershot, Hants. 4. Six inches long, growing in a bog, not on Sphagnum, in Denbighshire, 900 ft. 5. In a mountain rill, Monmouthshire. 6. In a damp place on a hillside, 600 ft., Salop. 7. On the top of a dry hill, 900 ft., the Buckstone, West Gloster, on Old Red Sandstone Conglomerate, in short turf, with heather, gorse, Polytrichum juniperinum, &c. Mr. West remarks (p. 282) that Montia does not grow in bogs. It might be well to limit that assertion to "on Sphagnum," or "in Sphagnum-bog."—Eleonora Armitage.

Phleum pratense L. var. precox Jord.—In June 1905 a very well-marked variety of Phleum pratense was found on the limestone at Cave Dell, Castleton, Derbyshire. This proves to be var. precox Jord.—E. Drabble.

The Koeleria of Ben Bulben.—In the Memorials of Babington a reference is made to the "Koeleria on Ben Bulben supposed to be valeriae" [sic]. In the index this is altered to "valesiana." I may say that through the kindness of the Curator I have seen the specimen in Babington’s Herbarium from Ben Bulben and find it is not K. valesiana, but is similar to the plant which I
gathered on that range last September, and which is now being examined by Dr. Domin. It belongs to the gracilis section, and is not the common British form.—G. Claridge Druce.

Schoenus nigricans L.—It may be of interest to report that in July 1906 this plant was found by me between Clevedon and Portishead, whence it was recorded in 1842. It is of rare occurrence in Somerset, and has long been supposed to be extinct in the above locality.—Mary A. G. Livett.

NOTICES OF BOOKS.


This work, extending to 244 pages, will be somewhat of a disappointment to him who purchases it in the expectation of reading a general account of the effect of climate upon plant-structure, and even the sub-title "Anatomisch-Physiologische Untersuchungen in den Tropen" will not prepare the reader for the fact that the book almost exclusively deals with the results of some observations made in Ceylon.

Prof. Holtermann has evidently imitated A. F. W. Schimper's style of work and drawn largely upon that botanist's ideas, but hardly with success or adequate appreciation. Schimper had an artist's gift of setting forth the main facts of his case to produce a bold and true picture, and of avoiding excessive detail. But in attempting the same method Prof. Holtermann seems to mistake important points for trivial details; for instance, after attacking Schimper's view that the vegetation near the sulphur springs of Java are xerophytic, he states that the amount of salts present is often insufficient to evoke xerophily, that analyses of the various springs are presumably in existence, and that the chemical composition of the fumaroles is not such as to evoke protective devices against transpiration. Yet he gives no convincing illustrations, on analyses of the soil, and no evidence against the quite probable possibility that minute doses of sulphur dioxide can evoke xerophily. Again, he makes the interesting statement that a detached shoot of Cyanotis fascicularis, when laid on a table, gradually withered during the day, but recovered its fresh appearance and turgidity during the night. From this he concludes that the shoot absorbed dew. Yet there is no evidence supplied that the shoot increased in weight during the night, nor that the regained turgescence was not due to mere transference of water from the aqueous tissue to the green cells, nor that there are any cells capable of absorbing dew. Later on, Prof. Holtermann goes on to say that in Ceylon there are various plants possessing aqueous tissue, and having a power of absorbing dew and of thus gaining in weight. The proof of the prevalence of such a widespread utilization of dew would have been a notable addition to our knowledge.
of plant-life in the Tropics, yet neither names of plants nor statistics are given. Yet one more case may be cited. After describing and figuring quite familiar devices for bud protection—including coatings of hairs and of wax-like substances, young stipules, leaf-sheaths, concave petiole-bases, peg-like ridges at the bases of leaves—the author goes on to say: "In all these protective devices I have been able to establish the fact that when they are artificially removed the buds dry and die. . ." This experimental evidence was just what was required, but how to accomplish it without incidental injury to the protected parts defied previous investigators. Yet Prof. Holtermann does not tell us by what extremely ingenious methods he contrived to remove the delicate film of wax or hairs, or the tiny pegs of Alstonia, and the like. In fact, throughout the book the author fails to be convincing.

Though scattered about the book are interesting isolated observations that seem to be new, very much of the text, even the spaced text, is already well known, as would be recognized if the literature were more fully cited.

The first fifty pages deal with climate in Ceylon, and give some useful quantitative statistics on transpiration.

The next Section commences with the consideration of mangrove vegetation, and a number of surprising statements are met with. We are told that most botanical writers regard aqueous tissue as a means of depressing transpiration, and stress is laid upon the very familiar fact that in reality its function is to prevent green cells from dying. But the main object seems to be to show that Schimper exaggerated the structural features devised to depress transpiration. Here the author had a chance of testing his view by including detailed measurements of transpiration; but, although measurements are given (in the preceding Section) of transpiration in Rhizophora and Avicennia, they are accompanied by no particulars as to temperature and atmospheric humidity, so that comparison might be made with inland plants in connection with which these details are, however, supplied. The statistics supplied conclusively demonstrate that in the experiment performed transpiration was, as a matter of fact, very slow. Among the curious statements designed to show the absence of historical protection against transpiration are the following: In Rhizophora conjugata the stomata are sunken, occur only on the lower face of the leaf, have strongly developed cuticular ridges, but are "not xerophytic in character"! Bruguiera gymnorrhiza is described as having a thick cuticle, but not so thick "dass ich, wie Schimper, dies besonders betonen möchte"! Again, in his eager attack on Schimper's view that the xerophytic structure is partly designed to prevent a poisonous accumulation of salt in the green cells, Prof. Holtermann confidently adopts the possibly incorrect and improbable assumption "that the cell-sap of all the cells of the leaf is equally concentrated as regards common salt," and further sustains his argument by informing us that no European halophytes washed by sea-water have means of depressing transpira-
tion; and he even instances *Salicornia herbacea* to support his view!

These examples suffice to show the unconvincing nature of the book, which continues with consideration of the vegetation of the *solfataras*, sea-shore, inland forests, *patanas*, parasites, and epiphytes, among which are isolated facts that are both interesting and new. (Incidentally a novel view of priority is taken when Mr. Boodle's already published observations on *Pteris* are quoted as subsequent to the author's, and later a similar original conception is brought out in reference to Mr. Wright's suggestive work on leaf-fall.)

Upon leaf-fall and periodic growth in thickness of wood, Prof. Holtermann adds nothing, so far as the reviewer can see, novel in idea or in fact. He records a pretty observation made by Mr. Carruthers, who noted that a chocolate-tree seven years old showed twenty-two rings of growth and had cast its leaves thrice a year. Prof. Holtermann, in reference to the production of wood-vessels at the beginning of the vegetative season in tropical trees, adopts the familiar theory put forward by Hartig in connection with temperate trees; but he restates it (in spaced type) in manner too narrow and dogmatic, thus: "At the commencement of the vegetative season it is absolutely necessary for new conducting channels to be produced rapidly, since the tracheal elements, which sufficed for the old leaves, are no longer sufficient, because the transpiration has materially increased. In addition the branches commence to grow, and in a very short time the mass of foliage is considerably larger than formerly." This proposition is nothing more than an assumption, because it neglects two facts: first, the amount of water stored in the wood of the tree; secondly, the possibility that the tree may perhaps, by increased rapidity of current, temporarily do without any sudden increase in channel. Later on, Prof. Holtermann makes an astounding misstatement in reference to a suggestion due to Hartig, to whom he attributes the opinion that there is "a connection between the formation of annual rings and the production of heart-wood"; and then he laboriously proceeds to overthrow this obvious delusion. Hartig, of course, never sought to establish any such relation, but he did show that those temperate trees which produce heart-wood, and in which the conducting channel consists of a few annual rings, the so-called "spring zone" is especially porous, and did ingeniously suggest that this is due to a sudden call for water-conducting elements.

In the final Section dealing with "Direct Adaptation," we find at the outset the same peculiar perspective in regard to the work of other botanists. In opening the discussion on the effect of changed habitat on halophytes the author has to agree in results with Schimper, yet without any justification he suggests (once more in spaced type) that certain of Schimper's observations on *Sonneratia acida* were possibly not made on that plant at all. Again, in reference to Schimper's statement regarding stone-cells in *Securola Koenigii*, he says, "I cannot definitely contradict this assertion," and adds that he could not find stone-cells in this
plant, but did find them in *S. Plumieri*. What plant does Prof. Holtermann mean by the latter? One species known as *S. Plumieri* is identical with *S. Koenigii*, another species known as *S. Plumieri* is quite a different plant. This final Section of the work contains a number of examples of the direct effect of environment upon plant-structures, but no material contributions to the knowledge of "direct adaptation."

In fact, the book, with its preconceptions, its hasty conclusions, its incomplete evidence, and its treatment of previous workers, seems to belong to the class "in which the voice of intention makes itself heard beneath the mask of insight" (Schopenhauer).

Percy Groom.


Jost's *Vorlesungen über Pflanzenphysiologie*, which appeared in 1904, is recognized by all students of vegetable physiology as a work of great and permanent value. Less exhaustive than Pfeffer's treatise it is nevertheless a masterly summary of our knowledge of this subject. It has, moreover, qualities of lucidity and precision which place it in striking contrast with Pfeffer's more elusive pages. A translation of Jost was therefore to be desired, and it is fitting that the desire should be met by the Clarendon Press to whose enterprise botanists are already so indebted.

The English translation by Professor Harvey Gibson occupies 561 pages, about 130 pages less than the original. This compression is secured at the expense of the reader; for so close-set are the lines that it is not easy to follow their sequence.

The illustrations are old and worn. Many are from well-known sources such as the Bonn text-book and are certainly, so far as English students are concerned, superfluous. The ink-black pitcher plant (p. 185), the figures of *mitosis* (p. 268), the blurred Mimosa (p. 513), may be cited as examples of the many figures which, unlovely in their present state, might be dispensed with altogether.

The cover bears the title "Jost's Physiology. Gibson," and therefore encourages the hope that the German text of four years ago has been edited and brought up to date. This hope the title-page and translator's preface dispel. Professor Gibson states that he has not attempted to edit Dr. Jost's pages and that he has, at the author's request, endeavoured to translate the German text as literally as possible. These decisions are to be regretted, and it is doubtful whether the work was worth doing on these terms; for, on such terms, it is hardly possible even to do justice to the book itself, still less to remedy its defects.

Occasional sentences in square brackets by the author do not succeed in bringing the book up to date. Thus the chapter on assimilation contains no reference to Usher and Priestley's work nor to the recent researches of F. F. Blackman. Neither in the bibliography to the chapters on Heredity and Variation, nor in the
chapters themselves, is mention made of such names as those of Galton, Bateson, Pearson, Biffen, Punnet, Sanders. The student is referred to no modern English or American work on Genetics, not even to De Vries’ “Species and Varieties, their Origin by Mutation.” The brilliant work of the Third Report is ignored, and we are told that “Mendel’s law of segregation is however not of universal application. There are hybrids which do not segregate, and also others which segregate in different proportions.” The segregation of hybrids would provide a Mendelian night’s entertainment.

The subject of manuring with artificial manures receives nineteen lines. Kainit is written “cainite” (p. 101). Phosphoric and nitric acids are said to be amongst the chief manures. Basic slag is referred to by the name in use in Germany, and it is stated with respect to lime that “one need never fear a deficiency of that mineral in agriculture.” The bibliography ignores Rothamstead, and is silent as to Hall; but refers the student to Meyer’s ‘Agricultural Chemistry’ 1895. When omissions such as these occur in a German work the Englishman says nothing; but when they come home to him in a translation he protests, and rightly protests. Our tributary to the stream of physiological research may be small; but its place must be marked on any map published in this country.

The actual translation is fairly, but not wholly, satisfactory. Growing point (p. 285) instead of growing-point is not a happy innovation. “The inward significance of manuring” (p. 101) illustrates a tendency to the use of unnecessary words. “Transformation of form” (p. 1) is not elegant. “Vines treated with copper” (p. 88) should probably read “treated with a copper salt,” since it appears from the next sentence that it is a solution which is used; past and present tenses rub shoulders uncomfortably in the sentences which follow. More serious objection must be taken to the employment of the word metamorphosis as the equivalent of the German “Formwechsel.” The word is already heavily weighted with meaning, is rich in historical association, and is too old to bear new meaning for the expression of which good words already exist. A reckless use of italics—as many as seventeen per page—is a feature of the book; adjectives seem to be specially, though not exclusively, favoured in this respect.

Frederick Keeble.

BOOK-NOTES, NEWS, &c.

The Editor, Mr. Carleton Rea, is to be congratulated on the appearance of the Transactions of the British Mycological Society for the season 1906 (Worcester, 1907, pp. 133–189, 3 coloured plates). He opens with the usual account of the Autumn Foray, which this year took place in Epping Forest. The season, previous to the 1st October, had been a very dry one; but the week’s examination yielded no fewer than three hundred and thirty species of fungi, and of these fifty were additions to the list for Epping Forest. The President, Mr. Arthur Lister, F.R.S., begins
his address by giving some delightful historical notes on the Forest, and then takes up the subject of Mycetozoa, describing in turn the methods of spore dissemination and germination, the life of the swarm-cells, and the development and cytology of the plasmodium. A valuable paper is contributed by M. Émile Boudier, an honorary member of the Society, entitled, "Quelques Rectifications et Observations sur les Illustrations of British Fungi" de Cooke." The writer pays a high tribute to the excellence of the plates and gives notes on many of the figures, on the nomenclature, form, and colour of the fungi. His remarks are replete with interest to all who have worked with the "Illustrations." The Editor has supplied, from his intimate knowledge of living forms, a most helpful paper on "How to distinguish the species of British Lycoperda in the field." He takes up each character in succession and lists the species under the different character-groups. The paper is a decided boon to field-workers, who have not found Lycoperdon an easy genus to deal with; but it would have been more readily helpful if it had been arranged in tabular form. Papers by W. B. Allen on Trameles rubescens; by A. D. Cotton on British Clacarie; and by Carlton Rea on Ozoniun, are also included, as well as the usual list of "Fungi new to Britain." A number of these are also new to science, and have been figured by Mrs. Carleton Rea, to whom the Society is again much indebted. The present number forms the close of the second volume, and an index of this and previous parts is appended, along with a list of members of the Society.—A. L. S.

We have received lately some further communication on the American Gooseberry Mildew. The Board of Agriculture have issued a new leaflet (No. 195) representing with pen and pencil the serious nature of the disease, and urging growers to be on the look-out for the first symptoms of attack. "The disease," we are told, "first appears as a delicate white mildew on the expanding leaf-buds, extending later to the young wood and fruit." In another paragraph: "The disease is of a very serious character, and has rendered the culture of gooseberries unprofitable wherever it has appeared, and in some cases even impossible"; but the consoling statement is added, "In this country the fungus appears to be mostly confined to the tips of the shoots." The Board of Agriculture does not yet seem quite sure that the disease is very harmful. A pamphlet by Mr. E. S. Salmon, The American Gooseberry Mildew, issued by the South-Eastern Agricultural College, speaks with no uncertainty. The author is fighting the apathy of growers and of people with authority. His aim is to induce the Board of Agriculture to carry out the following measures: (1) the prohibition of all further importation of diseased gooseberry stock; (2) the compulsory destruction of all diseased bushes, compensation being paid where necessary. Mr. Salmon again describes the appearance of the disease, and gives advice to those growers whose bushes have been attacked already.

We have received the Report of the Watson Botanical Exchange Club for 1906–7, from which we hope at a future date to publish some extracts.
NOTES FROM THE NATIONAL HERBARIUM.—I.

[U]nder this heading it is proposed to publish items of information which accrue during work in the National Herbarium, and which it seems worth while to place on permanent record, as elucidating the history of some of the plants contained therein, and specially of the older types. The Notes will be contributed by members of the staff and others; those forming the present instalment are by Mr. Britten.—Ed. Journ. Bot.]

"CAMELLIA AXILLARIS Roxb." The plant figured under this name in Bot. Reg. 349 and Bot. Mag. 2047 (both in Feb. 1819) is, as pointed out by Dyer in Journ. Linn. Soc. xiii. 330, Gordonia anomala. The diagnosis preceding Ker's description (Bot. Reg. 349) is latinized from "Roxburgh MSS. in MSS. Banks conservato"; Dyer (l. c.) says "I have tried to trace this MS. in the Banksian Library, but without success"; it is however the MS. Flora Indica mentioned in this Journal for 1902, 420, which Ker frequently consulted; the description, which is in Roxburgh's hand, is taken from vol. ii. p. 1523**. Sims quotes the same description as from "Roxb. fl. Ind. ined.," but does not mention the Banksian Library. The word "downy" is rendered by Ker "sericeo," by Sims "villoso." According to Ker, it was introduced by Roxburgh from Pulo-Penang to the Calcutta Garden. Dyer (l.c.) says "if it was obtained from Penang, it can only have been from a garden"; this may well have been the case, although Roxburgh distinctly says "a native of Pulo-pinang."

CERATITES AMÉNA Solander ex Miers Apocyn. S. Amer. 18, t. 1c. When revising our Apocynaceae I came across this plant, which was first published by Miers (l.c.). Its general appearance at once suggested that it did not belong to the order, and a closer inspection indicated Rubiaceae for it. Mr. Spencer Moore examined the specimens and identified it with Rudgea eriantha Benth., a plant collected by Gardner and, curiously enough, by Miers himself, who rightly identified it and whose specimen is accompanied by a pencil drawing of dissections of the flower. It must however be remembered that the memoir on the Apocynaceae was Miers' last work, published in his eighty-ninth year, and that it contains abundant evidence of failing memory. A careful examination of the National Herbarium, on which it is largely based, has failed to bring to light plants stated by the author to have been seen by him therein; while in the printed account the words "non vidi" are in several cases appended to descriptions of plants which Miers himself wrote up in the Herbarium. Ceratites is duly retained in Apocynaceae by Schumann (Engler & Prantl, iv. 2, 144), and no doubt seems to have been hitherto expressed as to its position.

CREPIS PREMORSA Tausch. Babington includes this plant in his Flora of Iceland (Journ. Linn. Soc. xi. 315) with the following note: "Solander states that he found it at Hafnarfjord. It is included in all the lists from the time of König; but no localities
are recorded. Vahl doubts its claims to be in them." Babington did not consult the small collection of drawings of the Iceland plants made for Banks by J. F. Miller, who accompanied him on the voyage to Iceland in 1772; had he done so he would not have failed to identify the figure named by Solander Hieracium prae-morsum with H. caesium Fr., of which Banks and Solander's specimen—not mentioned by Babington—is in the Herbarium. It may be worth while to give a list of Miller's sketches—of Hieracium caesium and the forms of Gentiana campestris finished drawings from the sketches were made by Thomas Burgess—Ranunculus hyperboreus Rotth., Arabis petraea L., Saxifraga hypnoides L., S. nivalis L., Leontodon autumnalis L., Hieracium caesium Fr., Erigeron alpinum L., Gentiana campestris L., Kaemigia islandica L. Of the Gentian two forms are figured—one with white or flesh-coloured flowers, the other of a red-purple hue throughout, including the blossoms. The specimen of G. tenella in Solander's collection is, as Babington says (l. c. 318), labelled G. Eidemi, but not in Solander's hand, although the name is assigned to him in the Index Kewensis.

Cyrtandra glabrata ("Solander [Dryander] MS. in h. Mus. Brit.") C. B. Clarke Monogr. Cyrtandr. 277. This species as described by Clarke is founded on specimens collected by Cook in Tahiti in 1775. The name (written glabra) was originally applied to a plant collected by Banks and Solander, of which there is a full description in Solander's MSS. and a drawing by Parkinson (glabrata). Dryander included Cook's plant under the same name, and it is this latter which must be considered as the type of glabrata; the Banksian specimens are referred by Clarke to C. biflora Forst.

Diciplerta frondosa Juss. Under this Seemann (Fl. Vit. 183) places "D. floribunda Sol. Prim. Fl. Ins. Pacif. (ined.) p. 203," of which he transcribes the description. There being no specimen of D. frondosa from Banks and Solander, I suspected some confusion, especially as Seemann refers to a Banksian specimen of D. clavata (Diforstera Baill.) which does not appear in the copy of Prim. Fl. Ins. Pacif. which Seemann consulted. A reference to the rough draft in Solander's hand shows that the name of the plant originally described therein as floribunda was subsequently changed by him to clavata—an alteration overlooked by Sigismund Bacstrom when transcribing the MS., or possibly made after the transcription. The entry under D. frondosa in Fl. Vit. should be restricted to the words "from Tahiti (Forster! Wiles and Smith!);" the synonymy and description belong to D. clavata.

Erinus frutescens Mill. Dict. ed. 8, n. 4, is the type of Caparia cuneata Ait. Hort. Kew. ed. 2, iv. 47—usually cited as of R. Brown, although his name is in no way connected with it in Hort. Kew. It is identical with C. saxifragofolia Schlecht. & Cham.—the name adopted in Bot. Biol. Centr. Amer. and elsewhere. If the plant be retained as distinct from C. biflora the name and synonymy will be as follows:—
Capraria frutescens, comb. nov.

Erinus frutescens Mill. Dict. ed. 8, n. 4 (1768), et in Herb. Mus. Brit.!


C. saxifragofolia Schlecht. & Cham. in Linnaea v. 105 (1830).


ex Benth. in DC. Prodr. x. 430.

Miller's plant was collected at Vera Cruz by Houstoun.

Erinus tomentosus Mill. Dict. n. 2, is retained in the Kew Index, but is reduced by Bentham (in DC. Prodr. x. 383) to Stemodia lanata Ruiz & Pavon, which must be called S. tomentosa. This was also collected at Vera Cruz by Houstoun.

Leucena Forsteri Bentham. Bentham (Hook. Lond. Journ. Bot. v. 94) rightly bases this species on the Mimosa glandulosa of Solander in Forster's Prodromus, p. 92, no. 565 (nomen), on the faith of specimens from George Forster, written up by him with that name and number in the National Herbarium. Seemann (Fl. Vit. 73) refers to these specimens, but says that the name "is not taken up in Solander's MS. Flora of the Society Islands." Perhaps by this he means that the name is therein misapplied, for it is certainly there (p. 349). But the description shows that it there refers to Serianthes myriadenia Planch., and this is borne out by the fact that the same plant in the Banks & Solander collection bears the name Mimosa glandulosa. Leucena Forsteri (the M. glandulosa of Forster) is described on the same page of the MS. as M. littorea and the specimens are labelled by Solander M. littoralis. Neither is mentioned by Seemann as having been collected by Banks & Solander.

Lysimachia pacifica F. Muell. Phyt. N. Hebr. 18. This name appears in Pax and Knuth's monograph of Primulaeae in Das Pflanzenreich (p. 312) among the "species non visæ." It is the Lysinia pacifica of Seemann (Fl. Vit. 147)—a name not cited in the work referred to, but quoted in the Index Kewensis with "(nomen)" attached. I think however that the plant is described, although the way in which the description is worded leaves this open to doubt. Here is the passage: "... Lysimachia pacifica Seem. sp. nov. in Herb. Mus. Brit. from the Isle of Pines (Mc Gillivray!). The latter has quite the habit of L. spathulata Vent.; spathulate entire, dotted and membranous leaves, axillary solitary flowers, and calyx segments densely covered with black dots. The flowers seem to be white. Calyx-segments ovate-oblong, acute." I have examined the specimen in the National Herbarium, which does not appear to differ specifically from L. spathulata (L. mauritiana Lam.), although it is more lax in habit than any specimens of L. mauritiana that I have seen. It may be noted that L. tenella Wall. Cat. n. 1491, referred by Pax & Knuth doubtfully to Centunculus minimus is, according to the specimen in the National Herbarium, Anagallis pumilus.

"Marattia terminalis Soland." This name is given by at least two authors—Drake del Castillo (Illustr. Fl. Ins. Mar.
Pacif. 164) and Pampanini (in Annali di Bot. ii. 92 (1905)—as a synonym of *Weinmannia parviflora* Forst., in this following Seemann (Fl. Vit. 109) who first printed the name. A comparison of Parkinson’s drawings of Tahiti plants, from which the name is said to be taken, shows that Seemann erroneously transcribed it. Solander wrote *Merretia*, intending no doubt to commemorate Christopher Merrett (1614–95), after whom he subsequently named *Merretia lucida* (*Corynocarpus laevigata* Forst.). Neither *Marattia* nor *Merretia* will be found in the *Index Kewensis*, from which, by a curious oversight, all the numerous names of Banks & Solander given as synonyms in Sir Joseph Hooker’s *Flora Novae-Zelandiae* are omitted.

*Sarcocephalus sambucinus* K. Schum. in Engl. & Prantl, Nat. Pflanzenf. IV. 4, 59 (1891). In his note on this plant in Bull. Herb. Boiss. vii. 377 (1907) Mr. F. N. Williams says: “The identity of the plant can be traced from the type specimen in the University of Upsala, which is the actual Sierra Leone specimen received by Auzelius from Winterbottom in 1798.” Mr. Williams appears to have assumed the existence of this specimen from Haviland’s remark in Journ. Linn. Soc. xxxiii. 4 (1897) and to have overlooked my correction in this Journal for 1897, p. 338. As I have there shown, the type-specimens are in the National Herbarium; there is no reason to suppose that Winterbottom ever collected any plants, and the specimen in Auzelius’s own herbarium at Upsala bears a different name (see Journ. Bot. l.c.). There is indeed no evidence that Auzelius ever called it *Sarcocephalus esculentus*, as stated by Sabine (Trans. Hort. Soc. v. 442); his specimen in the National Herbarium is named generically by Dryander, and J. J. Bennett added the trivial.

*Tacsonia micradena* DC. Prodr. iii. 334. This species is retained as distinct by Masters (in Fl. Bras. xiii. 538 and in Trans. Linn. Soc. xxvii. 628), who, however, says he has not seen it. He did not recognize that it is identical with *T. Purupuru* DC. MSS. which he refers to *T. pinnatistipula* Juss. in both the papers cited and also on Pavon’s specimen in the National Herbarium (from Herb. Lambert); on this De Candolle founded the species published by him as *T. micradena* and on which, following Pavon’s MS. name, he wrote *T. Purupuru*.

*T. pinnatistipula* Juss. *β*. *pennipes* DC. *l.c*. This name is erroneously attributed to Smith by Masters (*l.c.*). Smith, however, intended the name as a synonym of *P. pinnatistipula* Cav.—“an uncouth name” which “with great reluctance we have been obliged to alter.” The plant of Menzies cited by Smith was separated from *pinnatistipula* as a variety (*pennipes*) by De Candolle; this was raised to specific rank under *Tacsonia* by M. J. Roemer (Syn. Pepon. 194), to whom the *Index Kewensis* erroneously attributes *P. pennipes*. The variety stands as:


*Passiflora pennipes* Sm. in Rees Cyclop. xxvi. n. 48 (1813), in part (1828).

ADDITIONS TO THE FLORA OF HEREFORDSHIRE.

By the Rev. Augustin Ley, M.A.

The following notes deal with plants unrecorded for the county in the Flora of Herefordshire published in 1889, in "Additions to the Flora of Herefordshire" (Journ. Bot. 1894, 207), or in "Herefordshire Rubi" (Journ. Bot. 1896, 155). Notices are also inserted of a few plants already recorded for the county if deemed of sufficient general interest. The writer offers thanks to the Rev. W. N. Rogers for untiring aid in Rubus, and to Rev. W. R. Linton for invaluable help in Hieracium; to Mr. E. G. Baker for assistance in the Pansies and Roses; to Messrs. R. Towndrow, Spencer H. Bickham, Miss E. Armitage, Mr. Winterbourne, of Leominster; last, not least, to Rev. C. H. Binstead, late Vicar of Breinton, now of Whitbourne, without whose diligence and knowledge the additions to our moss list would have been few and meagre. Unless where otherwise stated, the records stand on the authority of the writer of the paper. † is prefixed to plants thought to be introduced, and * to those unrecorded for the county at the places mentioned above. In nomenclature and order, the flowering plants follow the London Catalogue, ed. ix.; for Rubus, Mr. Rogers's Handbook; for Hieracium, Mr. W. R. Linton's British Hieracia; for the Mosses, Mr. Dixon's Handbook Catalogue have been used.

Ranunculus Lenormandi F. Schultz. Bog in the Queen's Wood, Gorsley, 1898. The only record for the plant except on the high moorland of the Black Mountain.—Caltha palustris L. *var. latifolia (Schott). Observed at Sellack and King's Capel in the south, and at Lyonshall in the north of the county. Doubtless general.

Fumaria densiflora DC. Ross, 1897, Mr. H. Southall! Ledbury, Bickham,—F. pallidiflora Jord. Garden weed at Ross, 1871, Herb. Purchas! Weston-under-Penyard, 1898; confirmation of the old record for the same station in 1849.—F. *purpurea Pugsley. Fownhope, 1871, Herb. Purchas! Lyonshall, in abundance, 1902.—F. Borei Jord. It seems probable that far the larger portion of the capreolate Fumitories of the county fall under this aggregate. The writer has plants which he assigns to the type from Ludford Park, to *var. ambiguа Pugsley from King's Capel, to *var. muraliformis Cl. from St. Weonards and Huntsham.

Barbara *arcuata Reich. After many years of watching and cultivation of these plants, the writer feels justified in publishing the following localities as, in his judgement, undoubtedly belonging to this species:—Ross, wall-top at the Cottage Hospital, 1895, and subsequent years; King's Capel, in a grass-field, 1902. The pod in this plant is usually thicker and shorter than in B. vulgaris.

Lepidium *ruderale L. Waste ground at Colwall, 1906, Bickham!

Reseda *lutea L. Colwall, 1896, Miss Roper!
Viola *segetalis* Jord. Tillage at Sellack, 1906.—*V. *Paillouii* Jord. Tillage at Brilley, 1905.—*V. *pallescens* Jord. Tillage at Sellack, 1865.—*V. *sepincola* Jord. (*V. odorata × hirta, subodorata*). Far more rare than the cognate hybrid *V. permixta* Jord. Cherry Wood, Fownhope, with white flowers, 1877. Other examples probably to be referred to this hybrid have been found at St. Weonards (1875), Colwall (1885), Mr. R. Towndrow, and Great Daward (1893).—*V. sylvestris* Reich. The statement in the *Flora of Herefordshire*, that this violet is less common near Ross and in other parts of the county than *V. Riviniana* Reich., has been shown by longer experience to be incorrect.—*V. tricolor* L. Native in hilly pastures in the north-west of the county. The following segregates have been identified with some certainty:—

*V. *monticola* Jord. Tillage, Brilley, 1905; a very large-flowered state, due probably to manuring of the soil. Under cultivation in poor soil the flowers become much smaller.

*V. *Prosvstii* Dor. Tillage. St. Weonards, 1880; Great Daward, 1906.

*V. *contempta* Jord. Upland pastures at Deerfold, 1882, and at Byton, 1902.

*V. *hisplda* Lam. Deerfold, 1871.

*V. *carpatica* Bab. Shobdon Park, 1886.

*V. *Deseglesii* Jord. Tillage. Hope Mansel, 1880; Sellack, 1905.

*Polygala *oxyptera* Reichb. Dry hills, rare. Great Darrow, 1890, 1894; Cusop Hill, 1898, Rev. W. M. Rogers! Not extreme *oxyptera*, which would hardly be likely to occur in Herefordshire, but the plant of dry hills, which is nearer to *P. oxyptera* Reichb. than to *P. vulgaris* L.

Silene *nutans* L. Very rare in the county. "In the grounds at Wyeh Point, Malvern, apparently native," Mr. A. J. Crosfield.

*Stellaria nemorum* L. Damp river-side thicket at the Great Darrow, in abundance, 1899, and subsequent years. This plant was certainly not to be found at this station in previous years; but, judging from its abundance, it must have arrived several years before 1899.—*S. media* Cyr. *var. major* Koch. Colwall, 1895, Towndrow (as *S. umbrosa* Opitz); Sellack; Great Darrow, &c., 1901. No doubt abundant throughout the county, although previously unrecorded.

*Claytonia *sibirica* L. and C. *perfoliata* Don. "These two are establishing themselves as weeds at Ledbury," Bickham.

*†Spartium junceum* L. In abundance in a railway-cutting at Ledbury Station, Bickham. First noticed on the railway at Dymock, West Gloucester, whence it spread to Ledbury.

*Trifolium repens* L. var. *Townsendii* Bab. In turf at Moccas Park, 1904, Bickham! Authenticated by Mr. Townsend.

*Spiraeg* *Ulmaria* L. *var. denudata* Boënn. King's Capel, 1905, with the type. Probably widely distributed.

*Rubus idaeus* L. var. *obtusifolius* Willd. In the garden at Walford Vicarage, 1896; apparently the form *rotundifolius* Bab.

*R. plicatus* W. & N. *var. hemistemon* (P. J. Muell.?). Bog in Lyonsball Park Wood, 1900.
R. *nitidus* W. & N. Shirl Wood, Eardisland, 1878.
R. *affinis* W. & N. Hackley Common, Sarnesfield, 1903.
R. *carpinifolius* W. & N. In hilly parts of the county, rare. Howle Hill in the south; Lyonsball and Presteign neighbourhoods in the north-west. The localities mentioned for this bramble in Journ. Bot. 1896, p. 156, in wet thickets must be transferred to *R. leucandrus* Focke. See below, under that species.
R. *dunnoniensis* Bab. In plenty in a rough pasture near Lyonshall, 1897.
R. *nervicicus* Bagn. Foy parish near Ross, 1903.—*Var. chrysoclydon* Rogers. In the north-west of the county; Mosely Mere near Kington, 1896; Almeley, 1901; Brilley, 1905.
R. *villicaulis* sp. collect., subsp. *rhombifolius* W. Sellack, 1904.
R. *pubescens* W. The typical plant at Howle Hill, near Ross, 1906.
R. *amphichloros* P. J. Muell. In the centre of the county at two stations near Hereford, 1905.
R. *Questierii* Lefv. & Muell. Riggs' Wood, Sellack, 1894. Old pool-beds in Lyonshall Park; a form. The Sellack plant was typical; that at Lyonshall very untypical, but was attributed to this species by Rev. W. M. Rogers.
R. *Colemanni* Blox. Rare; only known at one station on the West Gloucestershire border. Bishopsworth, 1891.
R. *hirtifolius* Muell. & Wirtg. *Var. danicus* (Focke). Thinly scattered over the county. Holme Lacy; Ullingswick; Presteign. First found, 1893. —*Var. mollisimus* (Rogers). South and centre of the county. Welsh Newton; Little Doward; Bolston; Mordiford. First noticed in 1900.
R. *Lasioclados* Focke. The typical plant seems to be rare throughout Britain. Howle Hill, near Ross, 1906.
R. *?Lettei* Rogers. A bramble closely allied to this Irish form is abundant in Bolston Wood. The following careful note on this bramble has been prepared by Rev. W. M. Rogers:—"The Bolston
Wood plant seems nearer to *R. Lett*ei than to *R. criniger* or *R. Gelertii*. From the very constant plant of Counties Down and Armagh [*R. Lett*ei] it differs by closer pubescence on the stem, being in that one character most like *R. criniger*; by the leaf more open and widespread, with whitish instead of greenish-grey felt on the under surface, and with the terminal leaflet with longer, more gradually acuminate point and narrower base, the toothing also being deeper and more finely pointed; and by the much longer ultra-axillary panicle top. These characters, though not very distinctive when taken singly, give in combination a considerably different look in the two plants, and each form seems constant to a remarkable degree." First found in 1900.

*R. *adenanthus* Boul. & Gill. Rare. Carey Wood, Brockhampton, 1894.

*R. *Boraginaceus* Genev. Rare. Longclose Wood, Little Doward, 1904; Stanford Park, both in Herefordshire and Worcestershire, 1902.


*R. mucronatus* Blox. *form. mucronatoides* Ley MS. (see Handbook of British Rubi, p. 55). This remarkable form or variety is widely distributed in the north-west of the county, and deserves mention in this paper. Corton Wood, Presteign (Hereford and Radnor); Peas Grove, Kington; Highmoor Wood, Almeley; Shiril Wood, Eardisland; Brilley; Pont Esgob in the Black Mountain. First found in 1884.

*R. *Gelertii* Frider. Equally common in the county with *R. criniger* Linton, with which it was combined in the paper on British Rubi in 1896. Little Doward; Eaton Bishop; Aynestry.

*R. angiosaxonicus* Gelert *subsp. vestitiformis* Rogers. Locally abundant in the south-west, south, and east parts of the county, and in adjoining districts of Monmouth and West Gloucester.


*R. *Drejeri* G. Jensen. Rather rare, and known only in uncharacteristic forms. Welsh Newton; St. Weonards; Caplar; Aconbury; Breinton; Winforton; Berrington.

*R. vadula* W. *subsp. angliceanus* Rogers. Rare. Puttridge Lane, Ross, 1887, Herb. Purchas! Stations for this plant mentioned in Journ. Bot. 1896, p. 217, are now assigned to other species.

*R. podophyllum* P. J. Muell. As an aggregate plant, widely spread in the south of the county. St. Weonards, Welsh Newton, Llanrothal, and Ganaew; all in the south-west of the county.

*R. *Griffithianus* Rogers. Rare, and only in an untypical form. Carey and other woods in Brockhampton parish.

both in Hereford and Worcester; in abundance. I am assured by
Rev. W. M. Rogers that the Sapey plant is identical with the Dorset
bramble to which this name has been assigned.

R. Babingtonii Bell Salt. *var. phyllothyrsus (Frider). More
common than the type in Herefordshire. Great Doward, Walford,
Aeonbury, Yatton in the south and centre; St. Margaret’s in
the west.

R. *Bloxamii Lees. Very rare in Herefordshire. Ullingswicke,
1898, 1900.

R. fusco W. & N. *var. mutans Rogers. Very local. Ivington,
in abundance; Lingen; Byton. First noticed in 1891.

R. pallidus W. & N. var. leptopetalus Rogers, R. Lachri Wirtg.

R. longithymiur Bab. *var. botryeros Rogers. Rare, but (as an
aggregate species) widely distributed in the county. Great Doward;
Putley; Shobdon; Whitfield Woods: these localities are in each
division of the county.

R. fusco-ater W. Found in several stations in widely separated
parts of the county. Bishopston Hill; Richard’s Castle; Brampton
Bryan; Garway Hill.

R. distrustus Muell. & Wirtg. Westhide Wood, 1894; a plant
answering with much exactness to Rev. W. H. Painter’s Stafford-
shire plant thus named. See Handbook of British Inbi, p. 84.

R. Marshalli Focke & Rogers *var. semiglaber Rogers. Rare.
Bishopwood in the south; Kington and Brilley in the north. First
noticed in 1885.

R. viridis Kalt. Still one of the rarest Herefordshire brambles.
Big Wood, Whitfield, 1897.

R. Bellardii W. & N. In abundance in a wood in Cowleigh
Park, 1905. A hybrid—*fusco x Bellardii—in abundance in the
same wood.

R. hirtus W. & K. The typical plant in Big Wood. Whitfield,
1906.—*Var. flaccidifolius (P. J. Muell). Woods on Howle Hill,
Ross; first in 1885. Not known in any other station.

R. *minutiflorus P. J. Muell. Woods, local. Coldborough Park
Wood, 1888; Big Wood and Timberline Wood, near Whitfield;
woods near Peterchurch; near Upper Sapey, but just within the
Worcestershire border. One of the most striking of our native
brambles.

1902, p. 69. Up to the present (1907) unknown beyond the
Big Wood, Whitfield, where this striking plant exists in great
abundance.

R. *tereticaulis P. J. Muell. Very rare. Big Wood, Whitfield,
at a single spot, 1905. Elsewhere recorded for Britain only from
Sprowston, Norfolk.

R. dumetorum W. & S. *var. raduliformis A. Ley. Near Ross;
Wormbridge; Brilley; Whitney, Bickham! First noticed in 1905.
Probably widely distributed.—*Var. triangularis A. Ley. Rare and
local. Upper Sapey Common; in Herefordshire, and more abun-
dantly in Worcestershire. Recurring in Wyre Forest, near Cleo-
bury Mortimer Station (in Worcester).—*Var. britannicus* (Rogers). Widely spread; very abundant in the hilly western districts, especially in the valleys of the Monnow and Craswall Brooks, but not confined to these parts. Great Doward in the south; Holme Lacy in the centre; Whitfield in the western parts.—Var. diversifolius (Lindl.) is more widely spread in the county than had been supposed, and is now recorded from seven or eight stations in different parts.

*R. bucknalli* White. Rare, and known in a single district only. Mordiford, and near Yatton; first in 1895. On these plants the Rev. W. M. Rogers remarks:—"Indistinguishable from *R. bucknalli*, so far as panicle is concerned; but the stem is much less densely hairy, and lacks the resinous exudation characteristic of Mr. White’s plant." Mr. White himself recognized the Herefordshire plant as his species. Recorded in *Journ. Bot.* 1896, 223, as *R. Balfourianus* Blox.

*R. Balfourianus* Blox. Certainly a native of the county, and locally abundant in hedges near Ross, where it fruits freely.

*Poterium dupolygamum* Waldst. & Kit. Wynds Point, Malvern, Crossfield.

*Rosa*. On the *mollis-tomentosa* section of this genus, see a paper by the writer in *Journ. Bot.* 1907, 200. In view of this paper it is thought advisable to give particulars with regard to each member of this group.

*R. mollis* Sm. Rare in the county, and only known in the hilly western and northern parts. Wormesley in the centre; Mary Knowl and Richard’s Castle in the north; Black Mountain in the west.

*R. submollis* Ley. Much more common than the last, and known in some fourteen stations scattered over the whole of the county.

*R. omissa* Deség. var. *resinosoides* Crépin. Rare, only known in two districts. Coldborough Park Wood, 1888; Linton Ridge, 1900. The Herefordshire plant is a handsome form with elongate, nearly parallel-sided fruit. Cowleigh Park, Malvern, Towndrow 1

*R. pseudo-mollis* Ley. Rather common throughout the whole county. The Cowleigh Park station near Malvern, from which the plant was described by Mr. Baker, was in Herefordshire at the date of the publication of the *Flora of Herefordshire* (1889), but has been placed in Worcestershire by the readjustment of county boundaries which followed the Local Government Act of 1893.

*R. Sherardi* Davies. Rare in Herefordshire. Gorsley in the south-east; Ocrep in the south-west; Burghill in the centre; Aymestry in the north of the county.

*R. uncinata* Ley. Not common, but widely spread in the east, central, and northern districts. No station is known in the south or extreme west of the county.

*R. scabriuscula* Sm. Common, and distributed throughout the whole county.
R. sylvestris Woods. Much the same in its distribution as R. scabriuscula, but far less abundant.

R. tomentosa Sm. The most common member of the group throughout the county.

R. farinosa Rau. Rare and local. Aymestry, Kimbolton, Dinmore and Westhope, and one or two other localities. The plants here placed under the name of R. farinosa Rau are none of them typical, differing from Rau's plant in not having the peduncle quite naked.

Pyrus communis L. var. Pyraster (L.). Further investigation makes it probable that this pear is really native in the woods of the Great Doward Hill.—P. *cordata* Desv. Native at several stations in the south and centre of the county. Great Doward; Penyard Park Wood, Ross; Haugh Wood, Mordiford, Dr. Wood. This interesting plant cannot be supposed to be anything but a native plant in the county. The writer has watched it for four or five years on the Great Doward, but has never detected fructification, yet seedlings occur in the vicinity of the older bushes.

Sedum *reflexum* L. *var. albescens* (Haw.). A great part of the *S. reflexum* growing on old walls, in stone quarries, &c., in Herefordshire appears to be the *S. albescens* of Haworth. There is, however, no indication that this stonecrop has any claim to be accounted native in the county.


Galium *erectum* Huds. Rare. Pasture between Cradley and Leigh Sinton, just within the Herefordshire boundary, 1898, Towendrow!—G. *Mollugo* L. *var. Bakeri* Syme. Rare, only known in the southern districts. Grass-field, Tretire, about 1890, B. M. Watkins; rough field-border near Sellack, 1905.

Scabiosa Columbaria L. In one new station—on the Ridgeway, Eastnor, Towendrow!


Hieracium. In this genus the Rev. W. R. Linton's *Handbook* is exclusively followed for the order and nomenclature of the forms.

H. Pilosella L. *var. concinnatum* F. J. Hanb. Growing with the type, but less common. Hope Mansel; Great Doward; Breinton; Eardisley; Houddu and Grwyne Valleys of the Black Mountain.—*Var. nigrescens* Fr. Usually on wall-tops, rare. Walltop, Brampton Bryan, 1902; the typical plant of Fries. Hope Mansel and Great Doward; with dark shaggy heads, but the hair less black than in Fries's plant. The Great Doward plant is recorded by Mr. Linton as *H. Peleterianum* Mér.

H. lasiophyllum Koch (*H. cinerascens* Jord. Fl. Heref. 198). Still found at the Great Doward Hill at the stations for which it was recorded in the *Flora*, but unknown elsewhere.—*Var. plani-
folium F. J. Hanb. (H. pallidum Fr. Fl. Heref.). Great Doward, at several stations; unknown elsewhere. Both the above, with H. stenolepis and H. pachyphyllum, are found also on the West Gloucester side of the River Wye at Symonds Yat.—*Var. erygodon F. J. Hanb. With the type at the Great Doward: occasional.


H. pachyphyllum Purchas (H. casium Fr. Fl. Heref.). Locally abundant on the Great Doward, but confined to this hill.

H. *stenolepis Lindeb. On limestone rocks, very rare. Great Doward, along with the four preceding forms, but much less common. Usually distinguished from the preceding, not only by technical characters, but by the flatness of the head when in blossom. First distinguished in 1897.

H. *pellucidum Læst. Native in woods, on railway-banks and rocks; more common in the western than in the eastern districts. Great Doward, abundantly; Sellack; Lyonshall Park Wood; abundant on the cliffs of the Black Mountain.—*Var. lucidulum Ley. On mountain rocks; not found in the low country. On the Ffwddog range of the Black Mountain, abundantly; first in 1898.

H. serratifrons Almq. *var. lepistoides K. Johanss. Native in woods, on railway-banks and rocks; not rare. Great Doward; Woolhope; Backbury Hill; Upper Sapey; Lyonshall Park Wood, with H. pellucidum.

H. *subulatidens Dahl. On mountain rocks, locally abundant in the Black Mountain. Taren-r-Esgob, on the Ffwddog range, 1898, and subsequent years. This plant, and its variety cuneifrons Ley, are much more abundant in the Breconshire portion of the Black Mountain than in that falling within the area of the Herefordshire Flora.

H. *platyphyllum Ley. On mountain rocks, only in the Black Mountain district. Red Daren, Hatterel range, first about 1897; Taren-r-Esgob, Ffwddog range.

H. *cypripes F. J. Hanb. On mountain rocks with the two last; locally abundant in the Black Mountain. Near the Hay Bluff, Hatterels (but within Herefordshire), 1896; Taren-r-Esgob, Ffwddog range, 1898, plentifully.

H. pinnatifidum Lönnr. *var. vivarium Lönnr. Rare. Walford in the south; Lyonshall Park Wood in the north. First observed in 1898.—*Subsp. scanicum Dahl. Rare. Great Doward in the south; Bredwardine in the north; and Taren-r-Esgob in the west. First in 1898.


H. *cacuminatum Dahl. Common in woods and on hedge-
banks. Distribution not yet ascertained, but known to be widely distributed in the county. —*Var. barbarefolium (Lönnr.). Less common than type. Sellack; Pembridge; probably in many other localities.

H. septentrionale Ayr.-Touv. (H. corymbosum Fr. Fl. Heref.). Banks and field-borders; rare. Llangarren in the south; Hardwick in the north-west. First found in 1856.

H. stictophyllum Dahl. var. serpentinum F. J. Hanb. (Fl. Heref. 526, as "H. gothicum Fr."); Journ. Bot. 1894, 208, as "H. sparsijolium Lindeb."). The name should be as above. Hatterel Hills, 1886; Taren-'r-Esgob, 1900, on the Breconshire border.

H. tridentatum Fr. Exclude all the stations mentioned in the Flora, p. 195. Rare in Herefordshire. Gorsley Quarries, 1893; fine and typical.

H. rigidum Hartm. *var. Friesii Dahl., forma. Road-banks, wood-borders, &c.; very widely distributed in Herefordshire in the south, west, and north of the county; not known in the eastern districts. The stations mentioned in the Flora under H. tridentatum must be transferred to this plant.—*Var. seabraescens Dahl. Very rare. Roadside in Brilley parish, 1900; cultivated since that date.

H. boreale Fr. The form far most common in Herefordshire seems to fall under that called Eu-sabaudum, of Zahn, characterized by having its stem very hairy from base to heads, including the phyllaries themselves. A plant answering to H. obliquum of Jordan in being less hairy in all its parts, and having smaller lanceolate leaves, occurs on the Red Daren, Hatterel Hills. Another form, which appears to be the var. eminens of Jordan, with glabrescent stems and heads, the leaves ovate, broader, and coarsely toothed, occurs in several places in woods. Bolston Wood, 1888; Haugh Wood, 1891. This form is common in Wales.

Hypocharis *glabra L. Native? very rare. Chance's Pitch, Colwall, 1902, Towndrow!

†*Asperugo procumbens L. Alien. Ledbury, in considerable quantity, 1903, Bickham!


Mentha longifolia Huds. var. Nicholsoniana (Strail), Flora, 527. This is the prevalent form of M. longifolia throughout Herefordshire. A hybrid—Nicholsoniana × viridis—occurred on the riverbank at Hereford in 1899.—M. hirsuta Huds. *var. subglabra (Baker). On the Wye, Great Doward; on the Lug, Mordiford. Probably common.—M. * graculis Sm. Riverside thicket at the Great Doward, 1906; clearly native.

Origanum vulgare L. var. megastachyum (Link). Great Doward, abundantly; Ayemst, with the type. More abundant than the type throughout Herefordshire.

Calamintha *arvensis Lam. Very rare in the county. In the grounds at Winds Point, Malvern, Crossfield.

Salvia *pratensis L. Very rare; native? Bank on Backbury Hill, 1904, Bickham.
Aristolochia Clematitis L. Still (1906) in existence in the station at Ross at which it was first observed in 1802.

Mercurialis annua L. Leominster, on recently moved soil, 1906, Winterbourne.

Urtica dioica L. var. microphylla Hausm. Not rare in Herefordshire. Weston-under-Penyard, Sellack, Carey, Breinton, and other stations. See, on this plant, notes in the Report of the Botanical Exchange Club, 1905, 184. A verticillate variety of U. dioica bearing all its leaves in threes is common, but always as single stems growing among typical plants.

Habenaria albida R. Br. Very rare, only in the Black Mountain district. Head of the Cusop Dingle, 1899; also a single specimen of the hybrid albida x conopsea, Dr. Wood! Grwyne Valley; again in 1904.

Narcissus Pseudo-narcissus L. Meadows at Eardisley in large quantities; also a robust form bearing a crown with recurved lobes and perianth nearly or quite concolorous with the crown, Rev. C. H. Binstead! This form is not the var. b. lobularis Haw., the "Tenby Daffodil."

Gagea fascicularis Salisb. One new station. Colwall, 1899, Mr. W. H. Jones, Towndrow.

Phleum pratense L. var. nodosum (L.). Ledbury, 1902: Bickham.

Koeleria cristata Pers. Rare. Marele Ridge Hill, in two spots in fair abundance, 1899.

Athyrium Filix-femina Roth. var. Watsoni Syme. In woods in the Grwyne Valley, about the year 1875. The Grwyne specimen answers well to Watson's type-specimens. The writer has searched in vain in the Grwyne Valley for the plant in recent years.

MUSCI.

Ditrichum *tenuifolium Lindb. Very rare. On dried mud of a large pool in Moccas Park; once found.—D. flexicaule Hampe var. densum Braithwa. Exposed limestone on the summit of Cherry Hill, Fownhope.

Seligeria Doniana C. M. Still only known from the Ross district. Shady rock, Caradoc, Sellack, 1906.—S. acutifolia Lindb. var. longiseta Lindb. Rare; only at one station. With S. pusilla B. & S. at the Great Doward, 1898.

Dieranum fuscescens Turn. var. falsifolium Braithwa. On conglomerate rocks, Penyard Hill, Ross, 1898, Miss E. Armitage!


Rhacomitrium heterostichum Brid. var. gracilescens B. & S. Huntsham Hill, 1906, Binstead & Armitage!

Hedwigia ciliata Ehrh. var. viridis Schimp. Roofs at Nash, near Knill, Binstead.

Acaulon muticum C. M. Very rare. Open fallow near Pentwyn Farm, Brilley, 1905, Binstead & Ley.

Pottia recta Mitt. Little Doward and Shucknell Hills; Fownhope, Binstead.


Leptodontium flexifolium Hampe. Rare; one new station. On conglomerate rock, Penyard Hill, Ross, 1898, Miss E. Armitage!

Weissia *crispata C. M. Rare; confined to limestone districts. Great Doward, 1903, Dixon; Nash Scaur, Presteign, Binstead!— W. mucronata B. & S. Rare; one new station. Aconbury Camp Wood, Binstead.

*Pleurochota squarrosa Lindb. On limestone, rare. Great Doward Hill, 1902.

Ulota crispa Brid. Rare, and in minute quantity. On wych elm, Penethyly, Ross, 1899; Aymestry, 1905, Binstead! — U. phylanthra Brid. Rare. Shady damp tree-boles, Great Doward, 1899, 1900.


Aulacomnium andrrogynum Schwg. Rare in the county. Hedge-bank, Dadnor, near Ross, Miss E. Armitage!


Mnium *riparium Mitt. On boles and stone by the Wye, rare;

*Pontinalis *seriata* Lindb. In the Wye, rare; Breinton, 1874; Clock Mill, Winforton, *Binstead*.


*Amblystegium *juratzkæ* Schimp. Common? Breinton; Mansel Lacy, c. fr.; Pontillas, abundantly, c. fr., *Binstead*! This species is as yet imperfectly understood, and its distribution has not been well worked out. The specimens obtained at Mansel Lacy were pronounced by Mr. Dixon to be "good and characteristic."— *A. *Sprucei* B. & S. Very rare. Exposed limestone at the Great Doward, c. fr., 1899, *teste Dixon*, *Binstead*! This rare species is usually found on mountains, and has been detected in the Breconshire portion of the Gwyne Valley by Mr. Binstead.

shire. Moorland at the head of the Olchon Dingle, Hatterel Hills.


Since the completion of this paper the following moss has been detected in the county:—

*Brachythecium salebrosum* B. & S. Very rare. On rottling wood at Whitbourne, *Binstead* & *Ley*. This rare moss is unrecorded for any of the neighbouring counties.

Insert also the following:—

*Hieracium serratifrons* Almq. *var. Cinderella* Ley. Widely spread in the county. The ligules in this plant are very narrow, and stand apart from each other much more than in other species, giving the fully expanded heads a star-like appearance.

**ALABASTRA DIVERSA.**—**PART XV.**

**BY SPENCER LE M. MOORE, B.Sc., F.L.S.**

(Continued from p. 268.)

3. **NEW AND RARE UGANDA PLANTS (continued).**

**COMPOSITÆ.**

*Notonia opima*, sp. nov. Erecta, fere orgyalis, glabra, caule valido crasso in longitudinem striato, folis inferioribus (radicalibus?) magnis late obovatis obtusissimis basim versus sensim angustalvis ut superiora insigniter minora anguste oblongo-obovata acuta sursum gradatim imminuita et tandem in bracteas transeuntia sessilibus necon crassiusculis, capitulis pro rata magnis multi-flosculos in corymbis paucicephalis folia superiora multo exce-dentibus digestis, pedunculis propriis ascendebus quam capitula multoties longioribus, involucrum subcupulatum subhemi-sphærici phyllis 19-20 lanceolatis acutis margine membranacea García. floceulis vix exsertis, styli ramis appendice lanceolata papillosa onustis, achæniis cylindricis 10-costatis glabris, pappi setis copiosis sebreadis albis.

Hab. Semliki Valley, Toro; *Bagshawe*, 1276.

Folia inferioura 20-0-22-0 × 10-0-12-0 cm., in seco lutescenti-brunnescentia; costae secundae ordinis utrinque circa 7, in seco parum aspectabiles, leviter arcuate; folia superiora 4-0-10-0 × 1-2-4-0 cm. Corymbi circa 20-0 cm. long. Bracteeae ovato-oblongae, obtuse, 1-0-3-0 cm. long. Capitula profecto pansa 4-0 cm. diam. Involucrum phylla 2-3 cm. long., 0-5 cm. lat. Calyculi phylla dum adsint lanceolata, circa 1-7 cm. long. Flosculorum aurantiaci, in seco equidem sape rosei. Corollæ in toto 1-8 cm. long.; lobi linear-oblongi, obtusi, 0-4 cm. long. Columnæ staminaceae ad dimidium

**JOURNAL OF BOTANY.**—**Vol. 45.** [SEPTEMBER, 1907.] 2 b
suum exserta. Styli rami 0·45 cm. long. appendice 0·125 cm. long.

A very fine plant, differing from *N. abyssinica* A. Rich. chiefly in the foliage leaves and the involucre of 19-20 narrow orange-border ed leaves.

**Asclepiadaceae.**

*Xysmalobium reticulatum* N. E. Br. in Kew Bull. 1895, 251.

In grass land near Mbarara, Ankole; 1256.

Leaves remarkably broad in comparison with their length, 2·3-3·3 cm. long and 1·4-2·3 cm. broad; indeed, sometimes they are almost if not quite as broad as long. This is a very variable species as regards foliage.


Hab. Foot of Kabuga Hill, Toro; *Bagshawe*, 1225.

The chief differences between this and *S. Petherickianum* are mentioned in the reference as above. The most important of these differences is the pedunculate inflorescence of *S. cordatum*, all the specimens of the other having sessile umbels, characters of sufficient constancy to warrant their use in the careful clavis drawn up by Mr. N. E. Brown (Flor. Trop. Afr. iv. sect. i. 355). In addition to the different dimensions of calyx and corolla-lobes, I find the leaves of the corona somewhat different in the proposed new species, being shorter relatively to the staminal-column, indeed, scarcely overlapping it at all, and with three strongly marked teeth at the top; moreover, the two wing-like keels on the inner face of the coronal lobes reach as far up as the lobes themselves, instead of ending below the top.

*Cynanchum fraternum* N. E. Br. in Kew Bull. 1895, 256.

South-west of Lake Albert; 1311.

**Brachystelma Bagshawei**, sp. nov. Planta humilis caule e tubere sat satis magno abbreviato juxta solum pauciramoso, ramis in sicco compressis bene foliosis crassiusculis puberulis, foliis lineariis rarius anguste lineari-lanceolatis acipem versus sensim attenuatis apice ipso acutis basi in petiolum brevem sat latum attenuatis leviter crassiusculis secur costam centralem pag. inf. eminentem puberulis ceteroquin fere omnimodo glabris, floribus pro rata magnis in umbella sessili paniculata foliisurum summorum axillam tenente dispositis, pedicellis 0, calycis lobis lineari-lanceolatis sursum attenuatis extus piloso-puberulis basi glandulis 2 parvulis omnibus, corollae magnae tubo lato abbreviato extus glabros in sicco fusco lobis a basi sat lata lanceolatis sursum longe caudato-attenuatis dorso glabris intus villosulis, corona phyllis exterioribus et basi gynostegii ortis cupulam 10-lobulatae efformantibus lobulis triangularibus apice barbellatis phyllis interioribus oblongis obtusissimis antherarum dorso incumbentibus idque paullo excedentibus, stylo apice convexiusculo.

Hab. Kitakwenda, Toro; *Bagshawe*, 1223.

Planta 3/4-spithamea. Tuber ex schedis el. lectoris circa 8·0 cm. diam. et 2·5 cm. alt. Caulis indivisus incassatus, adusque 7·5 cm.
long., maxima pro parte solo abseanditus. Rami 0·2-0·3 cm. diam. Foliorum limbus 4·5-8·0 cm. long., 0·4-0·7 cm. lat., in sicco dilute lutescenti-viridis; petioli circa 0·5 cm. long. vel minus. Calycis lobi 0·5 cm. long., basi 0·12 cm. lat. Corollae tubus 0·3 cm. long.; ore 0·5 cm. diam.; lobi 6·0 cm. long., basi 0·6 cm. lat. Coronea phyllorum cupula 0·12 cm. alt.; hujus lobuli circa 0·05 x 0·045 cm.; phylla interna 0·1 cm. long., antheras ad 0·035 cm. excedentia. Pollinia ovoidea, 0·5 cm. long.

A remarkable plant, with close affinity to B. Johnstoni N. E. Br., but easily distinguished by its longer leaves, flowers without pedicels, smaller calyx-lobes, considerably shorter lobes to its less copiously hairy corollas, lobulate (not toothed) outer corona, and the leaves of its inner corona distinctly exceeding the anthers. The fruit of both species is unknown.

"Corolla dusky green in its free portion, dark red within [i.e. in the centre], as is corona. The plant has a rather fetid smell. Tuber dried, pounded and taken as medicine for pains in the chest."

Scrophulariaceae.

Ilysanthes albertina, sp. nov. Annuæ, parvula, erecta, minutissime puberula, caule simplici vel sœpius ramulosæ gracillimo, foliis sessilibus subsessilibusve parvis linearibus nonnunquam rarissimæ dentieulatis aliter integris, pedunculis gracilibus folia sæpiissimæ excedentibus, calyce tubuloso in lobos 5 semidiviso lobis lineari-lanceolatis leviter acuminatis, corollæ alæ tubo calyceum paullo excedente labio postico deltoideo-ovato apice breviter bilo- bulato lobulis linearibus acuminatis labio antico 3-lobo lobis omnibus inter se subæqualibus suborbicularibus, staminidiis basi gibbosus complanatis apice acutis omnino anantheriferis, capsule parvula anguste oblonga sursum attenuata valvis tandem maxime diver- gentibus, seminibus minutis.

Hab. Near Ngusi River, Lake Albert Edward; Bagshawe, 1383. Planta summum vix 10·0 cm. alt., plerumque humilior. Folia omnia opposita, 0·3-0·6 cm. long., crassiuscula. Pedunculi circa 0·5 cm. long. Calyx modo 0·2 cm. long.; lobi circa 0·1 cm. long., apice fusi. Corollæ tubus 0·3 cm. long.; labium posticum 0·2 cm. long., basi 0·15 cm. lat., hujus lobuli 0·05 cm. long.; labium antie- cum 0·2 cm. long.; lobus intermedius 0·1 cm. long., 0·09 cm. lat. Antherarum loculi ovoidei 0·05 cm. long. Staminodia 0·08 cm. long. Stylus subincclusus, hujus lamellæ 0·05 cm. diam. Capsula 0·4 cm. long. Semina 0·02 cm. diam., brunnea.

Differs from I. ugandensis Skan chiefly in the narrow shortly acuminate lobes of the calyx, the shorter corolla-tube, and the bilobulate upper lip of the corolla; from I. andongensis Hiern also in the calyx and upper lip of the corolla. The staminodes and the small narrow capsules with their minute seeds are additional points wherein it can be distinguished from both these species.

Acanthaceæ.

Brillantaisia grandidentata, sp. nov. Planta elata ramis validis tetragonis puberulis, foliis inferioribus maximis latissime
ovatis obtusiuseulis basi alte cordatis margine lobulatis vel grosse lobulato-dentatis utrinque costa costulisque fac. inf. minute pubescentibus exemptis minute puberulis petiolo sursum late alato quam lamina multo breviore etsi sat elongato suffultis, foliis superioribus subsessilibus inferioribus multo minoribus margine - sat grosse necon distantier dentatis summis in bracteas transseuntibus, paniculis subthyrsoides folia superiora sepissime excedentibus, calycis lobis corollae tubo brevioribus linearibus (postico lineari-oblongo) obtusiusculis minute pubescentibus, corolla majusculae tubo extus glandulosou-pubescente labia extus glandulosopubescentia circa seminaeque, staminibus breviter exsertis ima basi leviter dilatatis ibique pubescentibus ceteroquin fere glabris.

Hab. Forest near Fort Portal, Toro; Bagshawe, 1270.

Herba fide cl. Bagshawe circa 3-organis ("15-18 ft. high"). Foliorum inf. limbus adusque 34·0 cm. long., medium versus 32·0 cm. lat., supra late viridis subtot viridi-griseus; costae secundi ordinis utrinque circa 12, late arcuate; lobuli triangulares, apice obtusi, 1·5-2·0 cm. long.; spatia interdentalia ± 2·0 cm. lat.; petioli crassiusculi, circa 12·0-15·0 cm. long., hujus ala sub limbo circa 3·0 cm. lat. Folia superiora circa 10·0-20·0 × 6·0-14·0 cm., summa imminuta. Bracteae ovatae ± 0·8 cm. long. Panicula minute pubescentis, pilis glandulosus brevis sparsissime induta, adusque 20·0 cm. long. Calycis lobi inter se inaequales, 0·5-0·8 cm. long., 0·05-0·1 cm. lat., posticus usque ad 0·15 lat. Corolla purpureae tubus 1·2 cm. long., 0·5 cm. lat.; labium anticum 2·6 cm. long., 1·3 cm. lat.; hujus lobi oblongo-lanceolati, obtusiusculi, lobus intermedius anguste ovato-oblongus, obtusissimus, lobi omnes 0·4 cm. long.; labium posticum 2·4 cm. long. Filamenta 2·2 cm. long., anthera 0·7 cm. Staminodia 0·7 cm. long., horum anthera cassa 0·1 cm. long. Stylus circa 3·2 cm. long.

A very fine species, known by the large dentate-lobulate leaves combined with the subthyrsoid panicles, the relatively small calyx-lobes, and the relative sizes of corolla-tube and lobes. The affinity is with B. salviiflora Burkill.

**Brachystephanus coeruleus**, sp. nov. Herba prolixa saltem semiorygalis caule sat gracili tetragono ad nodos tumido frequenter ramoso ut ramuli minute puberulo, foliis ellipticis apice acuminate basi in petiolum sat longum attenuatis tenuiiter membranaceis supra late viridis subtus pallidis utrinque ad nervos minute puberulis ceterum glabris, floribus parvulis in spicis tenuibus deorum interruptis sursum continuis folia aequantibus subaequantibusve pubescentibus digestis, foliis floribus amplis ovatis acutis extus piloso-pubescentibus, bracteis calycis lobis similibus etsi brevioribus, calycis piloso-pubescentis lobis angustissimae linearis-lanceolatis acutis inter se paullulum inaequalibus, corollae tubo stricto cylindrico calyceum paullo excedente limbo tubum aequante labio postico integro antice breviter 3-lobo.

Hab. Mpamba River, Lake Albert Edward; Bagshawe, 1378.

Foliorum lamina ± 10·0 cm. long., 3·5-8·5 cm. lat., juvenilia vero minora; costae secundarie utrinque circa 8, inferiores approximatae, superiores distantes, fac. sup. subplanae, fac. inf. valde
eminentes etsi tenues; petiolli adusque 3-5 cm. long., sed saepe breviores. Spicæ 6-0-10-0 cm. long.; internodia sua inferiœra 0-5-1-0 cm. long. Folia floræa 0-6-0-8 cm. long., in sicco griseo-viridia. Bractæe 0-35 cm. long. Calyx 0-5 cm. long. Corollæ tubus albus, 0-75 cm. long., 0-135 cm. diam.; limbus corœleus, ejus labiœ circa 0-75 cm. long. Filamenta vix adusque 1-0 cm. exserta; antheræ oblongæ, 0-2 cm. long. Discus 0-05 cm. alt. Ovarium anguste ovoideum, compressiusculum, glabrum, 0-14 cm. long. Stylus glaber, circa 1-5 cm. long.

A very distinct species, easily recognized by its slender spikes of small blue flowers.

The pollen-grains have some minute echinulations around the pores, otherwise they are quite smooth.

**Isoglossa rungioides**, sp. nov. Herba ascendens deorum lignosa caule sursum bene foliato tetragono ad nodos aliquanto tumido secus lines duas pubescente alter glabro vel fere glabro, foliis ellipticis vel ovato-lanceolatis apice cuspidato-vel breviter caudato-acuminatis basi in petiolum brevem acuminatis in sicco viridibus tenuiter membranaceis fac. sup. fere glabris fac. inf. in costis pubescentibus, floribus in spicis oblongis septicis ramulosis brevissimisve terminantibus dispositis, bracteis amplis arcetem imbricatis flores oceludentibus obovatis apice acuminatis margine late scariosi dorso pubescentibus, bracteolis ovato-oblongis acuminatis calycem excedentibus margine scariosi, calycis lobis lineari-lanceolatis (postice paulo latiore) acutis margine ciliatis, corollæ tubo calvice paululum breviore ample labiis tubum fere duplo excedentibus labio antico ad ½ lobato labio postico ovato breviter 2-dentato, antherarum loculæ inequaliœs, capsula oblongo-ovoidea acuta 1-3-sperma.

Hab. Forest near the Ngusi River, Lake Albert Edward; also near Hoima, Unyoro; Bagshawe, 1361 and 1461.

Folia ± 10·0 cm. long., 4·0-7·0 cm. lat.; costæ secundariae utrinque circa 8, utroboque eminentes; petiolii adusque 2·5 cm. long., sed sæpœ breviores. Spicæ solœmœter 1·5-2·5 cm. long. Bractæe 0·8-0·9 cm. long., summum 0·7 cm. lat., margine ciliati. Bracteolaræ 0·6 × 0·225 cm. Flores albi palato rubro-lineato. Calyxis lobi 0·4-0·45 cm. long. Corollæ tubus 0·35 cm. long., 0·22 cm. diam., labium anticum 0·6 cm. long., hujus lobi (quorum laterales paulo longiores neœnon angustiores) 0·15-0·2 cm. long.; labium posticum 0·55 cm. long. Antheræm loculi lineari-oblongi, 0·1 cm. long. Pollinis grana normalia. Discus 0·05 cm. alt. Ovarium ovoideum, juxta apicem puberulum, 0·175 cm. long. Stylus puberulus, circa 0·6 cm. long. Capsula 0·7 cm. long., 0·35 cm. lat., sursum puberulus.

Nearest *I. substrobilina* C. B. Cl. but quite different with its scarious-edged bracts among other features. The habit and appearance are those of some *Rungias*, hence the trivial name.

**Adhatoda Bagshawei**, sp. nov. Frutex 1½-metralis ramulis prolixis tetragonis cortice cinereo mox obductis florentibus rari-foliosis, foliis longe petiolatis ellipticis obtusis basi gradatim extenuatis in sicco viridibus membranaceis supra fere glabris
subtus praesertim ad nervos puberulis, spicis ad apicem ramulorum abbreviatorum quam folia multoties breviorum sitis pau-
cifloris pubescentibus, bracteis parvulis lineari-lanceolatis lan-
ceolatisve sursum attenuatis extus puberulis bracteolas lineari-
oblugas obtusas leviter excedentibus, floribus pro rata parvulis
brevier pedicellatis, calycis minute pubescentis lobis lanceolatis
acutis, corolla tubo calycem longe excedente sursum leviter am-
pliato extus minute pubescente palato intruso labio antico fere ad
\( \frac{3}{4} \) lobato lobis lateralibus oblongis obtusis lobo intermedio ovato-
oblongo obtusissimo labio postico brevier bilobo lobis ovatis
obtusis, staminibus exsertis antherarum loculis subaequalitis in-
eriore in calcar breve obtusum exeunte, ovario ovoido-oblongo
minute pubescente, capsula sat longa inferne columnari superne
expansa pubescente abortu 2-sperma.

Hab. Mouth of Mizizi River, Lake Albert; Bagshawe, 1332.

Foliorum limbus 13-0-15-0 cm. long., 6-5-7-5 cm. lat.; costae
secundariae utrinque 5-6, ascendenti-arcuatae; petioli 3-5-5-0 cm.
long. Spicae florentes 1-5-3-0 cm. long. Bracteae 0-3 cm. long.,
bracteolae 0-2 0-25 cm. Calyx 0-25 cm. long., hujus lobi 0-2 cm.
Corollae tubus 0-7 cm. long., basi 0-25 cm., fauceibus 0-5 cm. diam.
; labium anticum 0-6 cm. long., hujus lobi laterales 0-4 cm., lobus
intermedius 0-32 cm. long.; labium posticum late ovatum 0-75 cm.
long., lobi 0-15 cm. long. Antherae circa 0-15 cm. long. Discus fere
0-1 cm: alt. Ovarium 0-15 cm., stylus 1-15 cm. long., hie basi pube-
rulus. Capsula apice mucronata, 2-0 cm. long. (pars expansa 0-9 cm.).
Semina sicea anguste ovoidea, dense scrobiculata, circa 0-25 cm. long.

A remarkable species, the flowers being rather those of an
Adhatoda as that genus is understood by Bentham and Clarke,
only greatly reduced. The pollen is normal. I know nothing
likely to be mistaken for this.

Dr. Bagshawe describes the flowers as "dusky yellow-red."
He also notes that the flowering branches are mostly leafless,
which is the case with two of the three specimens he sends.

(To be continued.)

ON THE DISAPPEARANCE OF CRYPTOGRAMIC PLANTS.*

BY A. R. HORWOOD.

A COMMUNICATION by Mr. W. Bell, read before this Section,

on the flowering plants indigenous to Charnwood Forest that

have apparently become extinct within the last century, includes

so lucid and exhaustive a topographical and historical description

of this area that it is quite unnecessary to show what changes

have taken place in the deforestation or alteration of this inter-
esting region. It is sufficient to remark that in cryptogams, as in

phanogams, Charnwood possesses a characteristic flora of its

own, certain species being confined to that region and not occurring

elsewhere within v.-c. 55.

* Read before Section K of the British Association, Leicester, August, 1907.
To take the various phyla of the so-called flowerless plants from highest to lowest, one by one, and trace in each group their past and present constituents, would be both interesting and valuable for comparison with other areas. Unfortunately this cannot be done in detail in every case, as each group has not received the same attention at the hands of local botanists, and in fact in the case of the Myxothalliphyta, the Schizophyta, Schizomyceetes. Bacillariales, Gamophyceae, and perhaps it should also be said of the fungi, especially the micro-fungi, much work yet remains to be done. But it may be stated as a general rule—with the reservation that infusorial organisms may be said to be of universal distribution—that in these cases also (and special reference is made to the "Algae" and "Fungi") the species of plants found on Charnwood Forest differ from those found in the surrounding areas, and the species thus confined to the mountainous region—whether algae or fungi—are subject to the same changes of climate, caused by deforestation and drainage, or the effects of poisoning by smoke and other artificial agencies, as the lichens, hepatics, and mosses, which, it is well established, have disappeared from these causes.

It is to the latter that this communication is mainly confined, as in regard to these more data are forthcoming, and the author has had more opportunity of personally arriving at and verifying the facts and conclusions here put forward. It should be noted that what has caused an alteration in the constituents of the lichen-flora affects two groups of entirely different affinity—certain groups of algae and fungi—united symbiotically in the lichen group, though it may perhaps be added that possibly the factor that causes the disappearance of the latter may affect only one and not both of the former groups.

It will be best to deal first with the lichens, which more than any other cryptogams demand the best natural conditions in their struggle for existence, whilst it will be more convenient also to deal with them here, in giving some general reasons for the universal disappearance of cryptogamic plants from Charnwood Forest within recent years. It is well known that lichens require not only a clear and pure atmosphere in which to exist, but also a moist and generally humid climate. The first requirement was admirably met—as was also indeed the other—by the state of Charnwood a century ago, but since the invention of the steam-engine and the subsequent introduction of railways into Leicestershire in 1832 by the construction of the Leicester and Swannington Railway by George Stephenson, both of these features of the district have given place to others. With the increased impetus given to the mining trade in the Leicestershire Coalfields, new collieries soon sprang up, and in a few years, where formerly all was given over to agriculture, there arose the Desford, Bagworth, Ibstock, Heather, Nailstone, Ellistown, and South Leicestershire Collieries. At Coalville the industry was increased enormously, Snibstone and Whitwick possessing several shafts, whilst further west, in the older part of the coalfield, at Pegg's Green, Swannington, the Calcutta Pit, Cole Orton, and to the north at Lount, Heath...
End, and Staunton, many more pits were opened. True, many of these are now closed down, but the process of extension still goes on, and with it more and more smoke and steam is poured out from the chimneys of colliery workings and brick and pipe works, thus daily making the atmosphere more highly charged with fine dust and carbon.

To this must be added the smoke and dust, &c., arising from the ever-increasing number of granite and other quarries or paving-stone cement works that are being started, or are already in operation, in the neighbourhood. In this last instance, not only is the atmosphere poisoned, but the rock itself, so essential to saxieolous species of lichens, is being daily diminished in volume and extent, and it is truly discouraging to the cryptogamic botanist to gaze on the huge quarries at Bardon, where half this famous hill is being blasted away by drilling and other operations, and this is also the case further south at Croft and elsewhere.

Thus, as a result of the extension of mining and other industries and the advance of civilization, the systematic botanist has to face the gradual extinction of all lichens, and, sooner or later, that of most hepatics and mosses, in those regions where at one time they flourished best. This fact was first pointed out to me by the Rev. H. P. Reader, M.A., of Holy Cross Priory, Leicester, who has long studied and helped me to study the cryptogamic plants of Central England. And not only in that region, but indeed everywhere: as a result of the increased consumption of coal and the diffusion of sulphourous gases which injure the leaves of plants, it is becoming daily more patent that the atmosphere of to-day will not nourish the plants that a century ago were from other reasons losing their hold of their respective habitats owing to draining or the extensive felling of woodland areas. This last alteration brings in suitable conditions for other plants that have a wider distribution, but now the increased amount of impurity in the atmosphere causes these plants also to become gradually scarcer and scarcer.

This new feature in the struggle for existence amongst plants has been dealt with purposely at some length, as it does not seem to have been noticed by any other student of cryptogamic plants in England, and as a committee for the consideration of the extinction of local plants exists, it seems a fitting occasion to draw attention here to this new factor of destruction.

* A paper was read last April, by Mr. P. Frazer, at the meeting of the American Institute of Mining Engineers on the sources of injury to vegetation in the neighbourhood of manufacturing works.

† Since this paper was read Prof. Tansley has drawn the writer's attention to a paper read at Bradford in 1900, by Mr. Albert Wilson, dealing with the effect of smoke on vegetation generally in the North of England. In the abstract of his paper Mr. Wilson mentions the effect of smoke on mosses and hepatics as compared with that on higher plants:—"Smoke at a maximum in winter, when many mosses are in a vegetative condition. Great diminution in their abundance and luxuriance in the neighbourhood of large towns. Peculiar exposure of bark-loving species to smoke influence, and the cause. Threatened extinction of Ulo and Orthotricha." This bears out the foregoing statements as to the
Not only in Leicestershire is this the case. In the Black Country, where in former days a good cryptogamic flora was to be met with, scarcely a lichen is to be found, whilst the hepatics and mosses have suffered to a similar extent from the same cause. Even in the south of England, where factories are few and far between, the same paucity is to be noticed.

Thus it behoves the lichenologist particularly, and the student of other groups of Cryptogamia, to hasten to complete the systematic study of the local floras still lingering on in the less populated districts of the British Islands; for in years to come this will be impossible.

Lichens.

The same agency which has caused the disappearance of so many interesting and rare species of lichens in Leicestershire is also responsible for another marked feature in the present lichen-flora. It is found that numbers of specimens of the genera Lecanora, Lecidea, and Verrucaria are imperfectly developed, spores being absent, and the plants are frequently immature or impoverished. It is thus often impossible to make a determination, as distinctive characters are in these cases based largely on the shape, size, and number of the spores; and it is difficult in this case to be sure whether a plant formerly recorded is not referable to some one of these immature states. For though not still existing in a perfect condition, it may be represented by examples of one or other of these indeterminable specimens. This does not obtain, however, largely except in the genera cited, which consist of numerous species.

The earliest record of a Leicestershire lichen is to be found in Ray’s Synopsis, 1724, where Alectoria jubata is mentioned on the authority of Petiver as occurring in Charley Forest. This is quoted by Withering in the 4th edition (1801) of his Systematic Arrangement of British Plants from Dillenius (Hist. Muse. 1747). Pulteney (1746), Crabbe (1795), Babington in Potter’s Charnwood Forest (1842), Coleman in White’s Directory (1863), Brown in Mosley’s Natural History of Tutbury (1863), Leighton in his Lichen Flora, 3rd edition (1879), Crombie (1895), and the author (1904) have elaborated the catalogue of Leicestershire lichens.

After collating the records contained in these lists, and summarizing the results of recent work in the Charnwood Forest region, it appears that none of the following plants, mainly confined to that district, now exist there:—

Collodium biatorinum, Sphinctrina tremeloides, S. anglica, Coniothyere furfuracea, Spharophorhium compressus, S. fragilis, S. coralloides, Stereocanton coralloides, S. denudatum, Alectoria jubata, Platysma sepincola, P. udophillum, Parmelia Mougeotii, P. incurae, P. olivacea, Lobaria scrobiculata, Stictina sylvatica, Lobaria

nature of the effects of increased smoke, and also extends to the North of England the area here indicated as particularly affected by its agency. Prof. Tansley informed the author that in the neighbourhood of Huddersfield this year he noticed that lichens were almost conspicuous by their absence.
pulmonaria, Ricasolia lætevirgens, Coccocarpia plumbea, Leprotoma lanuginosum, Thelotrema lepadinum, Strigula Babingtonii.

In addition to these, as to which there is little or no doubt about their being extinct, there are a considerable number of others that have not been met with of recent years, viz.:


Of the genus Cladonia several species have not occurred in fruit, but as so much depends in this genus on this character, and many specimens found are unfertile, it may well be that they still linger on. Of the genus Usnea only U. hirta is now to be found. In the genus Parmelia there are several recorded species, e.g., P. levigata, P. acelabulum, and Parmeliopsis ambiguus, which have not been met with recently.


No species of Endocarpon has recently been found, and the following species of Verrucaria do not now appear to be still survivors of the former lichen-flora, viz. V. epigaea, V. immersa, V. cinerea, V. biformis, V. chlorotica, V. nitida, V. olivacea, V. umbriana, V. clopina.

In estimating the number of extinctions it is, of course, possible that in some cases species have been recorded in error, but, apart from that eventuality, it is obvious from the foregoing list, which supplements the list of undoubted extinctions, that the lichen-flora of Leicestershire—and this remark may well apply to all the other midland counties—is fast diminishing.

Hepaticæ.

Of the hepatics of Leicestershire it may be stated that, with additions since the publication of the flora in 1886, some fifty have been recorded or met with. Of these probably two, Sphaerocarpus Michelii (=terrestris) and Dumortiera hirsuta require to be expunged as errors.

Of the remainder the following appear to be extinct, viz.:

Blasia pusilla, Marsupella emarginata, Lophozia incisa, Mylia
anomala, Lepidozia setacea, Frullania tamarisci, Anthoceros punctatus.

There are also a few which have not been met with recently, which may require to be added to the foregoing list, viz.:—
Lophozia inflata, L. bicrenata, L. gracilis, Cephaloziella byssacea, Odontoschisma sphagni.

**MUSCI.**

The following mosses do not appear to have survived in Leicestershire since, probably, some time anterior to the publication of the flora in 1886, viz.:—

The existence of the following species rests on somewhat slender evidence, and they may possibly be regarded as errors, viz.:—

The following have not been seen of late years:—

---

**NOTES ON BRITISH RUBI ( SUBERECTI ).**

**BY EDWARD G. GILBERT, M.D.**

(See pp. 129, 210, 248.)

I did not expect my kind friend Mr. Rogers to follow me in all my speculations as to the real relations existing between many of the Rubi; but I think he is wrong in supposing that there is a fundamental difference between him and me about them. I, too, keep to the lines indicated in his Handbook. It is that book which has guided me more than anything else (except perhaps observation of growing plants and their surroundings) to the impressions which have been made upon my mind about those relations. Without his Handbook I could have done nothing. He points out repeatedly the intermediate character of one or other of his species or varieties; or its tendency to vary, so that it becomes difficult (or even impossible) to distinguish it from some other. Coupled

* Where an asterisk is prefixed no specimen of the plant is known to be in existence.
with these remarks, observation in the field strongly suggests to me that the intermediate character may often be explained, and thus we may advance a step further in our knowledge of the genus. The frequent occurrence of forms intermediate between well-marked but closely allied species suggests the idea of hybridity; especially as the supposed hybrids vary more than well-defined species; and that in the direction towards one or other of their supposed parents.

What I notice is this: that in a lane, a wood, or on a common where some species of Rubus is predominant, there is to be found a sprinkling of forms clearly bearing the stamp of that one, but with a mingling of the features of it with those of others in its neighbourhood. If this be not due to crossing, the only other explanation of it seems to me to be that they all, through the influence of environment, have a tendency to assume those characters which the most abundant one there has already assumed.

To apply these remarks to the Suberecti. Mr. Rogers points out that R. fissus "becomes more like R. suberectus in damp shady places," such as the latter grows in. I find in damp woods at Lingfield R. suberectus. I also find near it a Rubus which strikingly combines the characters of R. suberectus and R. cyclomphyllus Lindeb. M. Sudre, of Angers, has sent to the British Museum a specimen of the same Rubus, and thinks it is R. suberectus × R. caesius. He calls it R. sulcatiformis. It very much resembles tall R. fissus. R. sulcatus grows at the margin of a neighbouring wood; but the leaves are much less hairy, and it looks like a luxuriant large-leaved R. plicatus with drawn-out internodes. Has not the existence of R. sulcatiformis obscured the distinction between R. fissus and R. suberectus? At all events, that distinction cannot be made out by a painstaking comparison of the specimens in the herbaria at Kew and the British Museum, if they have been all rightly named; because there are so many intermediates. Typical, i.e. selected, specimens of course differ widely. R. sulcatus Vest. and R. plicatus Weihe & Nees, judging in the same way from the specimens in the National Herbaria, cannot be clearly discriminated from fissus and suberectus—or at least have not been. This can hardly be from any other cause than that the boundary between them is ill-defined in nature or obscured by hybrids.

The only other Suberecti or Subrhamnifolii I have found here which stand out distinctly from all other Rubi are R. nitidus W. & N. and R. affinis W. & N. Others, which I find more sparingly and more variable, I have been led by nature and by Mr. Rogers's Handbook, and by the failure of the contributors to the National Herbaria to separate them from their allies and from one another, to suspect strongly are hybrids. They are R. Rogersii (plicatus × affinis?), R. opacus (nitidus × affinis?), R. nitidus var. Briggsianus (affinis × nitidus?), R. integriformis P. J. M. (nitidus × plicatus sometimes, sometimes nitidus × Balfourianus?). I believe I could give good reasons for my suspicions.
May I say here that I have included under *R. nitidus* *R. hamullosus* L. & M., as Mr. Rogers does. It is much commoner than the true *nitidus* W. & N., and, if I am right in my determination, very distinct.

From the common level of *R. fruticosus* the well-defined species appear to stand up like sharp ridges. In the spaces between these ridges appear (as it were) the low rounded elevations of the intermediates spreading laterally from ridge to ridge.

I feel rather flattered to find that the Rev. E. S. Marshall should have been able to learn any lesson from anything that I could write, especially as I can assure him that I learned that lesson long ago. But can repeated and minute examinations of all the specimens of brambles at the British Museum and at Kew from all parts of the British Isles, not to mention personal visits to the north, south, east, west, and middle of those islands, be strictly called “local” researches? Perhaps so, as the islands are comparatively small. But I have also, when it seemed desirable, referred to Continental specimens, and compared them with my own, especially the valuable series sent by M. Sudre to the National Herbarium.

Mr. Marshall’s observation that *R. coesiis* is not found in the Scotch counties where *R. fissus* occurs is very interesting, as tending to show that, if *fissus* should not be a distinct species, it is more probably a variety of *suberectus* than a hybrid. But turning to Mr. Rogers’s list of comital numbers I find that he says that *coesiis* is probably present in *every* county of the British Isles. He has noted *R. fissus* from fifty-eight, and from all those but six he has noted *coesiis*; while in twenty-six counties in which he has not noted *fissus* he has not noted *coesiis*. This is suggestive, I think, of something more than an accidental coincidence.

I have specimens from a plant growing near *R. suberectus*, which I took to be probably *suberectus × corylifolius*, and have again compared them with the following from which I find them indistinguishable, *viz.* some specimens of *fissus* and some of *suberectus* at Kew, and M. Sudre’s *× sulcatiformis.*

Mr. Marshall’s observation that there is no *R. affinis* or *R. nitidus* near *R. Rogersii* in Scotland is noteworthy, as M. Sudre has judged the Rev. W. R. Linton’s specimen in the “Type Set” to be a form of *R. affinis* W. & N., and I had before that thought it was probably a hybrid of *affinis* with *plicatus* or *nitidus*. Mr.

* Since writing the above I have been to Lingfield and carefully scrutinized that wonderful patch of suberect *Rubus*. Its stems reach a height of eight feet, and are very erect; but its numerous purple acicular thorns are those of *fissus*, as are its imbricate often hairy leaves. Intimately mixed with it is a great deal of *R. Balfourianus*, and close by some *corylifolius*. But I could not this year find any specimen in which the appearance of crossing seemed so clear as it had done on a previous occasion. Nevertheless, the purple prickles of *corylifolius* bear a striking resemblance to those of *fissus*; and it occasionally has a 7-nate leaf, one of the leading characteristics of *fissus*.

It and its close relative *Balfourianus* also flower like *fissus* and *suberectus*, earlier than any other *Rubus*. 

---

*Digitized by Microsoft ©*
Rogers very kindly lent me a specimen of *R. Rogersii*, which proved to be exactly like one or two which I have gathered in Kent and Sussex, and a specimen in the “Type Set” named “opacus”; but none of them have the cordate leaves and crowded prickles mentioned in his *Handbook*. It must, I should think, be an indistinct species; because Mr. Rogers himself saw plants in bloom here in 1902, of which he could not say whether they were *Rogersii* or not. *R. Rogersii* is common about Tunbridge Wells, and I have identified it (I believe) with Dr. Focke’s *R. ammobius*, which is considered in Nyman’s *Conspectus* to be *× plicatus*, of which I had looked upon it as a variety. In the National Herbarium there are at least two specimens, each named by one authority *ammobius*, and by another *Rogersii*. It varies much.

Mr. Marshall may be interested in the fact that *R. Marshallii* is common about Tunbridge Wells. Being of striking features, its variations or hybrids are readily recognized, and are numerous.

The difficulty of recognizing some of these hybrids (or varieties) even by the best observers, unless their memories of the types are refreshed at frequent short intervals, cannot, I think, be better exemplified than by the following facts. There is in the British Museum a specimen named *R. leucostachys × imbricatus* by the Rev. W. M. Rogers, Dr. Focke, and Mr. Marshall in combination; a few sheets from it is another of the same plant gathered by the same three gentlemen at the same place and on the same day, but named *R. leucostachys × Marshallii*.

I have lately ascertained the existence in Wales of *R. montanus* Wirtg. (named *R. senticosus* Koehl. by M. Sudre). I found it four years ago at Llandrindod Wells. It seems to be the same as *R. nemoralis* var. *Silurum* A. Ley, with which I had identified it on the strength of a specimen from Mr. Rogers in the “Type Set” so labelled. It manifestly deviates more from the *Rhannifolii* towards the *Suberecti* than do Mr. Rogers’s other varieties of *nemoralis*. At Llandrindod Wells it varies considerably, approaching sometimes *rhannifolius* or *carpinifolius*, at others *nitudus* or *plicatus*. As the width of its own variation is greater than the distance which separates it from *nitudus* on the one hand, and from *carpinifolius* on the other, it seems to me more reasonable to suspect it to be a hybrid than a separate species. This brings it into connection with *R. opacus* and *R. affinis* var. *Briggsianus*, both which are closely related to *R. nitidus* W. & N. Now I find that in the “Type Set” at Kew a specimen of “*R. nem. Silurum*” from the two Linton’s is just intermediate between Mr. Rogers’s specimen and a specimen of *R. opacus*. What could be more likely, if they are both hybrids of *R. nitidus*, as there are other reasons for suspecting? In Nyman’s *Conspectus*, *R. montanus* is made a close ally of *R. carpinifolius*. 

---
SHORT NOTES.

ACERAS ANTHROPOPHORA R. Bt. IN NORTH SOMERSET.—In May last I was conducted by Mr. A. E. G. Way through the Clifton "wild-garden," where he cultivates the majority of British flowers and is remarkably successful in his treatment of orchids. Among many other species I saw a fine patch of Aceras, numbering some twenty strong plants. These, Mr. Way assured me, had been derived from a few roots found by him about fifteen years ago in a rough pasture on high ground between Portishead and Clevedon, on the ridge that overlooks and runs parallel with the Channel about twelve miles from Bristol. Mr. Way at that time used the land as a game preserve, and fears that his keen-eyed keeper, whom he instructed to take up some of the roots, must have lifted them all, for he failed to find any more of the plant afterwards, although he searched repeatedly in succeeding seasons, until his tenancy of the land ceased. He has never obtained roots of Aceras from any other source. The place described is a large enclosure of primitive upland pasture on Weston Lodge Farm, at an elevation of under 300 ft., in the parish of Weston-in-Gordano. The Carboniferous Limestone rock crops out through the turf here and there, and carries a characteristic vegetation of Helanthemum Chamcecestus, Trifolium dubium, T. filiforme, Spirea Filipependula, Thymus, &c. Portions of the ground are separated by wire fencing for game-breeding purposes, and these positions are shifted from time to time. The matter is naturally of much interest, seeing that this orchid is essentially an Eastern Counties plant, apparently unknown hitherto farther west than Berkshire. But I notice that Mr. Preston, in his Flowering Plants of Wilts, states that it has been reported from three stations in that county, although he had seen no specimens. It is unfortunate that so rare a plant cannot be shown to exist to-day in North Somerset, but it is not improbable that there may be a future reappearance on the ground where Mr. Way found it.—JAMES W. WHITE.

OPHYRS TROLLII Hegenb.—My earliest acquaintance with this variety of the bee-orchis was made through a specimen collected in "Cook's Folly Wood, Clifton, 24 June 1851," by the late J. H. Cundall, and marked "Drone Orchis." In later years I began to hear mention of a "Wasp Orchis" among young people interested in botany. About July, 1885, four specimens were found on the Leigh (Somerset) side of the Avon, and these accorded well with Reichenbach's description of O. Trolilii, "labello acute triangulo elongato lobis lateralibus plus minusve obsoletis." Moreover, the markings of the lip were paler and more yellow than in the type, and the sepals rather longer and more acuminate. In all the flowers the labellum, viewed in front, presented a long triangular outline four times as long as broad, tapering from the base into an attenuate little-reflexed point. I heard of another specimen on the Gloucester side of the river in 1900, and in July of this year (1907) a patch of about a dozen plants occurred in one spot, and
one in another, all by the Port and Pier Railway, under Clifton Down. The whole of these localities are in the Avon Valley below, and within two miles of, Clifton Suspension Bridge. I have referred to a number of our principal county floras without finding a single mention of this variety; nor is it included in all British descriptive floras. I judge, therefore, that it must be remarkably rare in this country. Certainly it is a beautiful form, well worthy of distinction. Messrs. Hanbury and Marshall (Pl. Kent, p. 334) ask if O. Trollii be a hybrid, or a true variety of O. apifera. The Bristol specimens cannot be hybrids, as aranifera and arachnites are absent from the counties of Gloucester and Somerset.—James W. White.

Orchis ericetorum Linton. — For some years past it has appeared to me that Orchis ericetorum, which I now regard as a distinct species, and O. maculata had a different period of flowering. At Bournemouth I noticed that the former was going over when the latter was in full swing; and I have Carnarvonshire specimens gathered at the same date in the same year with a similar difference in the flowering stage. In this part of Dorset, at the junction of the tertiary with the cretaceous formation, both orchids occur in situations favourable for comparison in this respect. This year I was on the look-out for the first flowering of several plants, and came across O. ericetorum beginning to flower on the 10th of May. It was not till the 14th of June that O. maculata L. opened its flowers in my garden; though I saw a plant soon after that may have begun about the 10th. The interval therefore in this southern county was for this season a calendar month. It is almost necessary to make this comparison with plants growing in the same neighbourhood and in the same season. A herbarium series has plants from different latitudes and altitudes, and of various seasons. Our floras give May to July as the flowering season of O. maculata. This is correct for O. ericetorum, which in hilly districts or northern counties linger on through all July. But O. maculata does not flower in May, I feel assured, and does not usually begin in southern counties till the second week in June, and should rather be described as flowering June—July.—E. F. Linton.

Gall Formation in Ramalina.—In a recently published paper (Ber. deutsch. Bot. Ges. xxv. (1907) p. 233) Prof. W. Zopf gives an account of his examination of plants of Ramalina kullensis that varied from the normal development in having a short, thick, twisted and deformed thallus, on which spermogonia were richly developed, but, as a rule, no apothecia. The hypertrophied laciniae were hollow, and had here and there small holes scarcely visible to the naked eye, with fewer, much larger openings that looked as if eaten or torn at the edges. Quantities of microscopic excrementa, round or oval in form and dark in colour, were also to be found on the thallus or in the openings. Remains of three insects occupying the cavities were found: a species of mite (Acarus), a spider, and one of the Diplopoda, Polyxenus. The two latter were
only occasionally present; the mites were always connected with the deformations, and are considered to be the origin of the abnormal growth, though it may be occasionally due to minute spiders. Prof. Zopf also examined specimens of *R. scopulorum* var. *incrassata*, and of *R. cuspidata* var. *crassa* from the west coasts of France. These plants bear a striking resemblance to each other, as well as to the hypertrophied *R. kullensis*, and on examination were found to be inhabited by the same gall-forming mite. The Professor regrets his inability to examine the British specimens, *R. scopulorum* var. *incrassata* from the Channel Islands, South-west England and North-west Ireland, and *R. cuspidata* var. *crassa* from the Channel Islands, North England and North-east Scotland. Since reading the paper I have examined these specimens and I find all the phenomena noted by Prof. Zopf present in the British forms—the thickened thallus, exactly like his representation of the deformed *R. kullensis*, the abundance of spermogonia, the holes of two dimensions in the thallus, the quantities of small round or oval, dark-coloured excrementa, and the remains of mites, though these may not be the original gall-formers. There seems no reason to doubt that these varieties are merely gall-bearing forms of their respective types.—A. Lorrain Smith.

**New Localities of Rare Lichens.**—On looking over a series of lichens submitted to me by Mr. W. West, of Bradford, and collected by him in the Outer Hebrides and in North-west Ireland, I have found included some specimens entirely new to the districts. One of these, *Pertusaria gyrocheila*, was found on Clesham, a mountain in Harris, 2500 ft. high, the highest in the Outer Hebrides. The species was founded by Nylander, on a specimen collected by I. Carroll near the top of Ben Lawers in 1864. It was collected again by the Rev. J. M. Crombie, at a later date, from the same locality. I am unaware of any other record for this very striking-looking lichen. On the rocks of the west coast of Lewis Mr. West has collected plants of *Ramalina Curnowii* Cram., distinguished by the black base of the laciniae and the black spermogonia. It has been recorded hitherto only from southern localities, the Channel Islands, Scilly, and Cornwall. Another southern species, *Roccella fuciformis* DC., he has collected near Westport, on the coast of Co. Mayo. It is battered almost out of recognition, but the microscopic characters of thallus and fruits leave no doubt of its identity. Crombie notes it as rare in the islands of South-west Ireland. It is most commonly found on maritime rocks in the Channel Islands and the south coast of England.—A. Lorrain Smith.

**Scutellaria alpina** L.—I am not aware that the extreme variability in colour of *Scutellaria alpina* has been put on record. Coste, in his *Flore de la France*, says simply, "fleurs bleues avec lèvre inférieure blanchâtre." Having examined some hundreds of these handsome flowers this summer, I find M. Coste’s description somewhat misleading. The colour of the flower is hardly

*Journal of Botany.*—Vol. 45. [September, 1907.] 2 c
ever blue, but rather a beautiful violet-purple, resembling that of *Prunella grandiflora* or *Calamintha alpina* as nearly as anything. But it varies from a light mauve, or even lilac, through every shade of purple to a deep violet. In the Mont Cenis district, where the plant is very plentiful from 6000 to 7500 ft. above the sea, one specimen was entirely a rich rose colour, as pink as the flowers of *Pedicularis rosea*, and the bracts were the same colour; but usually the hood is purple and the lower lip a bluish mauve, the central portion only of the lower lip being sometimes nearly white. Last year, in Val Tourmanche, on the Italian side of the Matterhorn, I found some plants with the lower lip completely white, but this form is very rare. At Mont Cenis, near the summit of the Col, are three large patches with pure white flowers, all the bracts being of a uniform pale green. In the Maritime Alps, in June, *S. alpina* appeared to be somewhat paler in colour than at Mont Cenis and on the Swiss frontier. Not only does a root send forth flowering spikes of different colours, but often individual flowers on the same head vary considerably in colour, some being much redder than others. In shady situations the leaves are sometimes nearly glabrous, but even in the shade the bracts are generally tinged with purple. Although the increased brilliancy in colour of flowers, and especially the reds, blues and violets, as one ascends mountains is well known, it is a somewhat rare thing to find flowers normally white assume a pinkish tinge in the high mountains. To-day, at Moncenisio, I find *Silene involucrata* marked by pink and here also *Trifolium repens* assumes a rose colour, so that it is easily confounded with its near allies *T. pallescens* and *T. Thalii*. *Scutellaria alpina* is one of the many alpine plants found in the Pyrenees, the Alps of Central and Southern Europe (particularly on limestone), and again in the Altai region of Northern Asia—H. S. Thompson.

**The Box in England.**—In Robson's *The British Flora* (York, 1777) I find the following stations given:—"On Box-hill near Dorking in Surrey, at Boxwell in Cotswold in Gloucestershire, and at Boxley in Kent." This is of special interest, as confirming the views expressed in Journ. Bot. 1901, pp. 27-30, 73. He must be very sceptical who doubts its being native on the steep slopes of Box Hill, above Burford Bridge; I have also seen it growing rather plentifully, a mile or more away, towards Betchworth.—Edward S. Marshall.

**Rosa hibernica** (p. 304).—The following mention of this plant in Templeton's original locality occurs in Mason's *Parochial Survey*, iii. 183 (1819):—"Some time ago a beautiful bed of wild roses which grew to near an acre in extent, beneath the road to Richmond Lodge, was more accurately observed, and it was found that the rose was a non-descript. It is now called the *Rosa hibernica*, and a description of it is given in the Transactions of Dublin Society." The writer was the Rev. W. Holmes, Vicar of Holywood, in which parish the locality is situated. The spot is greatly changed by a road and railway which run through the
"acre" of roses which are now only to be met with in one hedge.
—H. W. Lett.

Silene conica in Surrey.—Mr. George Massee recently gave me some plants of *Silene conica*, which were gathered by him on Hockham Common, near Ripley, Surrey. I cannot find any previous record of this species for the county, and it is very rare in the adjoining counties of Kent and Sussex. From the nature of the locality it is evidently indigenous in Surrey.—A. B. Jackson.

NOTICES OF BOOKS.

Popular British Botany.


The practice of reprinting early editions of books which have passed out of copyright has been a subject of discussion in the literary papers, especially in connection with the works of Ruskin, which, at one time inaccessible to folk of small means, have now, in their earlier forms, been brought within the reach of the most limited purse. An instance of similar procedure is brought to our notice by the publication by Messrs. Routledge of a new impression of *Flowers of the Field*—a work which first appeared in 1853, and of which a completed and thoroughly revised edition (the twenty-ninth) was issued in 1899 by its original publishers, the Society for Promoting Christian Knowledge, under the competent editorship of Mr. Boulger. A notice of this edition appeared in this Journal for 1900 (p. 195), and although we felt bound to express our opinion that the S.P.C.K., which must have made a large income from the previous editions, might well have paid greater attention to numerous matters of detail, the usefulness of the book from a botanical standpoint was duly recognized.

No such tribute can be paid to the edition now issued by Messrs. Routledge. The name of Mr. Clarence Elliott, who has "edited and revised throughout," is unfamiliar to us, but no further testimony to his qualifications—or rather disqualifications—for the task is needed than that supplied by the volume itself. His preface is a literary curiosity, as will be evident from the
following sentence: "To have made a thoroughly scientific work of it was deemed undesirable, for it would have meant so much pulling to pieces and putting together again, that the charming classic, the simple book in which for so many years keen un-scientific amateurs have been wont to burrow, and find quite successfully the names of the plants which they collected, would no longer have remained."

The fact that Mr. Elliott has not even troubled to print the name of his author correctly—he speaks of the book as "John's" whenever he has occasion to refer to the author—is typical of the extraordinary carefulness which ramps through the book. The specific names under the figures almost always have a capital, while in the text, in cases where they ought to have one, it is not employed. There is no reference in the text to the plates, and the names do not correspond. Misprints abound—e.g. "Chickory" (plate 54); "Cryptipedium" (index); "Marsh Plum-thistle" (p. 162); "saxitalis" (p. 43); "Achillia" (p. 176); "ochroleucea" (p. 228). Under the page-heading "Glumaceae" we have Araceae and other orders which are not glumaceous; the figure of Draba verna (p. 23) is upside-down! Many of the figures in the text were wisely discarded as far back as 1871 by the S.P.C.K. as inadequate—the Society would do well, by the way, in future editions, to carry the process further—and the lettering of these is not always accurate—e.g. the two Chrysanthemums are included under one name on p. 174.

We have not a copy by us of an early edition, but the claim on the title-page that the volume before us has been "revised throughout" is sufficiently met by the statement in the preface that "most of the additions and alterations are of an unobtrusive nature." The additions do not include such recent accessions to our flora as Stachys alpina; we detect, however, Mr. Elliott's hand in the remark on Ononis: "Several more or less distinct forms occur which have been variously classed as species or varieties, but they scarcely come within the scope of the present work." The incompleteness which marred all the editions previous to Mr. Boulger's is observed here; Cyperaceae and Gramineae are entirely omitted.

A great feature is made of the coloured plates, which, as Mr. Elliott says, "speak for themselves." The few which are devoted to one plant are sometimes (but not always) quite good; the rest, on which two or three scraps of different plants are thrown down, are for the most part almost ludicrously feeble, although they have a kind of accuracy—sufficient at any rate to enable us to say that neither artist nor editor have always named the plants correctly: e.g. on plate 30, where what is called "Premorse Seabious" is almost certainly Seabiosa Columbaria and "Small Seabious" is quite certainly Jasione montana! There is ample ground for further criticism—as to its weight, for example, nearly 3 lb.!—but we have already devoted more space to the volume than it deserves. It is however important that the real value of a book of this kind should be plainly stated, because the reviews in the ordinary
newspaper press are usually written without expert knowledge, and thus mislead; the Westminster Gazette, for example, from which better things might be expected, thinks the edition "altogether a very desirable one."

The quarto volume entitled Wild Flowers of the British Isles, illustrated and written by Mrs. H. Isabel Adams, and revised by Mr. Bagnall, is in every respect a beautiful book. The coloured plates fully justify the statement that they "constitute a triumph for modern methods of colour-printing," and testify both to the artistic skill and botanical knowledge of their author. We have seldom if ever seen the substance, so to speak, and the habit of the plates rendered with such accuracy as in such instances as the Marsh Marigold and the Wallflower, to name only two among many; although here and there the plates are a little too much crowded and the colours somewhat too subdued. Mrs. Adams not only draws well, but her calligraphy is excellent; the characters of the orders were in some cases written on the plates, and the names are always given in the same elegant lettering. No greater contrast could be found than that existing between these careful studies from life and the feeble prettiness—not always even that—of the plates referred to in the preceding notice.

The descriptions are short, but careful and sufficient, as might be expected in a book submitted to Mr. Bagnall's revision; type and paper are excellent, binding elegant and suitable. If it were complete, it would be in every way a desirable possession—indeed, it is so now. But we should not be doing our duty to our readers if we did not point out that the work is incomplete—only the orders down to and including Composite are included, but nowhere do we find any mention of its limits, nor any indication that another volume is in contemplation.

Mr. Gordon's book on Grasses will not, we think, greatly facilitate the study of the order, partly because of its extraordinary arrangement, which renders it almost impossible to consult. Three "chapters" are devoted respectively to an "index to species, including synonyms," an "index to genera" and an "index to customary names"; to these last two chapters (iii. and xiii.) are devoted, the former referring to the plates—though this is not stated—which themselves are not lettered. But the figures appended to the names in these indexes do not refer to the pages on which the plant is described, but to the number it bears in "Chapter ii. List of British Grasses," which list contains no reference to the body of the work! Thus "Oryzoides, Leersia, 1," "Leersia 1," "Rice Grass, 1," and others merely indicate that the plant is numbered 1 in the list on p. 11! It is only by hunting through the book—for no cross-references are anywhere given—that we find that the genus is described on p. 61, the species on p. 108, each also appearing in the "tabular view" on pp. 140, 143! Anyone, therefore, wishing to use the book must first sit down and make a practicable index.

The "index to species" contains a large and absolutely useless number of names which find no mention anywhere in the book—

The author of this treatise has conducted a series of researches on a very interesting group of colour bacteria and now publishes his results. The group differs from other bacteria, in that light and indeed strong sunlight is required for their development. They occur on decaying organic substances where there is a lack of oxygen, as for instance on hay, cooked eggs, bones, worms, etc. If any one of these substances is put in a closed jar well covered with water and placed in a well-lighted window, the purple colour, due to the presence of the bacteria, makes its appearance in about a month, more or less. Experiments were made with many different culture media, and an entirely new group of these organisms that does not lay down sulphur was discovered and diagnosed.
A number of new genera and species are named and the different properties of the purple bacteria are examined, and their behaviour in regard to light, to oxygen, and various acids fully described. Molisch also subjected the colouring matter to a series of chemical and physical tests, finding two new colours: one green, which he names *Bakterio-chlorin*, and the other *Bakterio-purpurin*. The former resembles chlorophyll green but gave a different spectrum, it was also more susceptible to light, becoming brown in strong sunlight. The *Bakterio-purpurin* crystallized very easily, and was demonstrated to be one of the Karotin group. The illustrations represent the bacteria, the colour crystals and the spectra formed by the two colouring matters.

A. L. S.

BOOK-NOTES, NEWS, &c.

At the meeting of the Linnean Society on 20th June, Dr. Rendle gave an account of the plants collected on Mt. Ruwenzori by Dr. A. F. R. Wollaston (1906) from the paper by himself and Messrs. E. G. Baker, Spencer Moore, and A. B. Rendle. The plants were collected from two camps—one at about 3500 ft. above sea-level on the south-east slopes of the range between the mountains proper and Lake Ruisamba; the other at 6500 ft. in the Mubuku Valley on the east side of the range. Expeditions were made to intermediate and higher altitudes, the highest camp being at about 12,500 ft., whence plants were collected up to the snow-level at about 14,500 ft. on the east side. The time of year was January to July. Dr. Wollaston gives notes on the vegetation at different altitudes from 3000 ft. to 15,000 ft., and has brought back some photographs showing the nature of the country and different aspects of the vegetation. The plants at the lower elevations include some common tropical weeds, with a fair percentage of more localized species and some novelties. Cultivation ceases above 7000 ft., and at from 7000 ft. to 8000 ft. is found the largest forest of the range; a large *Dombeya* is noticeable, and one of the finest trees is a *Podocarpus*. Above 8000 ft. the forest thins out, and is gradually replaced by a belt of small tree-heaths and *Podocarpus*. The bamboo-zone begins on the east side at about 8500 ft. and continues up to 10,000 ft. The big tree-heaths begin about 9500 ft., at which level a number of terrestrial orchids were found, with numerous ferns. From 10,000 ft. to 11,000 ft. moss is plentiful on the ground and trees forming cushions 2 ft. deep: here were found two tree-Lobelias. In the next thousand feet Helichrysums, Lobelias, tree-heaths, and tree-Seneecios are the most conspicuous plants. The heaths cease about 12,500 ft., but the Senecios continue almost to 14,000 ft. Another *Lobelia* appears at about 12,500 ft., and is found on the steepest slopes almost to the snow-line. Helichrysums, sometimes forming bushes four or five feet high, grow luxuriantly. A small *Arabis* was found at 14,000 ft., and a rush, a new species of *Poa*, and mosses, were found growing up to the level of permanent snow.
Under the title *An Introduction to Practical Botany* (price 2s.), Messrs Dent have issued, in their Series of Mathematical and Scientific Text-books for Schools, a useful and suggestive little volume, the work of Mr. E. H. Davies, B.Sc., of the County School, Barry, Glamorgan. It consists of seventy-eight lessons, in each of which some plant, or part of a plant, is put before the young student, who is encouraged, first, to make definite observations, or perform some simple experiment; secondly, to make drawings of the object or experiment; and lastly, to write a clear description of the observations made on the work done and the results obtained. The book should be useful to teachers in elementary and secondary schools.

The first volume of the useful series of articles on the recent progress and present position of some of the many aspects of modern botany, issued under the title *Progressus Rei Botanicae*, under the able editorship of Dr. Lotsy, of Leiden, has been concluded with the issue of a third part. This last instalment, by R. P. van Calcar, is a résumé of the progress made in the study of immunity and the specific action of bacteria, &c., in the last thirty-seven years. The undoubted success of this first volume, from the botanist's point of view, should encourage the editor and the Association Internationale des Botanistes—under whose auspices it is issued—to continue so useful a work.

The vacancy in the Department of Botany, British Museum (Nat. Hist.), caused by the retirement of Mr. V. H. Blackman, has been filled by the appointment of Mr. W. Eric Brooks. Mr. Blackman has been appointed to the professorship of Botany at University College, Leeds. Mr. A. W. Hill, Lecturer in Botany to Cambridge University, has been appointed Assistant Director of the Royal Gardens, Kew.

The Twelfth Annual Report of the Moss Exchange Club (York: Coultas and Volans, 1907), though styled "Report for the year 1907," is clearly that of work done in 1906. Issued as it is for the benefit of members of the Club, it is also of interest to outsiders as an expression of the activity manifested in the study of mosses and hepatics in this country. Special interest will be felt in the announcement that the projected Moss Census Catalogue will be issued in a few weeks. In this Catalogue an attempt is made to plot out the distribution of every species and variety of moss in Britain. Owing to the regretted illness of Prof. Barker, its publication has been delayed. We hope that the editors will provide in the Catalogue a bibliography of the papers and collections upon which the Census is based. The greater part of the present report is occupied with an enumeration of the exchange-specimens divided among the members of the club, and a number of instructive critical notes on the plates are inserted in the list.

We greatly regret to announce the death of Mr. E. A. L. Batters, which took place at his residence at Gerrard's Cross on Aug. 11. We hope to publish a notice of his work in our next issue.
ON THE VARIATIONS OF THE EVENING PRIMROSE
(\textit{Enothera biennis} L.).

By G. A. Boulenger, F.R.S.

Most naturalists have taken a great interest in the observations of De Vries on the variations of \textit{Enothera}, as observed by him in Holland, which have been summed up in his classical work \textit{Mutationstheorie}, but few as yet seem to have gone to the trouble of forming an opinion of their own on the degree of distinctness of the various "mutants" which are claimed to represent new "elementary species." The question whether or not new species appear at the present day is one of the greatest importance to the philosophical biologist, and if it can be shown that De Vries is mistaken in his conception of "species," it remains as it stood before.

Many are the localities where the Evening Primrose has established itself in this country, and it would be of very great importance to test at different spots the results arrived at by the celebrated Dutch naturalist, an easy and interesting piece of work for our local botanists.

I have had an opportunity of looking into the matter at two different places, and I have found the results so different from those obtained by De Vries, that I think it desirable to place my observations on record, as an incentive to others to pursue the investigation.

To begin with, I have not been able to confirm the distinction established by De Vries between \textit{E. Lamarkiana} and \textit{E. biennis}, which I find to be connected by every possible transition, the characters, based on the flower, on which he distinguishes the species being of the order of continuous variation. Further, in observing the behaviour of \textit{E. Lamarkiana} in a sandy locality on the French seaside, I do not find a species producing here and there a few mutants, but an assemblage of specimens showing endless variation in every direction. If species were to be established on the basis adopted by De Vries, there would be an end of this aspect of systematic work. I feel fully convinced that the experienced systematists who have preceded De Vries were right in regarding \textit{E. biennis} as a highly variable species, the forms of which could hardly be defined as well-marked varieties. When De Vries argues that his new species are as satisfactorily established as those of many authors, he is right only in so far as the species to which he alludes were proposed by uncritical botanists upon herbarium specimens without any knowledge of the variations displayed by these plants if studied in the open on a large material.

It has been thought before that \textit{E. Lamarkiana} is only a garden variety of \textit{E. biennis}; also that it may be a hybrid, although, as observed by MacDougal, it has not been suggested with what species \textit{E. biennis} would have hybridized to produce \textit{E.}
Lamarckiana. But we know of the numerous hybrid and mongrel combinations produced in the allied Epilobium, wild and cultivated. To MacDougal's further objection that "to consider the mutants as reversions to the original ancestors of Lamarckiana is impossible, since the mutant forms exhibit qualities not possessed by any other known members of the genus, including biennis," it may be retorted that apparently no one, and certainly not he, has yet been able to ascertain the original American habitat of these two forms, taken in the very restricted De Vriesian sense, which are founded on examples obtained in Europe. In the present state of uncertainty it is futile to speculate on what constitutes the ancestral form of *E. biennis*.

I submit the following observations to the consideration of botanists. The specimens on which they are based are preserved in the Natural History Museum.

I am under obligation to Dr. Rendle for giving me every assistance in the department of which he has charge.

I.—Observations made at South Kensington.

The part of the Natural History Museum where the collections preserved in spirit are stored away, known as the Spirit Building, was erected twenty-five years ago on the waste ground at the back of the Museum, which was previously occupied by the International Exhibition of 1862. It was then a wilderness in which numerous weeds grew, conspicuous among them being the Evening Primrose, which displayed its yellow flowers right under the windows of the study assigned to me when I moved into the new building in the summer of 1883. Since that time, paths and something of a garden have been made around the Building, and most of the wild flowers have gradually disappeared. The Evening Primrose has, however, maintained itself, in small numbers, most of the plants being uprooted every year as weeds. This summer I requested the workmen whose business it is to keep the grounds tidy not to interfere with the Evening Primrose, so that I have been able to observe a good many specimens.

The plant answers well to the type usually called *Enothera biennis* in this country. It was identified as such for me by a botanical colleague in 1883, and, so far as I can recollect, its general habit and the size of the flowers were the same then as they are now. Specimens with very large flowers, such as we often see in cottage gardens near London, and which are designated *E. grandiflora* or *E. Lamarckiana*, have never appeared around the Natural History Museum. Specimens from Linnaeus's collection in the herbarium of the British Museum, labelled *E. biennis*, do not differ very materially from the plants which grow round this institution, and I should never have doubted the correct determination were it not for the appearance of MacDougal's work *Mutants and Hybrids of the *Enothera* (Washington, 1905).

In the praiseworthy attempt to settle the question of the original habitats of the various forms of Onagras which have been brought to the front by De Vries’s work on mutation, he has given a detailed description of what he regards as "*E. biennis* (in the strictest sense)” from plants growing on uncultivated land in the New York Botanical Garden. His description of the plant, stated to be hirsute, with finely pubescent buds and small flowers with petals only 12 to 16 millim. long, and sepals much shorter than the tubular portion of the hypanthium, with the pistil constantly shorter than the stamens, did not agree well with the Evening Primrose I had under observation. I therefore submitted a plant to Prof. De Vries, who kindly informed me that my Evening Primrose is a "*E. biennis* L. as it occurs everywhere in Europe; it is probably the type described by Linné. The *E. biennis* of Dr. MacDougal is another elementary species, occurring in the United States of America. It is one of the numerous forms of *E. biennis* found in the United States, but which has not yet been studied or described.” Two flowers from the Botanic Garden of Amsterdam, which Prof. De Vries was so good as to send me for comparison, differ only in being a little larger, the petals measuring 27 millim. against 24, which is the maximum length in the flowers observed by me. It is therefore with the sanction of this great authority that I designate the *Enothera* growing in the Natural History Museum grounds as the true *E. biennis*.

I have found it impossible to distinguish any well-marked varieties among the plants which grow under my eyes. And yet they present a great amount of variation, which I think deserves being placed on record.

In some plants the buds are closely grouped together, in others they stand wide apart, forming or not long spikes above the open flowers; in some the stalks or the midrib of the leaves are pink or crimson, in others there is no trace of such colour. But it is especially in the flowers that the variations are most striking if they be compared with De Vries’s account of the “elementary species” with which he has dealt. The length of the petals varies between 10 and 24 millimetres. The pistil may be as long as, longer, or shorter than the stamens, and in some buds just before opening it projects most distinctly. I here transcribe De Vries’s own words (i. p. 319) in defining his *E. Lamarckiana* from *E. biennis*:

"Dass sie [the new species of the Lamarckiana group] näher verwandt sind, als mit *E. biennis*, *E. muricatta*, *E. suaveolens* und den sonstigen in systematischen Werken beschriebenen Arten dieser Gruppe, ergiebt sich, ausser aus ihrer Abstammung, eigent-lich nur aus den Eigenschaften der Blütte. Diese sind erstens viel grösser als bei den verwandten Formen, und zweitens haben sie längere Griffel."* Der Griffel erhebt die Narben bereits in den

* Further on, however, one of the mutants of *E. Lamarckiana* is described as *E. brevistylis* (ii. p. 430), in which the style does not project, or but slightly projects, beyond the tube.
Knospen oberhalb der Spitze der Antheren. Wenn sich die Blüte öffnet, breiten sich die vier Narben im Kreuz aus, dabei die Antheren in der Regel nicht berührend. Bei *O. biennis* dagegen liegen die Narben in der Knospe mitten zwischen den Antheren und überragen diese zur Blütezeit nicht. Dieser Umstand ist für die Befruchtung sehr wichtig. Bei *O. biennis* findet diese bereits in der Knospe statt, in dem die Antheren sich einen Tag vor der Entfaltung der Krone öffnen."

The following table shows to what extent De Vries's definition of *O. biennis* can be relied upon:

**Measurements of Flowers fully open of *Oenothera biennis* Linné (*fide* De Vries).**

Two specimens from the Botanic Garden of Amsterdam, received from Prof. De Vries, July, 1907.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27</td>
<td>14</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
<td>9</td>
<td>13</td>
<td>26</td>
</tr>
</tbody>
</table>

Thirty-five specimens from outside Spirit Building of Natural History Museum, South Kensington, July—August, 1907.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24</td>
<td>11</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>10</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>10</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>12</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td>9</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>19</td>
<td>13</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>19</td>
<td>11</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>19</td>
<td>9</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
<td>10</td>
<td>11</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td>18</td>
<td>10</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>11</td>
<td>18</td>
<td>9</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>12</td>
<td>17</td>
<td>12</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>13</td>
<td>17</td>
<td>10</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>14</td>
<td>17</td>
<td>9</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>10</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>16</td>
<td>15</td>
<td>9</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>17</td>
<td>15</td>
<td>9</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>18</td>
<td>15</td>
<td>9</td>
<td>9</td>
<td>18</td>
</tr>
</tbody>
</table>

* In a *E. Lamarckiana* from St. Cast (further on, No. 10) I have noted that, although the pistil is much longer than the stamens, the stigma does not project beyond the petals in the bud on the point of opening. There are, therefore, exceptions in both "species."

† The same criterion for the grouping of the "elementary species" is adopted by MacDougall (*Mutants and Hybrids*, p. 52):—"The evening-primroses of eastern North America, from which probably all of the forms cultivated in Europe are derived, may be divided into two groups—a group including *E. biennis*, *muricata*, and *cruciata*, in which the flowers are comparatively small, and in which self-pollination is possible and frequent. The second group, including species native to a region further south, comprises *E. argillacea*, *E. grandiflora*, and *E. Lamarckiana*, in which the flowers are large and the stamens are much shorter than the pistil, a condition which with some accessory structures favours cross-pollination."
ON THE VARIATIONS OF THE EVENING PRIMROSE

<table>
<thead>
<tr>
<th></th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>15</td>
<td>7</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>20</td>
<td>15</td>
<td>6</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>21</td>
<td>15</td>
<td>5</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>22</td>
<td>15</td>
<td>4</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>23</td>
<td>14</td>
<td>11</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>24</td>
<td>14</td>
<td>7</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>14</td>
<td>6</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>26</td>
<td>14</td>
<td>6</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>27</td>
<td>14</td>
<td>6</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>28</td>
<td>14</td>
<td>5</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>29</td>
<td>14</td>
<td>3</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>30</td>
<td>13</td>
<td>8</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>31</td>
<td>13</td>
<td>7</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>32</td>
<td>13</td>
<td>5</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>33</td>
<td>13</td>
<td>5</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>34</td>
<td>12</td>
<td>3</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>35</td>
<td>10</td>
<td>3</td>
<td>7</td>
<td>17</td>
</tr>
</tbody>
</table>


These examples have been picked from different plants and mostly at random. It cannot be said that the variation is discontinuous.

The great variation in the length of the pistil appears in buds on the point of opening, which either show nothing of the stigma, or show a greater or less part projecting beyond the petals. In one case the stigma projected 4 millim. out of a bud the petals of which measured 15 (diameter of conical part of bud 6, length of tube 20, length of ovary 10).

I have received (Sept. 10th and 11th) from Mr. U. R. Sherren samples of four plants growing wild near London. The first, from Uxbridge, may be referred to the var. Lamarckiana, the fully open flower showing the following measurements:—

44 26 19 44

One of the buds, ready to open, shows the stigma projecting beyond the petals; whilst another, in the same condition, has the stigma completely enveloped by the petals.

The second, from Acton, resembles the typical *E. biennis* as growing in England, but the pistil is much longer, so that the flower would fall under the definition of the Lamarckiana group of De Vries:—

19 16 11 20

The leaves are very smooth, with pale pink midribs.

The third and fourth, from a brickfield between Acton and Willesden (collected by Mr. A. Leydell), I also regard as typical *E. biennis*; their flowers gave the following measurements:—

21 11 11 27
22 13 13 27

There is no pink in the leaves.

The typical *E. biennis*, as growing wild in and around London, is generally characterized by its long flower-spike with
numerous bud-bearing internodes above the open flowers and large bracts, and its dark green, shiny, moderately broad leaves, thus answering to the definition of De Vries’s *E. scintillans*. As the stigma is sometimes well above the anthers, I cannot see how *E. scintillans* is to be distinguished from such examples of *E. biennis*. The “grössere Gestalt” of the flowers (*Mutations-theorie*, ii. p. 477) is no criterion, since in a flower of *E. scintillans* sent to me by Prof. De Vries the petals measure only 22 millim., whilst they measure 27 millim. in specimens received from him as *E. biennis*. How is a systematist to carry out his work in presence of such contradictions?

The study of the above examples entirely confirms the opinion expressed by Mgr. Léveillé (*Mon. Onothera*, i. pp. 19 and 106):

“Dès à présent nous ferons une remarque fort importante sur laquelle nous appelons toute l’attention des botanistes, c’est la variabilité de la grandeur de la fleur chez les Onothères. Ce caractère se rencontre à peu près chez toutes les espèces qui présentent une forme à grande fleur et une forme à petites fleurs. On ne saurait considérer la grandeur ou la petiteur des fleurs comme des caractères susceptibles d’être employés dans la classification, de telle sorte que l’on ne saurait y voir qu’un caractère accidental répondant tout au plus à l’idée de variation.

“Chez les *Onothera* la grandeur des fleurs et la présence de poils ne peuvent fournir un caractère sérieux pour établir une espèce, pas même pour une variété stable. Il est impossible de savoir où finit l’*O. fruticosa* et où commence la *pumila*. On trouve chez la *pumila* des styles égalant ou même dépassant les étamines tout aussi bien que des styles plus courts que celles-ci. . . . D’ailleurs, ainsi que nous l’avons déjà dit, chez toutes les espèces d’*Onothera*, on trouve la forme à grandes fleurs et la forme à petites fleurs et souvent des intermédiaires entre les deux. Ce sont là des variations sans importance que nous nous refusons à enregistrer à titre de variétés.”

From what I have seen in the *E. biennis* growing in South Kensington I can fully endorse what has been said by the distinguished French botanist, and I am further strengthened in this opinion by the observations I have made in Brittany.

II.—Observations in Brittany.

In 1899 I was spending my summer holiday at a small seaside place on the north coast of Brittany, La Garde St. Cast (Côtes-du-Nord). Close to the hotel there were a few plants of a large-flowered *Onothera*, answering to the form often cultivated in gardens, and usually designated as *E. Lamarckiana* or *E. biennis grandiflora*. Their origin is unknown to the proprietor of the hotel; they are not escaped from his garden. I have been to that place several times since, and found the plant gradually spreading over the sandhills in the neighbourhood of the hotel.

In 1904 I had with me De Vries’s famous book *Mutations-theorie*, and I endeavoured to determine the varieties of this
C\textregistered{}E\textregistered{}nothera with the aid of the descriptions and figures it contains. But I did not succeed, and felt highly perplexed at the great amount of variation I found among these plants, some of which agreed in the large size of the flowers and the very long pistil with the general definition of \textit{E. Lamarckiana}, whilst others came very close to \textit{E. biennis}. But so numerous and bewildering were the intermediate forms that I gave up the task in despair. Yet I felt absolutely convinced that all these aberrant specimens were descended from the few plants which grew there in 1899. I came to the conclusion that, having run wild, these \textregistered{}E\textregistered{}notheras were reverting to the type of \textit{E. biennis}, and at the same time producing other forms similar to those described in the \textit{Mutationstheorie}. However, I found it difficult to marshal them under the definitions given by De Vries, and I felt serious doubt as to the value of the characters adduced by him in support of his "elementary species," seeing that the flowers at least occasionally varied on the same plant beyond the limits assigned by him to his "species."

Last August I went back to La Garde St. Cast, and found the \textregistered{}E\textregistered{}notheras had further spread. Although the specimens were not so numerous as I should have wished, owing to people having picked many, probably the finest of the inflorescences, I examined a large number of them, and was again struck by the enormous variation they exhibited in size and in the shape of the various organs. I dried a selected series of specimens, which I have deposited in the Natural History Museum. I have examined them again, and feel more convinced than ever of the futility of attempting to define species among them. It would be also quite impossible to divide them into two groups—\textit{E. Lamarckiana} and \textit{E. biennis)—according to the standard set forth by De Vries, \textit{viz.} the size of the flowers and length of the pistil compared to that of the stamen.

The first thing that strikes one is the variation in the size of the petals and in the length of the pistil. This is shown by the following table, in which I have arranged the various specimens according to the size of the flowers, irrespective of other characters to which I shall allude further on, the arrangement being the same as in dealing with the South Kensington flowers. All the flowers here recorded are from different plants, with the exception of three (marked *) which are from the same inflorescence, their measurements being given to show that considerable variation in the length of the pistil may exist in the same plant:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48</td>
<td>26</td>
<td>22</td>
<td>38</td>
</tr>
<tr>
<td>2</td>
<td>46</td>
<td>33</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>45</td>
<td>37</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>43</td>
<td>32</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>30</td>
<td>18</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>42</td>
<td>32</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>7</td>
<td>42</td>
<td>25</td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>8</td>
<td>41</td>
<td>30</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>A.</td>
<td>B.</td>
<td>C.</td>
<td>D.</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>9</td>
<td>40</td>
<td>23</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>40</td>
<td>27</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>11</td>
<td>40</td>
<td>25</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td>12</td>
<td>39</td>
<td>26</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>13</td>
<td>38</td>
<td>34</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>14</td>
<td>35</td>
<td>20</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>15</td>
<td>33</td>
<td>25</td>
<td>18</td>
<td>36</td>
</tr>
<tr>
<td>16</td>
<td>32</td>
<td>11</td>
<td>15</td>
<td>32</td>
</tr>
<tr>
<td>17</td>
<td>31</td>
<td>31</td>
<td>17</td>
<td>37</td>
</tr>
<tr>
<td>18</td>
<td>31</td>
<td>25</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>19</td>
<td>31</td>
<td>19</td>
<td>16</td>
<td>36</td>
</tr>
<tr>
<td>20</td>
<td>31</td>
<td>16</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>21</td>
<td>30</td>
<td>19</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>22</td>
<td>30</td>
<td>15</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>23</td>
<td>30</td>
<td>0</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>24</td>
<td>28</td>
<td>20</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>25</td>
<td>28</td>
<td>17</td>
<td>15</td>
<td>38</td>
</tr>
<tr>
<td>26</td>
<td>28</td>
<td>6</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>27</td>
<td>26</td>
<td>12</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>28</td>
<td>26</td>
<td>10</td>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>29</td>
<td>25</td>
<td>6</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td>30</td>
<td>25</td>
<td>5</td>
<td>12</td>
<td>31</td>
</tr>
<tr>
<td>31</td>
<td>25</td>
<td>0</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>32</td>
<td>23</td>
<td>15</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>33</td>
<td>23</td>
<td>12</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>34</td>
<td>23</td>
<td>9</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>35</td>
<td>23</td>
<td>6</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>36</td>
<td>22</td>
<td>17</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td>37</td>
<td>22</td>
<td>8</td>
<td>11</td>
<td>57</td>
</tr>
<tr>
<td>38</td>
<td>22</td>
<td>7</td>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>39</td>
<td>21</td>
<td>4</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>40</td>
<td>21</td>
<td>4</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>41</td>
<td>20</td>
<td>8</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td>42</td>
<td>20</td>
<td>4</td>
<td>10</td>
<td>32</td>
</tr>
</tbody>
</table>

It will be observed from this table that, as in the *E. biennis* tabulated above, the range of variation in the length of the tube and of the stamens is not nearly so great as that in the length of the petals and of the pistil. De Vries himself has remarked that the flowers of *E. muricata*, which are not half so large as in *E. biennis*, are borne by a calyx-tube of the same length.

Leaving out two aberrant specimens (Nos. 23 and 31), in which the style does not project beyond the tube (as in the *E. brevistylis* of De Vries), we see that the length of the style (outside the tube) varies from 4 to 37 millim., and the length of the filament from 10 to 22 millim. In the large flowers (petals 33 to 48 millim.), the pistil is always much longer than the stamens, as in the *E. Lamarckiana* of De Vries,† the variation in the length of the

* Range of variation as observed at:—

<table>
<thead>
<tr>
<th></th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Kensington</td>
<td>10-24</td>
<td>3-13</td>
<td>7-13</td>
<td>17-27</td>
</tr>
<tr>
<td>St. Cast</td>
<td>20-48</td>
<td>0-37</td>
<td>10-22</td>
<td>28-45</td>
</tr>
</tbody>
</table>

† The following are the measurements of two flowers of the typical
style being 20 to 37 millim., that of the filament 16 to 22 millim. In the smaller flowers (petals 20 to 30 millim.) the pistil is usually either as long as or shorter than the stamens, but there are exceptions (Nos. 21, 24, 25, 32, 36): the range of variation is 4 to 20 millim. for the style, 10 to 15 millim. for the filament. The tube is also generally shorter in proportion in the larger flowers than in the smaller ones, just as in the typical *E. biennis*, but there is nothing absolute in this character.*

Taking the flowers alone, there is a complete and continuous passage between *E. biennis* and *E. Lamarckiana*, and the series before me shows the impossibility of distinguishing the two forms on the relative length of the pistil and stamens, as has been proposed by De Vries.

I may add that I have compared some of the above flowers with the examples of *E. biennis* and *E. Lamarckiana* received from Prof. De Vries, without being able to detect any difference beyond a greater length of the tube in the latter.

The ripe seed-capsules vary greatly in size, form, and coloration.† In the large-flowered specimens (Nos. 2, 6, and 8) they measure 25 to 32 millim. in length, and 7 or 8 millim. in diameter, and (as in *E. rubrinervis* of De Vries) they are handsomely striped with red. In No. 1 the fruit is narrower and shows no red. In No. 35 the ripe capsule measures 31 by 6 millim., and is striped with reddish. The largest capsules (42 by 7 millim.) are found in No. 38, and they are striped with reddish. The shortest capsules (23 by 7 millim.) are found in No. 19; there is no red on them. But here again I have found these different types connected by all possible gradations.

Strongly puckered or crumpled leaves (as in *E. oblonga* of De Vries) often occur (Nos. 8, 24, 35), irrespective of the appearance of the flowers. No form can be defined by the presence or absence of crimson or pink in the stalks or the midribs of the leaves, which is independent of its presence or absence in the seed-capsules, and varies irrespective of the size of the flowers. Some plants are remarkable for the long and narrow shape of the

*E. Lamarckiana* from the Botanic Garden of Amsterdam, for which I am indebted to Prof. De Vries:—

<table>
<thead>
<tr>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>24</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>29</td>
<td>18</td>
<td>16</td>
<td>29</td>
</tr>
</tbody>
</table>

* Something similar obtains in the heterostyled *Primula elatior*, as my lamented friend L. Errera has shown (Rec. Inst. Bot. Bruxelles, vi. 1905, p. 225) that the expanded part of the corolla is generally a little larger and the tube shorter in the same proportion, in the macrostyled specimens; this excess in the diameter of the corolla is coupled with a slight increase in the intensity of the coloration. As pointed out by Darwin (*Different Forms of Flowers*, p. 49), several heterostyled species when cultivated are apt to become homostyled; but amongst the varieties of Auriculas distributed by florists, the long-styled form is rare, as it is not valued, which seems to show that the fact observed by Errera is not of general application in the genus *Primula*.

† In the South Kensington specimens of *E. biennis*, their length varies between 24 and 31 millim., and their greatest diameter between 6 and 7 millim.; they are never striped with red.
leaves (as in *C. muricata* L. and *C. elliptica* De Vries), and these are most conspicuous for that character, even at a distance (Nos. 26 and 32), but then, if we abide by the pistil standard of De Vries, some would be referred to the *C. biennis* group, others to the *C. Lamarckiana* group. No. 2, as regards the leaves, connects this variety with *C. Lamarckiana*.

I must point out that the plants which bore flowers (Nos. 25 and 27) so different in the length of the pistil, did not differ appreciably from each other.

In short, I have tried hard to refer all these variations to the "elementary species" of De Vries, but without success. Acting on the principles advocated by De Vries, it would be possible to describe a further number of new species, in addition to recognizing *C. biennis* and *C. Lamarckiana* in the restricted sense, but their definition would be very shaky.

As I feel tolerably certain that no *C. anotheras* have been introduced in the locality since the few large-flowered plants were seen by me in 1899, I have come to the conclusion that, at St. Cast, the curious forms which have appeared, as the plant has spread, are all descendants of *C. Lamarckiana*, which, when left to itself, may in certain localities, besides producing other variations, to be further multiplied by crossing, revert to a form so closely similar to the true *C. biennis*, from which it is probably derived, as not to be distinguishable from it.

If some of the mutants can be shown to be merely reversions to an ancestral type, how can the others be looked upon as species? They also may be reversions to some type out of which a form of obscure origin like *C. Lamarckiana* was first evolved, possibly by repeated crosses between varieties of the polymorphic *C. biennis*, which would be quite in accordance with the results of Louis de Vilmorin and Naudin.

Since my return from Brittany I have read Mr. Charles Bailey's paper on "The Evening Primrose on the Sandhills of St. Anne's-on-the-Sea, North Lancashire" (Manchester, 1907), from which I see he also has experienced difficulties in reconciling his plants with the definitions given by De Vries. He found variations in the petals and pistil, as well as in the leaves, some plants having the midribs of a pinkish red or light crimson colour, but this character of *C. rubrinervis* was not associated with the brittleness assigned to that species, or with red streaks on the capsule. He also mentions plants, by no means rare, with lighter yellow flowers than *Lamarckiana*, and only half their size. In one of these forms with small flowers the stigma was longer than usual, and its four divisions lay at the base of the corolla, the style being nearly suppressed, the anthers showing fully half an inch above the pistil; this form Mr. Bailey takes to represent De Vries's *brevistyli*.

In the other small-flowered form the stigma and anthers were of equal height. This latter form, I should say, represents the typical *C. biennis*, to which *C. Lamarckiana* may revert. It seems, however, to judge from Mr. Bailey's remarks, that the Evening Primrose does not exhibit on the sandhills of St. Anne's
anything approaching the amount of variation it does at St. Cast.

St. Cast is a charming resort, easily reached from St. Malo, and if some botanist should feel inclined to combine a seaside holiday with the study of the Evening Primrose, I may perhaps hope to see these observations extended by one more competent than myself.

To sum up, I would suggest the possibility of the Mutations-theorie being based on false premisses. De Vries has assumed, without any justification, that *Erothera Lamarckiana* is a natural species. The fact that it was originally described from a garden flower, grown in the Paris Jardin des Plantes, and that, in spite of diligent search, it has not been discovered wild anywhere in America, favours the probability that it was produced by crossing various forms of the polymorphic *E. biennis*, which had previously been introduced in Europe. If it be so, and the *onus probandi* of the contrary rests with the mutationists, we have no evidence of mutations in the phenomenon observed by De Vries, but simply one of those cases of Mendelian disjunction of hybrids to which he was the first to call the attention of the naturalists of the present generation. The characters of several parent forms, which may, for all we know, have originated through fluctuating variation, have remained latent in some individuals of *E. Lamarckiana* and reappear in different combinations, thus producing the appearance of distinct "species," each definable by several characters, springing up under our eyes.

CAREX AND EPILOBIUM IN THE LINNEAN HERBARIUM.

By Rev. E. S. Marshall, M.A., F.L.S.

In the course of carefully reading through my copy of Hudson's *Flora Anglica*, ed. 2 (1778), which is mainly based on Linné's *Species Plantarum*, ed. 2, I was led to suspect that some of the names commonly applied to our British plants could not stand. Having recently been able to spend some time in examining the original specimens of these two genera, and making extracts from *Species Plantarum*, ed. 1, I now venture to submit certain resulting conclusions or suggestions; and it seems likely that a systematic collation of the Linnean Herbarium as a whole with the two editions of *Spec. Plant.* and of *Fl. Anglica* would yield valuable results.

Although it is true that in many instances the specimens of Linn. Herb. do not represent Linné's description, I believe that their evidential value has been unduly depreciated; and it is clear that he used his collection, comparatively small and imperfect though it was, as a foundation for the descriptions, as the herbarium numbers agree with those of *Spec. Plant.* Where the names are in his own handwriting, their authority must be
reckoned as very considerable—a point on which Syme strongly insisted.

Mr. F. N. Williams writes to me:—"Whatever is the righteousness in rejecting the names in Linn. Sp. Plant, ed. 2, the expression in all cases of the master's matured ideas, in favour of those found in ed. 1 (e.g., Adonis ostivialis and autumnialis)? Why should an author be arbitrarily deprived of the right to issue a second edition of his own work?" With this reasoning I fully agree; but the collective wisdom of the Vienna Congress has decided otherwise, and I suppose that, for the sake of uniformity, the consequences must be accepted. Nevertheless, where the description of the second edition amplifies or restricts that of the first, thus showing more clearly what particular plant the author had in view, I do not think that it should be ignored. In some cases two, three, or four sheets are pinned together; the first of these (numbered and named in Linné's handwriting) may be taken as his "type-specimen," the others being frequently different species.

A.—CAREX.

C. chordorrhiza (sic). This represents 5. uliginosa; but the description and localities given in Spec. Plant. cannot refer to C. chordorrhiza, and rather point to Schænus compressus L. (Scirpus compressus Pers., 1805; S. Carexis Retz., 1779).

6. C. leporina. The type-specimen is C. Lachenalii Schkuhr (C. lagopina Wahl.); a second sheet being C. ovalis Good., and a third, C. Schreberi Schrank (præcox Schreb., non Jœq.) teste Kükenthal. Syme (E. B. ed. 3, x. 101) remarks that "Linnaeus appears to have confounded C. lagopina with the very dissimilar C. ovalis, Good., and to have united them under the name of C. leporina, the C. leporina of his 'Flora Lapponica' being C. lagopina, and that of his 'Flora Suecica' being C. ovalis. It is therefore better to reject as ambiguous the name leporina, which some authors apply to one and some to the other of these two species." However, Hudson's synonyms and localities show that Linné's contemporaries accepted the name as equivalent to C. ovalis.

8. C. muricata. Neither the type-specimen nor the description tallies with our plant so-called (C. contigua Hoppe). Smith has pencilled against it, "spicata Huds. Mr. P. and Dr. G." [Goodenough]; but I believe that he was mistaken. Dr. P. Ascherson wrote, "C. divulsa var. decipiens Lange = C. Pairei F. Schultz." It is certainly identical with Pairei, as named for me by Kükenthal, but is not a variety of divulsa. If the name C. muricata is retained, it must supersede C. Pairei; C. Leersii F. Schultz will come under it as a variety. A second specimen, named C. muricata Huds., but crossed through, is C. echinata Murr. (stellulata Good.).

I think it almost certain that C. spicata Hudson (which its author clearly distinguished from C. muricata L., and described thus:—"Spiculis subrotundis androgynis contiguis, capsulis ovatis acutis") really represents our so-called muricata, and should displace C. contigua Hoppe. The citations from Micheli and Ray confirm this view; against it is the habitat, "in aquosis et ad mar-
"ginus fossarum," C. contigua being usually a plant of rather dry situations; but, no doubt, like C. divulsa, it occurs in both.

11. C. canescens. Two very different species are thus named in Herb. Linn. The first (under which is written "Norfolc.") annotated by Smith as "divulsa—Good. & Fl. Brit.," is certainly that. The second bears this inscription:—"11 canesecens [queried, in pencil—by Smith?] spiculis subrotundis in summo culmo se contingentibus, brevissime pediculatis," and is C. fusca All. (Buxbaumii Wahl.); as is an attached sheet, subscribed "Lapp S.," with the addition "canesecens vera, J.E.S." The description quoted in Spec. Plant. ed. 1, from Flora Lapponica 332 does not fit C. curta Good. at all; on the other hand, a tracing kindly sent to me by Mr. Britten from Loeselius, Flora Prussica no. 32, ad pag. 117, also cited, and named by Loeselius "Gramen Cyperoides spicis curtis divisis," represents a remarkably remote-flowered and subdistichous curta. As tending further to prove that Linné did not really regard curta as his canescens, may be mentioned the reference to Micheli, Gen. 69, t. 23, f. 10, in ed. 2:—"Carex nemo-
rosa, fibrosa radice, caule exquisite triangulari, spica longa divulsa seu interrumpa, capitulis solitariis praeterquam ultimo." C. curta
is not (or very rarely) a woodland plant, and the above description fits C. divulsa admirably.

Additional light is afforded by the specimen in Herb. Linn.,
given as "10 brizoides," and underwritten "Lapp. S." Against it
are pencilled the following remarks of Smith:—"curta Good"; "canesecens Herb. Leche. J.E.S."; "& Herb. Lightf. Dr. G." It
has narrow leaves and pale-brown glumes, thus somewhat resem-ling the slender Scottish Alpine form of curta which has been
named by Kükenthal C. canescens L. var. fallax F. Kurtz; the
fruit is not fully formed, but I am inclined to consider it as either
C. Gebhardi Hoppe, 1826 (C. Persoonii Sieb., 1842, C. canescens
var. alpicaola Wahl., C. curta var. brunnescens Pers.) or C. vitilis
Fr. It should be remarked, en passant, that vitilis is not known
to be a British plant; the original specimen from Lochnagar was
almost certainly C. helvola Blytt (curta × Lachenalii), the other
alleged localities belonging to C. canescens var. robustior Blytt
or var. fallax F. Kurtz. This so-called brizoides, evidently
mistaken by Linné for the true species of central and southern
Europe, is so very near curta that he would not have separated it
from his canescens, had he understood by canescens what is com-
monly supposed.

Although the matter is by no means free from difficulty, I con-
sider that C. divulsa has far better claims to be reckoned as C. can-
escens L. (the name is, indeed, quite descriptive of it) than has C.
curta Good. Considering the presence of C. fusca under the same
name, and the conflicting testimony of the citations, the best
course will be to drop the Linnean name altogether, as too un-
certain and ambiguous, and to adopt C. curta Good.

12. C. flava. This is represented by a well-grown plant, bear-
ingar three culms. Female spikelets three, approximate, the male
spikelet sessile, springing from between the two uppermost; fruit
much inflated, strongly ribbed, the lower with an abruptly deflexed beak. It is what we have regarded as the type, and differs much in appearance from C. lepidocarpa Tausch.

21. Carex distans. Inscribed "Cyperoides, vol. 3, p. 77 [or 22, I am not sure which], No. 5 Seguier." The sheet is, I think, our "inland-distans", and not the coast-plant (C. neglecta Degl.).

20. C. atrata. Against the type-specimen is pencilled "non vera," and (in another hand) "ustulata" (atrofuscus Schkuhr), which is correct. The description in Spec. Plant. proves that this was an error of identification. An attached sheet consists of two specimens of C. pulla Good. and one of young but very characteristic C. rigida Good.

19. C. saxatilis. The type-sheet (annotated "sic videtur") and a second unnamed sheet are both excellent pulla. The citation in Spec. Plant. ed. 1, from Fl. Lapp. cannot be anything else; nor does the description (quoted from Fl. Suec.) appear contradictory. Taking into account the specimen of C. rigida above-mentioned, I am convinced that C. saxatilis L. ought to displace C. pulla Good., rather than C. rigida Good.

29. C. panicea. The type-specimen is our usual form. A second sheet belongs to var. tumidula Læst.; a third (pencilled "Muhlenberg No. 33") contains two distinct, presumably American, species, not at all closely allied to panicea.

27. C. cespitosa (so spelt in Spec. Plant.). The type-specimen consists of two flowering stems, without leaves or root. Fruit veinless; glumes ovate-oblong, much exceeding it (this is contrary to the long description in Fries, Summa Veg. Scand. p. 227), blunt, darkish brown (not black) with a paler centre. Certainly neither Goodenovii, acuta auct., nor elata All. (Hudsonii Are Benn., stricta Good.), and apparently the true plant. A second sheet is good C. Goodenovii Gay.

28. C. acuta. The type-sheet consists of three culms, all slender and young; the only one sufficiently advanced to repay examination is distinctly tristigmatic, and has the glumes of C. acutiformis Ehrh. (paludosa Good.) rather than of C. gracilis Curt. (acuta auct.). On a companion-sheet are two specimens ("ex oriente, Nasselquist") of C. hispida Willd. and one of C. acutiformis, determined by Ascherson.

From Spec. Plant., ed. 1, I quote rather fully:—


Gramen Cyperoides, foliis caryophyllaeis, vulgatissimum. Raj hist. 1292.

β. russa. Carex spicis masculis superioribus numerosis, femineis inferioribus: intermedia unica androgyna. Roy. lugdub. 75.

Carex maxima, spicis plurimis remotis longis. Fl. Lapp. 329.

[There are three other less important references under β.]

Habitat in Europa ubique: α in sicciornibus, β in aquosis."
While the herbarium evidence is strongly in favour of identifying Linné's species with *acutiformis* Ehrh., the description in *Fl. Suec.* accords better with *gracilis* Curt. Hudson's special description of *acuta* cannot refer to *gracilis*; on the other hand, the publication by Ehrhart proves that he understood *acuta* L. in the generally accepted sense. Perhaps the safest course, that followed by Kükenthal, is to drop the name *acuta*, writing *C. gracilis* Curt. and *C. acutiformis* Ehrh. for the two species affected.

29. *C. vesicaria*. The type-specimen is our *vesicaria*. Attached are two half-sheets; the upper I believe to be very immature *panicea*; the lower is named by Smith "inflata Hud. Mr. Woodw." Turning to *Fl. Anglica*, ed. 2 (1778), I find *C. inflata* thus described:—"Carex specis remotis subpedunculatis erectisueulis, mascula erecta lanceolata, capsulis ovatis acuminatis calyceis duplo longioribus" . . . "Anglis, bottle Carex" (Bottle Sedge is still in use for *C. amphitacea*). The Linnean specimen already mentioned is excellent *C. rostrata* Stokes, 1787 (*amphitacea* Good., 1794); the references to Ray and Morison under *C. vesicaria* β. and γ. of *Spec. Plant.*, ed. 1, also appear to mean this species. Apparently *C. inflata* Huds. should be retained for *C. amphitacea* Good.

B.—*Epilobium*.

1. *E. angustifolium*. This is represented by a weak, narrow-leaved, small-flowered state much like the alleged *E. rosmarinifolium* from Glen Tilt. I suspect that it was gathered in the far north of Scandinavia.

3. *E. hirsutum* is the ordinary plant; but β. is represented by *E. Lamyi* F. Schultz, as determined by Haussknecht, who identifies *E. virgatum* Fr. with *E. obscurum*; the *obscurum* of Fries being apparently not Schreber's species, but *E. Lamyi*. The description of *E. hirsutum*, β. in *Spec. Plant.* ed. 1, can only apply to *E. parviflorum* Schreb.

5. *E. tetragonum*. The type-specimen is a slender *E. roseum* Schreb., with remarkably narrow, almost linear-lanceolate, leaves. In *Spec. Plant.* ed. 1, the short description runs:—"Epilobium folii lanceolato-linearibus denticulatis, imis oppositis, caule tetragonono. *Sauv. monsp.* 75. Lysimachia silquosa glabra minor. *Bauh. pin.* 303." In ed. 2, "lanceolato-linearibus" is altered into "lanceolatis." This, to my mind, completely upsets the contention that Linné intended *E. adnatum* Grisebach; especially in view of the omission of the adnate stem-leaves, which afford the most striking specific character. On the other hand, the *E. tetragonum* of Flora Londonensis is good *E. adnatum*; and I believe that the name *E. tetragonum* Curt. is unobjectionable.

7. *E. alpinum*. The type is a rather small but well-marked *E. lactiflorum* Hausskn. (determined by Haussknecht). The description in *Spec. Plant.* (ed. 1 and 2):—"Epilobium folii oppositiis ovato-lanceolatis integerrimis, siliquis sessilibus, caule repente" cannot cover *E. anagallidifolium* Lam., but fully agrees with Haussknecht's species; and, by the rule of priority, his name must give way to *E. alpinum* L. "Habitat in Alpibus Helvetici,
Lapponicus" merely shows that Linne had not learned to distinguish the Scandinavian and Arctic E. alpinum (lactiflorum) from E. anagallidifolium and E. alsinefolium. I may add that the plants figured by Syme as anagallidifolium and alpinum are both referable to the former.

SOME BRITISH SPECIES OF PHAEOPHYCEÆ.

By A. D. Cotton, F.L.S.

The object of the present communication is to bring forward some observations on certain little known or imperfectly described members of the Myrionemaceae and Ectocarpaceae, and at the same time to record three species not hitherto known to occur in this country.

The plants dealt with belong to genera consisting of small and inconspicuous species, concerning the morphology of which our knowledge is still far from complete. To the systematist also these genera offer a fruitful field for investigation, as is shown by the fact that during a short period of collecting, not only were three species added to the British flora, but several unfamiliar forms were met with, some of which may prove to be undescribed. Until our knowledge of the life-history and variability of previously described plants is more complete, the advisability of dealing with the new forms as distinct species is questionable, and for this reason an account of the latter is deferred, and the present notes are confined to species which are already known.

The species recorded for the first time as British are Ascocyclus affinis Sved., Hecatonema diffusum Kylin, and Streblonema effusum Kylin.

Ascocyclus affinis Sved. Östersjöns hafsalgflora, 1901, p. 107, fig. 17.


This plant, described by Svedelius in 1901, is a typical Ascocyclus, and distinct from any previously known; it does not appear to have since been recorded. The distinguishing features of the species are the size of the ascocysts and plurilocular sporangia, which measure 30–50 × 8–12 µ and 40–50 × 6 µ respectively.

The British specimens agree with the diagnostic characters, except in one particular, viz., the width of the sporangia, a point which will be referred to later. The material was found fairly plentifully on a frond of Laminaria which had begun to decay; the spots formed by the plant measured ½–1 mm. in diameter, and were scattered irregularly over the frond between plants of Myrionema sp. and Streblonema aecidioides Fosl. Specimens of different ages were present, varying from those previous to fructification to those in which the crop of spores had been liberated.

Digitized by Microsoft®
This being the case, an examination of the basal disk was rendered easy, as was also the following out of the different stages.

The basal disk is of the usual Myrionema type, but is more irregular than in most species; the cells may be brought out very clearly by staining with gentian violet.* In the young plants the growth is usually regular and even, but in the older parts cases may be observed in which the branching is without definite order; in other instances an almost pinnate arrangement is exhibited, and the outline of such thalli is markedly lobed. The cells of the older parts are usually 6–10 μ wide, and are of the same length or one and a half times longer, whereas the growing cells at the margin are usually 25 × 7–8 μ. True dichotomy of the marginal cells was not observed.

The thallus bears the three organs mentioned by Svedelius, viz., hairs, ascocysts, and sporangia. In the British material these bodies agree precisely with his description, except that the sporangia are usually somewhat larger, averaging 35–55 × 8–10 μ instead of 30–50 × 6 μ. Sporangia of the smaller size also occur, and there is every transition between the two. The sporangia are typically uniseriate; but in the case of some old plants in which the first crop of spores had been liberated, a second crop of sporangia appeared, many of which showed a biseriate arrangement. These biseriate sporangia were, for the most part, of the same size and form as those of the previous crop, though in one or two cases they exceeded them in size.

The development of the ascocysts and hairs agrees with that described for other species of Ascoecylus: both appear early, and some may be fully grown before the earliest sporangia develop. In two cases stalked ascocysts were observed, and in another instance an ascocyst had become septate in the upper part. Erect assimilating filaments are usually absent, but in more than one plant a few of these bodies were noted.

Ascoecylus affinis, though a sharply defined species, is thus found, when an examination is made of a considerable number of plants, to vary within certain limits—(1) as to the form of the basal disk, (2) the size and form of the sporangia, and (3) as to the presence or absence of erect filaments.


* The best method for making preparations of this and similar algae is by using glycerine jelly that has been stained with gentian violet, as described by the writer in the New Phytologist (vol. i. 1902, p. 129). In the case of the present species the whole plant, after some hours, takes up the violet, the ascocysts and basal disk staining most deeply. This method, successful as it is with Ascoecylus affinis and many other species, is of no value for other closely allied plants, which for some reason refuse to take the stain. Effective staining is perhaps dependent on the presence of certain forms of mucilage.
The only previous record of this species in Britain is from the Isle of Cambrae (Batters in Grevillea, vol. xxi. p. 21). The present specimens, collected at Swanage in April of this year, were growing on Rhodymenia palmata, and mixed with Hecatonema diffusum. The plants were of small size, and of the type described by Rosenvinge on the same host.

Hecatonema globosum is to be found in most of the recent works which attempt to give a complete list of the algae occurring in the various countries of Europe, and, as will be seen from the citations above, it has been placed in five different genera. Many writers have remarked on its variability, and also on the possibility of more than one species being included under that name. In Reinke’s original plant the upright filaments are of considerable length, consisting of 10–14 cells, the sporangia being produced on the ends of the ultimate branches (vide Atlas, tab. 16), whereas in the form described by Rosenvinge on Rhodymenia palmata (l. c. p. 86, f. 20) the filaments are shorter and less branched, the sporangia being borne on short stalks consisting of 1–3 cells. Jonsson also (Mar. Alg. of Iceland. Bot. Tidskrift, vol. xxv. 1903, p. 147) states that he found a form growing on Rhodymenia palmata “precisely resembling Rosenvinge’s fig. 20, with erect filaments branched or unbranched, and the sporangia stalked or sessile.”

The shortening of the branches above referred to brings about a marked difference in the general form of the plant, the typical form producing minute balls (as indicated by the specific name), whilst the form on Rhodymenia is flattened, and bears a close resemblance to a Myrionema. The present gathering represents the third time this form has been recorded; the records are from three different countries, and in each case the plant was growing on Rhodymenia palmata. For these reasons it has been thought advisable to separate the plant, and to regard it as a distinct variety to be characterized as follows:—


With regard to the systematic position, the genus to which the plant was assigned by Batters seems to be the most suitable. Hecatonema, as remarked by Sauvageau, possesses the upright growth of an Ectocarpus, and the basal disk of a Myrionema. The typical form of the present plant agrees with Hecatonema in combining these characters, though it differs somewhat in the fact that not only some but all of the thallus cells give rise to upright growth.

**Hecatonema diffusum** Kylin, Algenflora der Schwedischen Westküste, 1907, p. 39, fig. 10.

On *Rhodymenia palmata* Grev., Swanage, April, 1907. New to Britain.

To this species the writer has referred an alga found on Rhodymenia, the specimens agreeing in all respects with those described.
under that name by Kylin. The plant is allied to *H. maculans* Sauv., but is distinctly smaller. Notwithstanding the well-known variability of form exhibited by the algae of this genus, the author is inclined to agree with Kylin in regarding the species as distinct, and *Hecatonema* as the best genus in which to place it.

Additional evidence confirming the latter point was afforded by a fragment of *Rhodymenia*, which bore some later stages of the epiphyte. From each of these older plants grew a tuft of Ectocarpus-like filaments of about 1 mm. in length. The filaments gave rise to a few short subulate branches, but no sporangia were observed. The cells in the middle and upper parts of the filaments measure 20–30 × 12 μ, though towards the basal region they are scarcely longer than broad.

There is a remote possibility that the above-mentioned filaments may represent the growth of young *Ectocarpus* plants that had germinated in the centre of the *Hecatonema* tufts. A careful examination did not yield any evidence to support such a view, though to decisively demonstrate organic connection between the two types of algae is not easy. There is, however, every appearance of such a connection, and this, taken together with the fact that such filaments are present in the allied species *H. maculans*, make it highly probable. In *H. maculans* the upright filaments give rise to sporangia, and there is no reason to doubt the production of similar sporangia in *H. diffusum* if sufficiently late stages could be discovered.


The present notes on this plant are confined to the vegetative characters. Material was obtained from specimens of *Padina pavonina* collected at Torquay (August, 1905 and 1906).

The remarks made by Sauvageau (Journ. de Bot.) as to habit have been fully confirmed; the plant is truly endophytic, the filaments, which are intercellular, growing in the direction of the long axis of the *Padina*. In a section of the latter two entirely different aspects of *Ectocarpus Padinae* are thus obtained, depending on whether the section be transverse or longitudinal. In the transverse section *Ectocarpus Padinae* is very inconspicuous, only the transversely cut ends of the filaments being visible, whilst in the longitudinal section its endophytic character is at once apparent; there is little doubt that it was through not examining a longitudinal section that Buffham failed to recognize the true habit of the plant. Drawings made by the writer of the somewhat remarkable endophytic filaments possessed by this species agree in every way with those given in the Journ. de Bot. 1897; the curious foldings in the walls noticed by Sauvageau were also very marked in the Torquay material.

Antheridia and plurilocular sporangia occurred plentifully, but experiments have not so far been conducted with regard to fertilization. Two types of sporangia, as have been described by
Sauvageau, were not distinguished with certainty; it is possible, however, that one or other of these types was absent.

**Streblonema effusum** Kylin, Algenflora Schwedischen Westküste, 1907, p. 49, fig. 13.

In *Ceramium rubrum* Ag. Cawsand Bay, Cornwall, August, 1906. New to Britain.

The British examples agree precisely with the plant described and figured by Kylin, which likewise occurred in *Ceramium rubrum*. This species is obviously very closely allied to *S. intestinum* (Reinsch) Holmes & Batt., the type-specimen of which was redescribed by the writer last year (Journ. Linn. Soc. vol. xxxvii. p. 295). Distinguishing characters are difficult to grasp, but *S. effusum* appears to differ in the vigorous habit, with abundant production of sporangia; the latter also are more immersed in the host-plant than in *S. intestinum*.


A species of *Streblonema* was observed in *Dudresnaya coccinea*, which, though not determined with certainty, is worthy of notice.

*S. volubile* Thur. was first described and figured by Crouan in 1851. It possessed the usual type of creeping filaments, the sporangia were large, ellipsoid, and unilocular; no other form of reproductive organs was observed. The plant has been noted since by various writers, but in no case has a plurilocular sporangium been found in connection with those of the type above referred to.

In 1895 Batters (l. c.) recorded the plant as British, and drew attention to its presence in *Dudresnaya* in various specimens preserved in herbaria. At the same time he gave an account of a *Streblonema* found by Buffham in *Gloeosiphonia*, and which he doubtfully referred to *S. volubile* Thur. This plant possessed plurilocular sporangia, which were described as varying in shape from roundish or oval to spindle-shaped, and from 20-70 μ in length, and usually 18-21 μ wide in the broadest part.

The plant referred to in the present note, which also possesses plurilocular sporangia, would appear to be different to that collected by Buffham. The sporangia are very small, 1-2-seriate, and are frequently found in clusters of two or three together. Their average measurement is 30 × 12 μ, but they may be found to vary within the limits of 20-40 × 10-15 μ. The cells of the vegetative portion of the plant also are very small, and are more uniform than usual in species of *Streblonema*; their measurements rarely exceed 20-30 × 10-15 μ. Five to seven chloroplasts are present in each cell.

Buffham’s plant in *Gloeosiphonia* and the present plant in *Dudresnaya* are almost certainly distinct. Mr. Batters (the news of whose lamented death has just been received), who was kind enough to examine the latter and to compare it with Buffham’s slides in his herbarium, stated that as far as he could see the one would appear to come as near the true *S. volubile* as the other. Until, however, further information is forthcoming, it is impossible to speak definitely.
Two distinct forms, therefore, have been tentatively referred to *S. volubile*, and it remains for further investigation to decide which, if either, of these determinations is correct. *Dudresnaya* is not difficult to obtain in certain localities on the south coast, and *Streblonema*, when present, is readily recognized by the brown coloration formed in the *Dudresnaya* fronds.

**NOTES ON POTAMOGETON.**

**By Arthur Bennett.**

*Potamogeton floridanus* Small, Fl. S. E. United States, 37 (1903). The following note by Dr. Morong (Bull. Torrey Bot. Club, xiii. 145 (1886)) applies, I believe, to this plant:—"Mr. Curtiss also sent what appears to be a peculiar form of *P. natans*. It has small, acute, elliptical leaves, 4-6 cm. long by 5-15 mm. wide, and erect peduncles about 6 cm. long. It looks exactly like specimens in the Torrey Herb. from India, which are labelled *P. natans*, var." The above note is appended to a description of *P. Curtissii* Morong from the Blackwater River, the habitat of Dr. Small's species. I have little doubt that Dr. Morong's and Dr. Small's are the same species, and I think it likely it may be my *P. Tepperi* (Journ. Bot. 1887, 178), which has much the facies of a small *natans*, and is often so named. If the Torrey Herbarium specimen is from the "Khasia Hills, alt. 4-5000 ft.," collected by Hooker and Thomson, it is *P. Tepperi*, which at present is recorded only from Asia and Australia.

**Altitudes of Potamogetons.**—The following list of altitudes of various species is a contribution to a subject that is little attended to in the genus. In all cases I have seen specimens, with the exception of those of the Geol. Exped. 40th Parallel, Botany, 1871, Washington:—

*P. natans* L. Britain, 2500 ft.; Turkestan, 6000 ft.; India, 9000 ft.; California, 6000 ft.

*P. polygonifolius*. Britain, 2200 ft.


*P. Tepperi* A. Benn. Khasia (India), 4-6000 ft.

*P. fluitans* Roth. Sikkim (India), 9000 ft.

*P. indicus* Roxb. India, 1-7000 ft.

*P. Cheesemanii* A. Benn. New Zealand, 2500 ft.

*P. lucens* L. Britain, 1100 ft.; Spain, 9750 ft. India: Kumoan, 6100 ft.; Kashmir, 5-6000 ft.

*P. prolomus* Wulf. Britain, 2500 ft.; France, 1730-2690 ft.; Jura, 3500-3800 ft.; Switzerland, 6500 ft.


*P. heterophyllus* Schreb. Britain, 1600-2300 ft. U.S.A.: Montana, 7500 ft.; Utah, 10,000 ft.
P. diversifolius Rafn. Mexico, 6–8000 ft.
P. densus L. Britain, 1020 ft.
P. obtusifolius Mert. & Koch. Britain, 600 ft.; N.W. Himalayas, 9000 ft.
P. pusillus L. Britain, 1100 ft. India: Patna, 5180 ft.
Asia: Pamirs, 13,000 ft.
Asia: Pamirs, 8700–12,350 ft.

P. lucens L. Specimens sent by Dr. Small from Florida (Coll. Messrs. Small and Carter; Nov. 1903) are of a stronger growing form than those of the New England States, but not varying sufficiently to be named; but others are very distinct, and I propose to name them.

P. lucens L. var. floridanus. A very odd form of lucens, characterized by an almost simple stem, with long internodes; leaves lanceolate (2½ inches x ½ inch), the apex excurrent into a short, moderately hard spine, margins strongly undulated; stipules strong, persistent; peduncles 6–7 inches long. “Everglades back of Miami, Florida, 17, 11, 1903.” The exactly lanceolate leaves are very unlike any lucens forms from the New England States or Canada. In Europe, branches are often thrown off from the flowering-stem with short leaves; but these are almost invariably rounded at the apex, and quite unlike these Florida specimens. Many Asiatic specimens have these short leaves, but they also are rounded; while others, from Manchuria, have linear-lanceolate leaves drawn out to an acute point at the apex.

P. natans L., P. polygonifolius Pourt., P. coloratus Horn. Some remarks made in an excellent paper by Mr. West (Proc. R. Soc. Edinb. xxv. 967, 1905) remind me that in the British Flora, ed. 8, 484 (1860), Dr. Arnott disposes of the three as only really one species. Now, if polygonifolius is (as suggested) a degraded natans, how comes it they grow side by side in the Isle of Strom, each exactly retaining its characters? or why should not the
reverse be pleaded?—natans as a higher form of polygonifolius. Again, altitude is suggested as making some modification; certainly it does to some extent, especially if in shallow water, but I have P. natans from India from 9000 ft. altitude (Duthie) indistinguishable from Surrey specimens; and so with other specimens.


P. gramineum R. Brown! Prodr. Fl. N. Holl. 343 (1810), non L.


A form (latifolius) of this species occurs in the Murray River, South Australia (leg. Tepper), with leaves double the normal width, 1 dm. long, and with forty-five nerves or veins. None of the New Zealand specimens approach this, nor do the Centinmeal Park specimens, N.S.W. Australia (leg. Maiden), though larger in all parts than most examples of the species.

In habit the species is variable; specimens from Australia Felix (F. v. Mueller) are straggling in growth, while those from the Yarrogobilly River, N. S.W. Australia (ex Maiden) have shorter internodes with fascicles of leaves in the leaf-axils; peduncles 2½ cm. long; spikes 1½ cm. Others from the Waihi Stream, North Island, New Zealand (leg. Cheeseman), have long internodes, no fascicles of leaves, and peduncles 1 dm. long, and spikes 2½ cm. long; and Moreton Bay examples come between these.

Raoul’s description was made from specimens from the Banksian Peninsula, New Zealand.

Additional Australian stations to those given by authors will be found in the First Government Report (1853), by F. v. Mueller, p. 30.


For specimens of this remarkable plant I am indebted to the late Mr. Baagøe, of Nærstadv, Denmark. The habit is that of alpinus, but with the nervation nearer crispus; the leaves are not serrated, the peduncles and spikes are those of alpinus, and the upper leaves are suffused with red in the same way; the stems are also compressed, though in a less degree than in crispus.

Though quite willing to question its hybrid origin, I do not see how to avoid that conclusion; the plant cannot be placed with either crispus or alpinus, and I am not prepared to suggest it as a new species, as the condition of the spikes suggests hybridity.

× P. ripensis Baagøe in l. c. (P. zosterifolius Schum. × trichoïdes Cham.); Distributed by Mr. Baagøe as P. zosterifolius Schum. f. gracilis. Hab. in amne Nibsæ, prope Ribe, Jyllandia, Denmark, 1899.

I accept this name on Mr. Baagøe’s authority. There are no

* In original examples (leg. Raoul) the veins are thirty to thirty-five.
signs of any peduncles in my specimens, and looking to the great difference in width of leaves assumed by some of the graminifolius section I am not convinced that this is not a remarkable narrow-leaved form of zosterifolius. Mr. Baagöe also sent a form of zosterifolius named angustissimus from Varming in Jyllandia (1899). In this the leaves are even narrower than the last; but the whole habit is different, and so far as the immature spikes show, it is rightly referred to zosterifolius. The stipules are quite free, while in the last they are closely appressed to the stems.

Another plant sent by Mr. Baagöe as crisps × rufescens I cannot separate from rufescens (alpinus), having gathered just such specimens among the many alpinus that I have collected.

P. mascarensis Cham. in Linnaea, ii. 228 (1827).

P. natans L. b. mascarensis Kunth, Enum. iii. 128 (1841).

This species (?) seems to be extinct, like so many of the Mascarene birds, as I cannot find it has been collected of late years. Beyond the specimen in the Berlin Herbarium, I know of only two others, one in the Paris Herbarium, and one in Delessert Herbarium (labelled “P. natans L. Dans la rivière de Regiout, Oct. 1832. Bové.”). That at Berlin came from Kunth, who had it from the Paris Herbarium in 1820.

Dr. Johnstone, who resided on the Island of Mauritius, had no such plant among the Potamogetons he kindly sent me.

P. Robinsii Oakes in Hovey’s Mag. vii. 180 (1841). On fruiting specimens this species produces small spathulate leaves, 2 cm. long × 3 mm. wide; these occur at the base of the peduncles, similar in character to those on P. panormitanus Bivoni, only of thicker texture.

So far as I have seen these are not noticed in any North American Flora, and Mr. Hill’s plate (Bot. Gaz. xxv. 148 (1898), t. 15) does not show them, although the very rare fruits, which are winged on the central carina, are there well represented. I do not find any of these leaves on my specimens of P. Maackianus Ar. Benn. (P. serrulatus Reg. et Maack., non Opiz, nec Schrader), but specimens in fruit are so rare that it is not perhaps safe to assume they do not occur.

Though so common in at least fifteen of the United States, especially in Massachusetts, its life-history has yet to be written, and would afford an excellent study. But this must be done in the field or by cultivation; dried specimens only afford a few phases of plant-life, and that mostly in the condition in which they can best be specifically determined; the spring and winter states are rarely represented. Mr. Hill (l. c.) considers this species one of the best defined and least variable of North American Potamogetons. An additional station to those on record where it has been found in fruit is “Duck Lake, Whitehall, Mich.,” Hill sp. Before 1880 only one fruit was known, but in that year it was found by Mr. Faxon in Massachusetts, and in 1889 by Prof. Macoun in the Somas River at Alberni, Vancouver Island.

26 (1893). In this Journal for 1889 (p. 33, t. 286) Mr. Fryer described the above plant under the name of "P. varians Morong in herb. ined."; and the Messrs. Groves use this name in the 9th edition of Babington's *Manual*. This name was used because in letters and specimens he sent to me Dr. Morong employed it, and we supposed he intended to publish it.

The earliest name, however (see Journ. Bot. 1900, 130), is *P. spatheformis* Tuckerman ex Robbins in A. Gray, Man. Bot. ed. 5, 487 (1878). In his description Mr. Fryer discusses its hybrid origin (as *heterophyllum × Zizii*). Dr. Morong says: "A weighty argument against this view is the fact that neither of the supposed parents occur in Mystic Pond [its original locality], and that it should be produced in localities separated by the Atlantic Ocean."

Certainly the curious part of its hybrid reference is (as Mr. Fryer mentions) that, although there exists a certain difference in the North American forms *angustifolius* (*Zizii*) and *heterophyllum* that can hardly be put on paper, yet is easily recognized by the eye, the *variants* of America is the *variants* of Britain, save for very minor differences. Ascherson & Graebner make it *Zizii × heterophyllum*, though the land form gathered in a ditch in Cambridgeshire that had not been dry for thirty years before is essentially towards *heterophyllum*. Messrs. Ascherson & Graebner record it from Silesia, the Rhine Province, and Sweden. I have it from Ireland (Donegal, 1889, H. C. Hart), and Miss Armitage gathered it in Pembroke * in 1902. In America the variability of the plant is remarkable. Dr. Morong sent me a series of specimens "collected in one season from July 10th to Sept. 25th, that you may see how singularly the plant varies during the season; all from the same spot." The actual dates being July 10th–25th, August 11th, Sept. 1st–15th, 25th.

Beyond the reference by Dr. Morong in his N. Am. *Naiad*. 22 (under *P. Faxonii*) and 27 (under *P. spatheuleformis*), I do not think there is any suggestion (other than my own in this Journal for 1900, 128) with regard to hybridity in this genus in America. But Dr. Hagström considers he has some North American hybrids.

**SHORT NOTES.**

**Pollen of Hybrid Violets.**—A short account of some observations which I have made during the last two seasons upon the pollen of various hybrid violets may be interesting. Opinions have been expressed that the pollen of hybrid violets is always abnormal—ill-shapen and devoid of protoplasmic contents—whereas my investigations lead me to believe that, although some such grains may be thus described, the majority are spherical in shape, quite sound and full. The first plant I examined was the hybrid *Viola odorata ×*

---

hirta. Here the pollen-grains, taken from the unopened flowers and examined under a one-eighth inch objective, were certainly small and ellipsoidal, with a few exceptions which appeared to be normal. *V. floribunda* Jord. is considered by some writers to be a hybrid between *V. odorata × hirta*: I believe, however, that it is in reality a good species. In this case, and in that of a plant from Banwell, Somerset, with red-purple, highly scented flowers (which I take to be a cross between *V. subcarnea* and *V. hirta*) unmistakably sound pollen is produced. In *V. ericetorum × stagnina* (an acknowledged hybrid) from Wood Walton Fen, the pollen-grains, examined in water under the microscope, were found to be spherical, and filled with protoplasmic contents. After remaining some time in water (one to three days) some of the grains were found to be bluntly triangular, with a pore at each angle, somewhat simulating the pollen of *V. cornuta*. This condition probably marks the commencement of germination, and the emission of the pollen-tube. It is clear therefore that, although certain hybrid violets are infertile, the abortive development of the pollen cannot always be regarded as a diagnostic character in discriminating between the true species and the hybrid.—E. S. Gregory.

*Ophrys Trollii* (p. 314).—There is what looks like an excellent figure of an original specimen (in the herbarium of the Zurich Polytechnic), said to be the only coloured one yet published, in Max Schulze’s *Die Orchidaceen Deutschlands, Deutsch-Osterrichs und der Schweiz* (Gera-Untermhaus, 1894). The German description may be translated thus:—“Tubers roundish, stem four-leaved. Spike three-flowered. Bracts lanceolate, large, longer than the germen. Outer perigon-leaves lanceolate, acuminate, about as long as the germen, reddish outside with green nerves, rose-red inside; the two lateral inner perigon-leaves two-thirds the length of the outer, linear, brownish. Lip three-lobed; lateral lobes short, linear, yellow; central lobe narrowly lanceolate, elongate, long-acuminate, neither emarginate nor reflexed, with a purple-red stripe in the middle, yellow at the margin. Column greenish, with a nearly straight, green, linear, pointed beaklet. By the old castle of Wüllingen, near Winterthur, in Switzerland; not refound.” This description was made by Hegetschweiler from the original drawing; he considered it to be intermediate between *O. fuciflora* and *O. musceifera*. Regel thought it a hybrid between them; but M. Schulze remarks that “this conclusion is contradicted by the long-acuminate outer perigon-leaves, and the narrow, long-acuminate central lobe of the lip.” Reichenhach Fil., who regarded it as a variety of *O. apifera*, due to deep shade, described it in his *Iconographia* as having the lip acute, triangular, long; lateral lobes more or less undeveloped. He also gave this name to plants found near Jena by M. Schulze, who would, however, rather regard them as transition-forms. Thus it is fairly clear that the Winterthur specimens represent the extreme of a series. Not having seen any of the British plants which have been so named, I cannot offer any opinion as to their correctness; but the beautiful plate referred to above is quite different from any
O. apifera that I have come across, either fresh or dried.—Edward S. Marshall.

P.S.—Since writing the above, Mr. J. W. White has kindly lent me an excellent pen-drawing by Miss F. Cundall of the Bristol plant, which is clearly a variety of O. apifera, differing from type only in the lip. It agrees well enough with the description of var. Trollii Reichb. fil., but is not by any means identical with O. Trollii Hegeschw. That has the bracts much longer and more leafy, the sepals narrower and more acute, the lip about half as broad at the base, more tapering, and rather longer. The colour, as represented in M. Schulze’s figure, is also brighter than that of O. apifera.—E. S. M.

Ranunculus divaricatus Schrank.—In the “List of Seed-plants and Ferns” Mr. Britten and Dr. Rendle have, in deference to the opinion of Continental botanists, adopted the name of Ranunculus divaricatus Schrank for the species heretofore generally known in this country as R. circinatus Sibth. It appears to us, however, that the name of R. circinatus should be retained, and to elucidate the point a review of the evidence seems desirable. At the outset we would recall the fact that Mr. Hiern, whose opinion on such a question must carry great weight, in his paper on the “Forms and Distribution of Batrachium” (Journ. Bot., 1871) referred R. divaricatus Schrank to R. trichophyllus Chaix, quoting R. divaricatus Koch, non Schrank, as a synonym of R. circinatus. In a recent letter to us Mr. Hiern has pointed out that R. trichophyllus Chaix and R. divaricatus Schrank are both founded on the same plant, i.e. Haller’s No. 1162. In publishing the former name, Chaix (in Villars Hist. Pl. Dauph. i. p. 335, 1786) gives no description, merely quoting “HALL. 1162.” Schrank’s original description of R. divaricatus (Baiers Fl. ii. 104, 1789) is as follows:—“Der Stengel schwimmend; Die Blätter zusammen-gesetzt, tellerförmig; die Theile haarförmig, auseinanderstehend. Auseinanderfahrender Hahnenfusz. Ranunculus caule fluitante, petiolis unifloris, foliis capillaris, lacinii divergentibus. Hall. hist. n. 1162. Foeniculum aquatique Tabern. 187, ganz gut.” Schrank’s diagnosis is equally applicable to R. trichophyllus and R. circinatus, with the exception of the term “tellerförmig,” i.e. salver-shaped, which more aptly describes the leaves of the latter species, with the segments branching laterally only, than those of the former, where the branching of the segments is not in one plane. This appears to be the only point in favour of R. circinatus being intended. When we come to examine the citations from other authors the evidence seems overwhelmingly in favour of the opposite view. To begin with, no one having R. circinatus in view could possibly refer to Tabernemontanus’s figure as “entirely good,” it being in fact an excellent representation of R. trichophyllus. Again, the citation of Haller’s type brings in Barrelier t. 566, which is also R. trichophyllus. The strongest point, however, in favour of R. circinatus only not being intended by Schrank is that Haller described a var. B of his No. 1162, which from his citing Plukenet’s figure (t. 55, f. 2) there is little doubt is
intended for \textit{R. circinatus}, and if Schrank discriminated \textit{R. circinatus} he would have quoted the var. \textit{\beta} rather than the type. It may therefore be concluded, we think, that Schrank did not discriminate between \textit{R. trichophyllus} and \textit{R. circinatus}, but that he merely took up Haller's species, which had been already named \textit{trichophyllus} by Chaix, and this being the case, it appears to us that \textit{R. circinatus} Sibthorp must stand.—H. & J. Groves.

**New Variety of Spergula arvensis L.—** A small form of \textit{Spergula} has been under consideration for some years, sent me from Guernsey first by Mr. J. W. White in 1890, when I wrote out a description of it, thinking it was at least new to Britain. For several years I waited for fuller material, and for ripe fruit; and then in the same season fruiting specimens were given me by Mr. White from Jersey, and Miss Dawber from Guernsey. I sowed some seed at once, but only one plant escaped slugs, and that came on too late and died before flowering. This plant, however, maintained the dwarf habit, and was prostrate in this early stage. The seeds being densely papillose bring it under var. \textit{vulgaris} Koch. My thanks are due to Mr. E. G. Baker for comparing my specimens with those in the British Museum of var. \textit{glutinosa} Lange, which differs from the new variety in being a larger plant, densely glandular-pubescent and in the seeds being white-marginied; and also for giving me the original description of var. \textit{gracilis} E. Petit, which is chiefly distinguished by the \textit{acute} sepal. I append a description:

**Spergula arvensis L. var. \textit{nana}, nov. var.** Stems several, 1–6 in. long, prostrate or decumbent, usually very short. Leaves \(\frac{1}{8}–\frac{1}{2}\) in., rigid, about as long as the internodes. Flowers \(\frac{3}{4}\) in. diam. at the base of the few-flowered cymes, smaller upwards; sepals broadly ovate-oblong, obtuse, glandular-pubescent on the back. Capsules subglobose, lowest (largest) \(\frac{3}{4}\) in. diam., smaller upwards, on pedicels twice as long, more or less; seeds densely papillose, smaller than the type, wing black. This variety grows on dry spots near the shore in Guernsey and Jersey, and is soon over, flowering in April and even in late March, and fruiting in May. It is not much earlier than the type, which also fruits in May in dry sunny spots in Hants and Dorset, but the latter goes on springing up through the summer and autumn and fruiting as late as October and November.—E. F. Linton.

**Calamagrostis lanceolata Roth in Essex.—** This plant, which is queried for Essex in \textit{Top. Bot.}, I saw in August growing sparingly on the swampy border of a pond in the parish of Maplestead, North Essex.—G. Claridge Druce.

**Branching in Palms.—** Mr. Ridley has a paper on this subject in the \textit{Annals of Botany} for July, which contains observations additional to those published by Sir D. Morris in \textit{Journ. Linn. Soc.} xxix. (1892). Neither writer refers to the interesting note by Mr. H. O. Forbes published (with a plate) in this \textit{Journal} for 1879, p. 193, on a cocoa-nut palm which at about that date had twenty-five living axillary branches, with sears of fifty-two.
Parietaria officinalis L. (Journ. Bot. 1906, 429; 1907, 34).—Dr. Vigurs points out that the action of the stamens in this plant was fully described by Curtis in the Flora Londinensis, who says: "The curious manner in which these flowers shed their pollen, or fertilizing dust, is known to most botanists, but may be new to some of our readers; each filament has a peculiarity of structure which renders it highly elastic; there are four of them in number; on their first appearance they all bend inward; as soon as the pollen is arrived at a proper state to be discharged, the warmth of the sun, or the least touch from the point of a pin, will make them instantly fly back with a degree of force, and discharge a little cloud of dust. This process is best seen in a morning when the sun shines on the plant, in July and August; if the plant be large, numbers will be seen exploding at the same instant."

Archibald Sinclair.—In the parish churchyard, Penarth, Glamorgan, there is a well-preserved tomb bearing the following inscription:—"Sacred to the memory of Archibald Sinclair of the town of Cardiff, who was one of the Harbingers of His Majesty George III., a justly celebrated and scientific botanist. He died Oct. the 7th, 1795, aged 64 years." I can find no reference to his work either in the Biographical Index or elsewhere, and should be glad to obtain some indication of his claim to the position he appears to have held among his contemporaries.—A. H. Trow.

[The name of Archibald Sinclair was previously unknown to us, and we have been unable to find any reference to him in botanical literature.—Ed. Journ. Bot.]

South Lancashire Notes.—I have found Sparganium neglectum Beeby in two localities near Walton recently. Since its discovery in West Lancashire by Messrs. Salmon and Thompson (Journ. Bot. 1902, p. 295) it has been detected in several fresh localities in the county, and it seems very probable that many of the stations for S. ramosum will be found to refer to this plant. A quantity of Senecio visciosus L. appeared in August on railway banks near Walton. The ground had been disturbed to make a temporary railway siding, but no fresh ballast was brought, so far as I could ascertain. The plant had certainly not occurred in this locality previously, as I have visited it several times a year for the past ten years. I have since learned that the Rev. S. Gasking has also found it this year on railway banks near Fazackerley, about two miles away. It is not recorded for the Lancashire side of the Mersey in the Flora of Liverpool.—J. A. Wheldon.

Orchis pyramidalis in Co. Down.—Whilst botanizing recently in company with Mr. J. Glover, in the woods of Mount Stewart, near Grey Abbey, Co. Down, we observed Orchis pyramidalis L. in fair quantity at one point. In the Cybele Hibernica the only record for the county is "Ballyholme '73, two plants."—A. A. Dallman.
NOTICE OF BOOK.


These handsome volumes, the result of much knowledge and investigation, provoke a feeling of regret that, being in many respects so good, they should not have been better. The authors have spared neither trouble nor expense; they have brought together a vast amount of information, much of it, in Dr. Henry's portion, hitherto unpublished; the work is well printed on good paper; the plates are numerous—sixty to each volume—and well chosen. And yet it must be said that, for want it would seem of a little consultation with folk versed in the arts of book-arrangement and book-production, the volumes as a whole distinctly fall short of the comparative perfection which they might easily have attained.

There is only one work with which this can fairly be compared, and that is Prof. Sargent's admirable Silva of North America. With such a model before them, it is difficult to understand why Mr. Elwes and Dr. Henry departed from it; for whenever they have done so it has been a departure for the worse. Prof. Sargent's book is arranged systematically; each description begins with a brief diagnosis, followed by a full bibliography; then comes a detailed description, with copious footnotes on the early history of the species, with incidental references to points of interest connected with structure, fertilization, and other matters, and, when the name is commemorative, a short but excellent biography of the person commemorated; each volume contains an excellent index. Mr. Elwes and Dr. Henry adopt no kind of arrangement—the first four genera treated are Fagus, Ailanthus, Sophora, and Arancaria; there is no index to the volumes, and the table of contents is not arranged alphabetically, so that one must run through it in order to know what is and is not in the book: even species belonging to the same genus appear in different volumes. The authors might at least, by beginning each genus on a right-hand page, have afforded purchasers an opportunity of arranging the work for binding in systematic order, but this has not been done. The bibliography is comparatively poor; the descriptions are full and doubtless excellent, the distribution is very well done, and there is ample evidence of a wide acquaintance with the literature of the subject; but we miss the miscellaneous but always pertinent notes which give an air of completeness to Prof. Sargent's work.

The care in small details which adds so much to the appearance of a book is manifest in the typographical arrangements, as well as in numberless small points which catch the eye on every page: e.g. "var. Floridana (Taxus floridana)" (i. 100)—the same name cannot correctly have a capital and a small initial; "Schl." (p. 101) is not a correct abbreviation for Schlechtendahl, nor is it right to cite "Schlechtendahl, Linnea"—it should be
"in Linnea"; "var. Chestnutensis" (p. 111, twice), "raised by William Paul of the Cheshunt Nursery," should of course be Chestnutensis; "Lee's Botany of Worcestershire" (p. 148), "Mr. R. Claridge Druce" (p. 153), "Ray, Synopsis 542" (p. 148)—there are only 482 pages in the book!

A more serious example of want of thoroughness will be found in the "List of reported Mistletoe-bearing Oaks in England" (vol. ii. p. 334); Mr. Elwes, who is responsible for the list, seems to have drawn it up in the most perfunctory manner. The subject is of sufficient interest to justify some historical research, but the earliest date in the list is 1857. No fewer than seven instances are included on the authority—surely neither original nor confidence-inspiring?—of "Leisure Hour, 1873" (apparently the date of publication); one at least might have been entered on the more satisfactory testimony of Mr. Townsend (see Fl. Hampshire, ed. 2, 189). The writer of this notice may be pardoned for feeling astonished to find himself entered as the authority for its occurrence near Plymouth in 1884, seeing that neither then nor at any other time has he been in that neighbourhood; it would seem that for "Britten, 1884" should be read "Lees, 1854" (see Phytol. n.s. i. 192), but this, according to Briggs (Fl. Plymouth, 178) was an error. Here, again, the arrangement is slipshod; no attempt has been made to bring the localities in one county together, and in some cases the county is not mentioned.

As will have been gathered from some of the names quoted, the title of the book is somewhat misleading; "the trees of Great Britain" are to be understood as including "all which grow naturally or are cultivated in Great Britain, and which have attained, or seem likely to attain, a size which justifies their being looked on as timber trees." Most of these the authors tell us, they "have seen with [their] own eyes and studied on the spot, both at home and abroad"; and the result is a mass of authenticated observation such as has seldom been brought together. The defects which we have pointed out, so far as these are remediable, will, we hope, be absent from future volumes, each of which, we trust, will be supplied with a proper index; those of arrangement, we fear, cannot be obviated, and they must interfere with the ready consultation of the work.

James Britten.

BOOK-NOTES, NEWS, &c.

Under the title Memorials of Linnaeus, Dr. Rendle has prepared and the Trustees have published a Guide to the collection of portraits, MSS., specimens and books exhibited at the Natural History Museum to commemorate the bicentenary of Linnaeus's birth. The exhibition contains objects lent by the Department of MSS. British Museum and by the Linnean Society, as well as others, including the original specimen of Linnea collected at Lycksele in Lapland by Linnaeus on May 29, 1732 and sent by
him to Gronovius with the suggestion that it should bear his name, from the Department of Botany. The Guide, which contains two portraits of Linnaeus, costs 3d., by post 4d.

The New Zealand Government has published an interesting report of the botanical survey of Kapiti Island undertaken by Dr. L. Cockayne in October, 1906. The report is accompanied by a number of excellent illustrations from photographs showing aspects of vegetation, with a list of the indigenous and introduced plants in which we note that Kirk's Sonchus oleraceus var. littoralis is raised to specific rank as S. littoralis. We think the Vienna rule as to the employment of capitals for names derived from persons should have been observed; we are glad to see that Kew has now fallen into line in this respect.

Two parts have been issued of Mr. Ridley's Materials for a Flora of the Malayan Peninsula, dealing with the monocotyledons. Of the value of the book, to which we may recur, there can be no doubt; but it is to be regretted that the convenience of those who use it has not been more carefully considered. Each part is paged separately, but has no index; the name of neither order nor genus appears at the top of the pages, which are occupied merely by repetitions of the title of the work. It is strange that matters of this sort are so constantly overlooked—e.g. in the indexes to the monographs of Das Pflanzenreich, the genus-name is always omitted from the headings of the index pages, thus hindering ready consultation.

The number of the Journal of the Linnean Society (Botany, xxxviii. 263) issued on July 11 marks the adoption of a new format: the increase in size undoubtedly gives it an appearance of greater importance, and must be regarded as an improvement. The number contains an interesting paper, with plate, by Mr. Hemsley on a three-spurred variety of Platanthera chlorantha which he names tricalearata; it was found by Miss D. R. Wilson near Sherborne, Dorset, in June 1906. Only one specimen was observed, and it may be doubted whether the abnormal condition deserves a varietal name. Other papers are on Hallieraenantha, a new genus of Acanthaceae, by Dr. Stapf; on the systematic position of Hectorella ceesitosa, by Dr. A. J. Ewart; on the origin of Angiosperms, by Messrs. Newell Arber & John Parkin; and a general report on the botanical results of the third Tanganyika expedition, conducted by Dr. W. A. Cunington in 1904-5, by Dr. Rendle.

Mr. A. W. Hill publishes in the New Phytologist for "June and July" (published in September) an interesting paper, illustrated by an excellent plate, on "The Natural Hybrid between the Cowslip and Oxlip." The New Phytologist will in future be published at the Botany School, Cambridge.

Dr. Theodore Cooke's careful Flora of the Presidency of Bombay is rapidly approaching completion; the recently issued part brings the enumeration down to the beginning of Araceae.
EDWARD ARTHUR LIONEL BATTERS.
(1860–1907.)

(with portrait.)

The brief paragraph in the September number announcing the sudden death of Mr. Edward Arthur Lionel Batters must have come as a painful shock to readers of this Journal. All who had the privilege of knowing him personally, of associating with him in the collection of marine algae, or of hearing his views upon questions of systematic distinction, must have felt that he was in the prime of his mental and bodily capacities, and had still many years of work and happiness before him. Stricken unsuspectedly with an attack of blood-poisoning which rapidly developed, he succumbed in three days, even before the danger of the case was recognized.

Born on December 26th, 1860, Mr. Batters was the fifth son of Mr. George Batters, of Enfield. He was educated at King's College School, London, and Trinity Hall, Cambridge, where he studied law; he proceeded to the degrees of B.A. and LL.B., and was called to the Bar at Lincoln's Inn. But having no taste for the career of a barrister, and not being dependent upon his profession, he abandoned law and devoted himself largely to the study of British marine algae. Natural History had indeed always attracted him even in his earliest years, as may be seen from the following extract from a letter written by his aunt, a resident of Berwick-on-Tweed:—"He was only seven years old when his mother died. In those early years before her death she spent many summers with us [at Berwick]. Her favourite haunt was by the seaside, gathering seaweeds and fossils. And when too young to pronounce long names, he would often find fossils and know them by their indentations. He first gained his love for seaweeds from his mother. And he began in earnest when very young, on being given Mrs. Gatty’s book, to search the shore and cave-pools for specimens. As his father was a self-taught geologist, so he was equally a self-taught algologist. His knowledge was intuitive. He had no help from anyone." Before entering Cambridge University he spent two or three years with a coach at Berwick-on-Tweed, thus enjoying unusual facilities for continuing his study of algae. Shortly after this he made the acquaintance of Mr. E. M. Holmes, who has supplied the following information to the editor:—"The only man who knows Batters's early days better than I do is Mr. R. I. Lynch, Curator, Botanic Garden, Cambridge. It was through him that I made Batters's acquaintance. Batters went to stay with his aunt at Berwick-on-Tweed, and there picked up a floating seaweed (Dasysa Muelleri, if I remember rightly). He tried to identify it at Cambridge, and, getting no help from the botanical staff there, applied to Mr. Lynch, who told him: 'If anyone can help you, it is Mr. Holmes.' Lynch knew me at Plymouth as an algologist before he went to Cambridge. I was able to identify it; and there sprang up an
acquaintance and friendship between us. Batters was not married at the time when I identified the *Dasya*, being a student at Cambridge. I stayed three days at Berwick with him when his aunt was away, and showed him *Codium* and *Cladophora arctiuscula* growing there, and *Dictyosiphon mesogloia* on the road to Holy Island, where we went (four miles across the mud) to get *Mertensia maritima*, and where I found *Carex incerta*. Every seaweed that he had not got I gave him a duplicate of if I had one, and gave him the names and addresses of all my correspondents. I introduced him to Buffham, who in the first place came to me to know what remained to be done in the microscopic examination of algae. I told Buffham that the reproductive organs of several species were not known, indicating the groups and species. This work he did well, being a first-class microscopist. Indeed, he taught Batters what he knew of microscopic work, and helped him to choose his lenses. I also indicated to Batters, and to Traill before I knew Batters, the plants that should be looked for in the north, and many of these they found. Batters, having a keen eye and being an excellent draughtsman (he comes of an artistic family), found also several new species and described them. Concerning them I gave him what help I could, and when I could not determine what they were, being too busy teaching *Materia Medica*, &c., I told him to whom to send them."

The first important paper published by Mr. Batters was his "List of the Marine Algae of Berwick-on-Tweed" (*Trans. Berwickshire Naturalists' Club*, 1889, 171 pp., 5 plates), in which he revealed to the public for the first time what a remarkable knowledge he had already acquired of marine algae. He tells us that for several years he had visited Berwick at all seasons for the purpose of collecting, and that with very few exceptions he had himself gathered every species recorded in the list. The excellent plan of the book shows the author's capacity for marshalling his facts, and the critical notes are evidence of his powers of observation.

In 1890 he collaborated with Mr. Holmes in the production of a "Revised List of the British Marine Algae" (*Annals of Botany*, v. pp. 63-107). This was a check-list with the distribution of the species broadly indicated; and in it a new classification was adopted more in accordance with the advance of knowledge, Mr. Batters taking the *Cyanophyceae* and *Phaeophyceae*, and Mr. Holmes the *Chlorophyceae* and *Rhodophyceae*.

His first contribution to the *Journal of Botany* was a "Hand-list of the Algae of the Clyde Sea Area" (1891, pp. 212-214; 229-236; 274-283, with map), compiled at a time when there was considerable activity in the biological research of this region. In the years that followed he contributed to the Journal a number of short papers treating of new or critical British algae, among the novelties there described being the following genera new to science:—*Goniomphyllum*, *Colaconema*, *Trailliella*, *Porphyrodiscus*, *Neevea*, *Rhodophysema*, *Erythrodermis*. Another new genus, *Conchocelis*, a perforating alga, was described in the *Phycological

In 1892 he gave his aid to Mr. Massee in editing Grevillea, taking charge of the portion devoted to algae, and contributing to each number a systematic paper and most of the biographical notices. That periodical came to an end in 1894, in which year Mr. Batters published a “Provisional List of the Marine Algae of Essex” in the Essex Naturalist, and a paper “On Acrosiphonia Trailli, a new British Alga,” in Trans. Bot. Soc. Edinburgh.

His most important contribution to alology was the “Catalogue of the British Marine Algae,” which was issued as a Supplement to this Journal in 1902. It is a list of all the species of seaweeds known to occur on the shores of the British Islands, with the localities where they are found. This is the most exhaustive exposition of the systematic arrangement and of the local distribution of the British marine algae that has yet been published, and was the framework on which he intended to build the much-needed handbook which we all anxiously awaited from him, and which he was so eminently competent to produce. It was indeed currently supposed that his manuscript for this was almost ready for press. But a thorough search has clearly shown that nothing more than a fragmentary beginning of the work was made. Possessed of an unflagging memory, he was easily able to store in his mind all that wealth of facts and details which he so willingly put at the disposal of those who questioned him. This wonderful knowledge, save in so far as it is roughly recorded in his field note-books, is all lost.

His herbarium is estimated to contain upwards of 10,000 British and 3000 exotic specimens, and includes the collections of Mrs. Mary P. Merrifield and of the Rev. John Hutton Pollexfen, M.D. An obituary notice of the latter was contributed by Mr. Batters to this Journal in 1899 (pp. 438, 439). He also possessed more than 3000 microscope-slides. These, with his herbarium and manuscripts, are now lodged in the British Museum with a view to their acquisition.

Mr. Batters possessed great powers of organization. A few years ago the affairs of a coal-mine in which he was interested were left in a state of confusion on the sudden death of the chairman. Mr. Batters was appointed to the vacant chair, though knowing nothing of the working of the mine. In a few months he had obtained a complete mastery of all the details, and soon succeeded in putting the whole business into such excellent working order as to astonish and delight the grey-beards on the board of directors.

As mentioned above, Mr. Batters inherited artistic ability, which he manifested in various ways; for instance, he recently executed some admirable wood-carving from his own designs, though uninstructed in the art.

Both as a friend and as a botanist he will be sorely missed. His kindly, modest, unselfish nature made him beloved by every-
one with whom he came in contact. In his particular branch of botany his loss is quite irreparable. Such a good systematist and collector is a rare treasure nowadays. The knowledge which he possessed is not to be learned from books or classes, and demands both natural aptitude and years of observation and study.

His name is commemorated in the genus Battersia founded by Reinke in 1890 (Ber. deutsch. bot. Ges. viii. p. 205) upon a Ralfsia-like brown alga of the family Sphacelariaceae collected near Berwick.

A. & E. S. Gepp.

NOTES UPON HIND'S FLORA OF SUFFOLK.

BY C. F. SALMON, F.L.S.

Whilst preparing an article upon the flowering plants of Suffolk for the Victorian History of the county, it seemed a suitable time to take advantage of Dr. Hind's suggestion in the preface to his Flora:—"Whilst the Flora has been in progress, a Herbarium of Suffolk has also been in course of preparation. . . . As it is to be placed in the Ipswich Museum . . . it will be available for future students of Suffolk Botany; and it will serve as a test of the correctness, or the contrary, of the genera and species as set forth in this work." By the kind permission of the Museum authorities I was allowed to examine the Herbarium at Ipswich, and to borrow many of the more critical forms for careful study.

The notes which follow show the result of this examination, and must be compared side by side with the Flora; particular note must be taken that the comments refer only to the plants from the localities cited and not to the species generally.

The opportunity has been taken to add a few records (distinguished by an asterisk) which appear to be new to their respective divisions of the Flora: all the other plants may be found in the Ipswich Museum.

I wish to thank, for much critical help, Messrs. A. Bennett, J. Groves (Ranunculus, Characeae, &c.), Rev. E. F. Linton (Rosa, Salix, &c.), Rev. E. S. Marshall (Carex, &c.), and Rev. W. Moyle Rogers (Rubus).


42. Fumaria confusa Jord. 3. Bradwell. Hopton = F. offici-

45. *Barbara stricta* Andrz. 1. Thurston. A form of *B. vulgaris* which approaches *B. stricta* in some features, but will not match Kew or York examples of the true small-flowered plant.— *B. intermedia* Bor. 2. Nayland = *B. praecox* R. Br.


56. *Alyssum calycinum* L. *3*. Easton Bavents, 1896!


68. *Viola lutea* Huds. 1. Barnham Heath. Does not seem to be lutea, but one of the tricolor group nearest carpatica Borbas.


71. *Polygala vulgaris* L. var. *P. depressa* Wender. 2. Thurlow. Specimen poor; probably *vulgaris*.


95. *Geranium pratense* L. 1. Livermere. On the label is written, " Possibly introduced."


123. *Lathyrus palustris* L. 1. Near Euston Bridge (? Norf. or Suff.). Mr. Bennett tells me that this locality is in Norfolk.


189. \textit{Valeriana officinalis} L. b. V. \textit{Sambucifolia} Mikan. 1. Ixworth Thorpe = \textit{V. Mikani} Syme.  
190. \textit{Valerianella carinata} Loisel. 2. Nayland = \textit{V. olitoria}.  
194. \textit{Aster Novi-Belgii} L. The Redgrave Fen plant is \textit{A. salignus} Willd.  
211. \textit{Arctium nemorosum} Lej. 1. Fakenham Wood = \textit{a minus} form.—\textit{A. intermedium} Lange. 1. The examples from Fakenham, Stanton, and Troston are all \textit{A. minus}.  
235. \textit{Erythraea littoralis} Fr. 1. Brandon and between Wangford and Lakenheath. Specimens from these localities do not agree with \textit{E. littoralis} (which is rare in southern England), and are better placed as narrow-leaved forms of \textit{E. Centaurium}; see \textit{Bot. Rec. Club Rep.} for 1883, p. 43.  
256. \textit{Scrophularia umbrosa} Dum. 1. Hindenclay Wood. This should be gathered again before being definitely included in the \textit{Suffolk Flora}; the specimen preserved is very immature and unsatisfactory, so much so that one well-known botanist hesitated to place it under \textit{Scrophularia} at all!  
275. \textit{Galeopsis dubia} Leers. Exceeding doubtful as a Suffolk species if only based upon the record in \textit{Phytol. N. S. vi. 368 (1862) (q. v.)}.  
280. \textit{Utricularia neglecta} Lehm. 3. Kessingland and Belton = \textit{U. vulgaris}.  
287. \textit{Statice Limonium} L. 5. Chelmondiston. Good specimens of \textit{L. Neumani} (= \textit{S. Limonium} x \textit{bahusiensis}) occurred
amongst the examples from this locality, which also produces true bahusiensis.

288. Plantago Coronopus L. The Southwold "P. multispicata" is merely a monstrous form.—P. major L. The panicled form from Worlingham is also a monstrosity.


296. Atriplex deltoiddea Bab. 1. Fakenham. 5. Stutton = A. hastata L.

304. Polygonum Raiz Bab. 5. Landguard Fort. A likely enough spot for this, but the plant preserved is only *P. aviculare* L. var. agrestinum Jord. Unless known elsewhere in the county, the record for Suffolk must disappear.

305. Daphne Mezereum L. 1. Hawstead. A mistake; this locality should stand for the next species, *D. Laureola*.

397. Asarum europæum L. 4. Wortham. The specimen is labelled "cult."


A NATURAL BERBERIS-HYBRID IN ENGLAND.

By Rev. E. S. Marshall, M.A., F.L.S.

On September 23rd, 1907, I found a very large Barberry-shrub, extending for about twenty feet and fully ten feet high, in the hedgerow of a narrow, unfrequented lane, midway between the hamlet of Bossington and Hurlstone Point, v.-c. 5 S. Somerset. Its general appearance is that of a very fine B. vulgaris, and I should probably have passed it by, but for the very different fruit. A brief examination of the characters convinced me that it was a hybrid between the common Barberry and the shrubbery plant of our gardens, B. aquifolium; and this determination is fully borne out by comparison with the parents, which I happen to have growing. B. vulgaris occurs in a wood above Bossington, as well as in several hedges about Allerford and Selworthy, and I think it probably native. B. aquifolium is occasionally planted as cover for game, and may have been thus introduced on the Acland property. I believe that B. vulgaris is the female parent; the agency both of insects and birds must, I think, have contributed to its production, as the locality is about half a mile from the nearest house.

B. aquifolium × vulgaris.—Bark grey-brown on the older, yellowish on the younger, wood. Thorns mostly in groups of three, as in vulgaris, but as a rule shorter, seldom exceeding \( \frac{3}{4} \) in. Leaves simple, rather light green, sessile or shortly stalked.
(dark shining green in aquifolium, about 6 in. long, with usually three pairs of leaflets besides the terminal one), 1 to 2 in. long and up to 1 in. broad, coriaceous and probably evergreen, glabrous; veins very numerous, strong, prominent above when dry; sub-entire and smaller upwards on the young shoots, more or less distinctly prickle-toothed (holly-like) and occasionally laciniate lower down, and on the older branches. Fruit abundantly produced, varying from round to oval, bright red when half ripe, ultimately almost black, with abundant glaucous bloom and dark crimson juice; style distinct, stout, crowned by the broader stigma. Racemes rather short, 1¼ to 1½ in. long (about 1 in. in vulgaris, about 2½ in. aquifolium, which is similar in the shape and colour of the fruit, but has the sessile stigma depressed when ripe). Seeds apparently perfect.

It is curious that this plant should so strongly incline towards one species in habit, armature, and simple foliage, and to the other in fruit. Dr. Focke's remarks (Pflanzenmischlinge, p. 22) are so interesting that I translate them in full:—

"Mahonia.

"Several closely related species (B. aquifolium Pursh., B. fascicularis Lindl., B. nervosa Pursh., and B. repens Lindl.) have been introduced from North America into European gardens. The genuine types are fairly well characterized, and can be distinguished without much difficulty; but in European gardens they have merged through manifold crossings into one extremely variable, but in all its forms fully fertile, 'mixed species' (Mischart). The first hybrid of the kind, a B. aquifolium × fascicularis, was already distributed by Rivers, the nurseryman, before 1850. For example, about 1855 my father planted a number of Mahonias from England. As they thrrove better in the dry sand of his garden than any other cultivated plants, he sowed the seeds of different kinds separately, but obtained from each sowing a variety of forms, which it seemed quite hopeless to keep apart. Since then these shrubs have increased remarkably by self-sowing; all the specimens are very fertile, but one can with difficulty find two bushes among them which exactly resemble each other.

"Mahonia × Euberberis.

"Berb. vulgaris L. var. atropurpurea hort. × aquifolium Pursh. was of accidental origin in A. N. Baumann's garden at Bollweiler, in Alsace, and was introduced into horticulture under the name of B. Neuberti. It is more like B. vulgaris, but is evergreen and has prickly leaves."

The Somerset plant appears to be the first known instance of a quasi-wild hybrid in the genus. My garden shrub agrees well with the description of true B. aquifolium Pursh., and has none of the characters of B. fascicularis or B. nervosa.
NOTES ON THE FLORA OF THE CHANNEL ISLANDS.

BY G. CLARIDGE DRUCE, M.A., F.L.S.

In June and July of the sunny year 1906 I revisited the Channel Isles after an absence of twenty-nine years. The prolonged drought had burned up the annuals and small Leguminosae, but still much of interest was left, even on the dry sand-dunes of St. Ouen’s in Jersey, of L’Ancresse, Guernsey, or Longy Bay in Alderney. Naturally the intervening years had left their mark on the places visited; St. Aubin’s Bay, which in 1877 had some considerable area of aboriginal soil, has now to a great extent been built upon, the marshes drained, and a sea-wall built, much to the detriment of many local species, and to the actual extirpation of Ranunculus ophioglossifolius, while the existence of Allium sphaerocephalon in its only locality in the islands is imminently threatened. At St. Ouen’s the apparently useless sea-wall has destroyed the locality for Diotis, and the golfers in their wild and wandering course do an unnecessary amount of damage. Building operations at St. Aubin’s and St. Helier’s have exercised their usual malevolent influence. Still, the wide expanse of sand-dunes at St. Ouen’s remains much as it was, so far as its natural conditions go, but the spread of Statice plantaginea, Brassica Cheiranthus, and especially of the introduced Lagurus, is very remarkable. The Cape of Good Hope Gnaphalium undulatum has come to stay, and before a decade has passed Senecio Cineraria will doubtless have become established. Enotera odorata has much extended its range in the island, and the profusion of Kentranthus ruber in three tints of colour is a prominent feature at St. Helier’s.

In Guernsey, especially on the eastern side, there has been a much greater change, the extensive granite quarries have transformed the face of the earth; the destruction of the old salt-pans at St. Sampson’s is complete, the site being now occupied by glass-houses or other buildings, and Suaeda fruticosa and Polygonum monspeliense, which I once gathered there, are now extinct. The marshes of the Grande Mare have become much smaller by drainage, and what is left is less rich than formerly, the local species—Spiranthes aestivalis, Pyrola rotundifolia, and Carex punctata—being now quite rare. The golfers have settled upon L’Ancresse, and over the whole island there has been a great eruption of habitations and glass-houses. To make up for plant diminution Allium Ampeloprasum appears to be now more frequent near St. Peter’s, and Erigeron macronatum, Gunnera chilensis, and Trachelium caruleum are now established aliens.

The two excellent local floras—that of Jersey, by Mr. Lester-Garland, and the very comprehensive work on Guernsey and the adjacent islands by Mr. E. D. Marquand—deal very thoroughly and scientifically with the flora.

Notwithstanding the havoc which the spread of population and increasing attention to cultivation has caused, these islands
are still most interesting botanical ground, and the peculiarities of plant distribution are again and again brought to one's notice. Why should there be no 
Medicago of any kind or Geranium Robertianum in Sark? Why has Jersey no Caltha, Isoetes hystrix, Ophioglossum lusitanicum, Briza media, Rubus idæus, Prunus insititia, or Senecio aquaticus? and why should Jersey have Nar
dus, Corynephorus, Carex binervis, Papaver Argemone, Geranium lucidum, and many other species which are absent from Guernsey? More puzzling still is the flora of that small islet Burhou, near Alderney, which from the distance looks covered with verdure, and yet possesses not a species of grass, the green colouring being due to 
Pteris and Spergularia rupestris. Nor is there a single Composite, although there is a small patch of Scirpus maritimus, which does not occur on the adjacent island of Alderney. The absence of aboriginal woodland in the islands accounts for the non-existence of such sylvan species as Oxalis Acetosella, &c.

The glory of the Jersey flora is the masses of colour produced by that eminently Mediterranean species 
Echium plantagineum, by the beautifully contrasted foliage and blossom of 
Brassica Cheiranthus, by the pale gold of 
Raphanus maritimus, or the artistic tints of 
Mathiola sinuata. Then there are the lilac-pink flowers of 
Statice plantaginacea, the pale pink of 
Tunica prolifera, the rich dark rose of the fragrant 
Dianthus gallicus, the patches of straggling foliage and pale-red flowers of 
Centaurea aspera, and the down-like panicles of the introduced 
Lagurus ovatus. In Guernsey, the shady lanes lined with ferns, the hedges and way
sides here and there adorned with the beautiful 
Fumaria capreolata or speciosa, and more abundantly by the luxuriant F. Borei, and the beautiful growth of 
Agropyron junceum and its hybrids on the coast are characteristic features. In Alderney, the rich profusion of 
Brassica inaea, which impressed Babington on his visit, is still a great feature, nor less remarkable are the enormous spikes of 
Orobanche amethystea growing on the glaucous 
Eryngium; the rank abundance of 
Salvia Verbenaca is also a characteristic feature, while the occurrence of 
Orchis pyramidalis and Arabis hirsuta on the sand-dunes testifies to the large percentage of calcareous shell-débris which the soil contains. Nor must the beautiful patch of the rare 
Limonium lychnidifolium remain unnoticed, and the blue-flowered 
Orobanche purpurea, the rich bright rosy flowers of 
Ononis reclinata, and the clean-cut foliage of 
Bupleurum aristatum delight the botanist's eye.

To visit Sark after Alderney is like going from Kent to North Wales; the plants appear to flower about ten days later, while the difference in the species is very marked. The high cliffs surrounding Sark appear to have been an effectual barrier to the introduction of many species, and the absence of mobile sands necessarily limits the variety of the flora. While admitting there is great similarity as a whole between the flora of these islands with that of the adjoining French coast, it is the difference rather than the likeness which strikes one. This perhaps not so much in the relative occurrence of various species as in variations of
the same species. There is more than one would at first suspect that recalls the flora of South Devon and Cornwall. There is also the interesting evidence of a Peninsular, and indeed of a Mediterranean, element; as Mr. Lester-Garland says: "It was to be expected, a priori, that the mildness of the maritime climate of Western Europe would enable some of the southern plants to advance much further north than is possible in the interior of the Continent, and experience has proved that this expectation has been justified." He enumerated twenty-six species "whose proper home is on the shores of the Mediterranean and which straggle up the west coast of France, becoming rarer as they advance towards the north." Of these Mediterranean species, fourteen are not found in Britain. To those enumerated I am now enabled to add three species, two of which are almost certainly native elements of the island flora—Spergularia atheniensis, which has a wide range along the Mediterranean coast, and Orobanche Ritro var. hypocheroides, the type of which is limited to a few localities north of Marseilles, but here exists as an endemic variety on a different host-plant. Agrostis verticillacantha, which is abundant in Guernsey, may not be native, since it is said to be introduced in its only known station in north-western France in the environs of Cherbourg, but further research may establish its claims to a higher grade of citizenship. Besides these distinct species, we have a well-marked modification of Picris hieracioides in Alderney, of Leontodon nudicaulis in Guernsey and Alderney, of Vicia angustifolia in Jersey, and of Spergula arvensis in Guernsey, Jersey, and probably Alderney. Nor must the peculiar Saleica, which I have named Marquandii, from Guernsey be forgotten in this enumeration of the more striking features of the Channel Island Flora.

One of the joys of my visits (for since I wrote the foregoing I have, in the spring of 1907, again been to the islands in order to see Ophioglossum lusitanicum and Ranunculus flabellatus) was to meet with the veteran Mr. Piquet, now considerably over eighty, and to find him active and vigorous, and botanically as keen as ever. To him, to his son, to Mr. Lester-Garland, and Mr. E. D. Marquand my best thanks are due for their great kindness.

The following is a list of the more interesting forms noticed in localities which are mainly additional to those given in the published Floras. The sign † means an addition to the island.

_Ranunculus sceleratus_ L. Rare in Guernsey; I saw it at Perelle Bay.—_R. Flammula_ L. Not uncommon and variable. The large form, var. _serratus_ Pers., grew near St. Ouen's Pond, Jersey, and in the Grande Mare, Guernsey. On the damp spots on L'Ancresse Common _R. Flammula_ occurred as a diminutive form with the facies of _R. reptans_ L., but it was not creeping. In the damp gully near Grosnez, Jersey, it occurred as a small stout form.—_R. Lingua_ L. still occurs in the pond on Longy Common, Alderney, the only locality in the Channel Isles.—†_R. Steveni_
Andrj. In the Waterworks Valley, near Bouley Bay, Jersey. Near Vale, Guernsey.—*R. Boreanus* Jord. Trinity, Jersey; and as the *var. tomophyllus*, Grande Mare, Guernsey.—*R. Picaria* L. A form with more contiguous petals, that is, less star-like than usual, at Petit Bot, Guernsey, deserves further study.

*Papaver somniferum* L. As the *var. setigerum* and var. *glabrum*, Millbrook, Jersey.—*P. Rheas* L. *var. Pyrorii* Druce. St. Aubin’s, Jersey.—*P. dubium* L. *var. Lamottei* (Bor.). Sark.—*P. Argemone* L. Bel Royal, Jersey.

*Glaucium luteum* Scop. Not only on the coast, but also on the drifted sand inland, at Don Bridge, Jersey.

*Fumaria capreolata* L. Near Cobo, Guernsey. †Near Rozel, Jersey, 1877; not given for Jersey in the *Flora*.—*F. speciosa* Jord. Near Vale Castle, Guernsey; the first certain record. A very beautiful species. —*F. Boreai* Jord. Abundant in all the islands, as at St. Helier’s, St. Ouens, L’Etac, St. Aubin’s, &c., Jersey; Vale, Vazon, Cobo, St. Andrew’s, Perelle, &c., Guernsey; Dixcart, Vallette, &c., Sark; Braye, Longy, &c., Alderney. —*Var. serotina* Clavaud. Cobo, Guernsey. Under this, for the present, Mr. H. W. Pugsley, who has kindly named these *Fumarica*, puts a plant with almost globose fruit, indicating a passage to *F. muralis* Sond., which I gathered at Cobo and St. Andrew’s, Guernsey, and in Sark; but he says he has seen similar from Britain, and he believes it is a constant form, in which case it is perhaps worthy of a varietal name.—*Var. verna* Clavaud. Plants near to this grew at Millbrook, Jersey.—*F. confusa* Jord. Less common in the islands than *F. Boreai*, but still widely distributed and frequent. †St. Ouens, St. Helier’s, &c., Jersey, for which it is a new record, unless indeed it is the plant referred doubtfully to *F. muralis* in the *Flora of Jersey*. St. Martin’s, St. Andrew’s, Cobo, Vazon, Guernsey; Alderney; Sark.—*F. officinalis* L. Sark; new to the island. A lax rampant form in Alderney.

*Mathiola sinuata* Br. Was in splendid flower and very luxuriant in St. Ouens’ Bay, Jersey; one of our most beautiful species.

*Radicula Nasturtium-aquaticum* Rendle & Britten *var. microphylla* (Reichb.). Grosnez, Jersey.

†*Barbara verna* Aschers. (= *B. precox* R. Br.). Vallette; new to Sark.

*Cardamine pratensis* L. I only saw the variety †*palustris* (Peterm.) in the islands.—*C. flexuosa* With. La Haule, Jersey.

*Arabis hirsuta* R. Br. Rather plentiful on the sand-hills which are partly covered with vegetation; the sand here contains a considerable percentage of shells, thus affording a calcareous soil. *Cochlearia Armoracia* L. Alien; Bel Royal, Jersey.—*C. danica* L. Often growing on walls, as well as on rocks and in turf, as at St. Helier’s, Jersey, and Petit Bot, Guernsey.

*Alyssum maritimum* Lam. West Mount, &c., Jersey.

*Sisymbrium officinale* Scop. †*var. leiocarpus* (Jord.). Vale, Guernsey. Also in Sark, but the type is the commoner plant.

*Brassica Cheiranthus* Vill. Much increased in frequency in
Jersey, and a very beautiful species; also at Vale, in Guernsey, but I was unable to find it in Alderney. — B. incana Doell. (= B. adpressa Boiss.). Remarkably abundant in Alderney; also in several places in Jersey, as at Don Bridge. At Braye, Alderney, the var. hirta, described by Babington in Prim. Fl. Sarn. as having "Silquis hirtis rostro glabro," under the name of Erucastrum incanum Koch var. hirtum, also occurred. — B. Rapa L. †var. Briggsii H. C. Wats. Near Millbrook, as a casual.—B. alba Boiss. Casual; St. Saviour's, Jersey.—B. nigra Koch. At St. Aubin's, Jersey.

Diplotaxis muralis DC. var. Babingtonii Syme. Bel Royal, Jersey.

Lepidium Draba L. St. Luke's, Jersey; St. Martin's, Guernsey.

†Erophila procox DC. At L'Ancrese, &c., Guernsey; †near St. Aubin's, Jersey.

†Coronopus didymus Sm. Near the Harbour, Sark; new to the island.—C. Ruellii All. St. Helier's, St. Luke's, Jersey.

Thlaspi arvense L. St. Luke's, Jersey; rare.

Raphanus maritimus Sm. †var. alba. On the sands of St. Ouen's Bay. With the type, which was in great plenty, occurred many plants with pure white flowers. On June 23rd the bright flowers of this species was a conspicuous feature in the flora, on the 30th the petals were practically absent, so short in this year was the flowering season. The type is common at West Mount and Bel Royal, Jersey.

Reseda alba L. As a casual, Beaumont, Jersey.

†Viola canina L. The sand-hill form, with leaves suggesting lactea, near La Moye, new to Jersey, as the old record was almost certainly for the aggregate plant. Also from Petit Bot, Guernsey, as the var. ericetorum.—V. nana Godr. Abundant among the short vegetation on the sand-dunes of the Quenvais and St. Ouen's, Jersey, and on L'Ancrese Common, Guernsey. The flowers are very small, and usually very pale yellow, but in spring the bluish petalled form was commoner.—†V. obtusifolia Jord. Sark.

Helianthemum guttatum Mill. I found a few plants with unspotted petals near Fiquet Bay, Jersey, but the dry season had practically burned up the greater part of the plants. This form had not been noted by Mr. Lester-Garland.

Polygala oxyptera Reichb. Common on the sand-dunes of St. Ouen's Bay.

Silene latifolia Rendle & Britten (= S. inflata Sm.). Rare; near Bel Royal, Jersey. Also near Vale, Guernsey, where the plant is very rare. Both plants appeared to be the var. brachiatus (Jord.).—†S. dubia Herbich (= S. nutans L. var. dubia (Herb.)). St. Aubin's towards Portelet, Beauport, Don Bridge. Possibly this is the only form of S. nutans in Jersey.

†Lychnis alba × dioica. St. Aubin's, Jersey; near St. Martin's and Vale, Guernsey. — L. Githago Scop. Rare; Bel Royal, Jersey.

Dianthus gallicus Pers. This was just in flower in June. It
is confined to a single spot on the dunes, but there it is very abundant and increasing. Some of the plants have very large woody tap-roots; but I believe the plant has been introduced within the last twenty years, as it is scarcely possible for so conspicuous and beautiful a species to have escaped attention. The flowers are deliciously fragrant.—\textit{D. deltoides} L. One spot near Bouley Bay (Mr. Piquet).

\textit{Cerastium tetrandrum} Curt. In all the islands, but the drought had dried it up in most cases. On the cliffs near Essex Castle, Alderney, a plant allied to this occurs; it is similar to one I found on a colline near Hyères. The leaves are broader and a darker green than the type, and the plant forms dense tufts; the peduncles are elongated.—\textit{C. vulgatum} L. (\textit{C. triviale} Link). At St. Aubin’s, Jersey, a form occurred as a tall rigid plant having clustered cymes and short capsules, and shorter, broader, and less acuminate sepals. That this is not the result of dryness of soil is shown by some plants which I gathered in the driest parts of the Quenvais, which, although much reduced in size (about a sixth of the St. Aubin’s plant), have the long peduncle, the long capsule, and more acute and narrow sepals of the typical plant. In other plants from the Quenvais and St. Aubin’s the sepals were very narrow and elongate, suggesting the influence of \textit{tetrandrum}.—\textit{Var. pentandrum} Syme. This annual dwarfed form occurred at Petit Bot Bay, Guernsey.

\textit{Sagina maritima} Don. At St. Helier’s, Jersey, and at Vazon, Guernsey, it occurred as the \textit{var. densa} (Jord.); in Alderney, at the Corblets, and on West Mount, Jersey, as the \textit{var. debilis} (Jord.). A plant from Fort Essex, Alderney, is near \textit{var. prostrata} Towns.—\textit{S. apetala} Ard. Common and luxuriant in all the islands. —\textit{S. ciliata} Fries. \textit{†Dicart}; now to Sark. In Alderney very uxuriant as the \textit{var. ambigua} at Corblets. Also on West Mount, Jersey.—\textit{Var. patula} (Jord.). At St. Helier’s, &c., Jersey, and Alderney; and it is the commoner form in Guernsey. Marquand says \textit{patula} has glandular peduncles. Some of the plants were large, prostrate, and very glandular. All four species of \textit{Sagina} grew close to the Grand Hotel, Jersey.

\textit{Arenaria leptoclados} Guss. \textit{†var. visoidula} Rouy & Fouc. At Corblets, Alderney, and the Quenvais, Jersey. —\textit{A. serpyllifolia} L. In all the islands; and as the \textit{var. macrocarpa} Lloyd on the Quenvais, Jersey.

\textit{Stellaria media} With. \textit{var. apetala} Gaudin (S. Boréana Jord.). Plentiful at St. Aubin’s, Jersey, and L’Ancresse, Guernsey.

\textit{Spergula arvensis} L. (\textit{S. vulgaris} Boenn.). Alone noticed. Near La Vallette, Sark, a very large form was observed with larger flowers than the normal plant; it is near to, if not identical with, the \textit{†var. maxima} Weihe.—\textit{Var. nana} E. F. Linton. In our chief floras the habitat of \textit{Spergula arvensis} is given as “cultivated ground,” and its time of flowering from “June to August.” Dunn, in the \textit{Alien Flora}, it is true, says: “Native on the shores of the Mediterranean Sea, and, more rarely so, in other parts of Europe, including Britain. In this country it is, however, much more
common as a weed of sandy cultivated ground." This form is, however, a native of the short close turf on the coast of Guernsey, being especially abundant about Petit Bot Bay and L'Ancreuse, Guernsey, and also occurring in Alderney and Jersey. Mr. Marquand has known it for many years, and the Rev. E. F. Linton (see his note, p. 380) has had it in cultivation. It is one of the earliest species to flower, being in full bloom in February and March. The habit is that of Sagina procumbens for which, in the flowerless condition, the rosettes, from 1 to 3 in. across, might be mistaken. The seeds are papillate; the plant is more or less glandular, but less conspicuously so than in the type.

_Spergularia rubra_ L. Abundant in Jersey, and often a very luxuriant plant.—_S. rupestris_ Lebel. Common in Jersey, Guernsey, and Alderney, and forming a large part of the vegetation of Berhou (Marquand), and usually very glandular. In cultivation the plant is much altered in appearance, losing its turgidity, and becoming a slender straggling plant. — _S. neglecta_ Syme. Corbière Rocks; only one station given in the Jersey Flora. — *S. atheniensis* Aschers. (= _S. diandra_ Boiss. var. _atheniensis* mihi). Near St. Helier's, Jersey, on mobile sand. This plant, which has a wide range of distribution along the Mediterranean coast of Europe, from Phaleron, near Athens, to Cadiz, does not appear to have been recorded for the north-western coast of France. It differs from _S. rubra_ by the stipules being blunt and broadly triangular and dull, not narrow-lanceolate and silvery white in colour. The central rosette of leaves characteristic of _S. rubra_ is also lacking; the seeds are larger; the capsule also differs in shape. From _S. neglecta_ it may be known by its much smaller capsule, more slender branches, and different habit.

_Polycarpon tetraphyllum_ L. This plant, as Mr. Lester-Garland points out, exists under two different modifications. The one, which may be taken as the type, is found by the waysides, at the base of walls, and in cultivated ground, and is the much larger plant, with larger and darker-coloured leaves, and more numerous flowers. The second is a much smaller plant, of a yellowish-red tint, with fewer flowers, and a very different habit. This is found on the sand-dunes and other dry uncultivated places. I was too late to find it in flower in 1906, and too early in 1907, but it has much the appearance of _P. alsinifolium_ DC., which is said to differ in the number of the stamens, having five, while _P. tetraphyllum_ has three only. Corbière admits it as a native of the sand-dunes in Normandy, but Rouy & Foucaud (Fl. France, iii. 313) say it is limited to the Mediterranean. In Alderney a less extreme form (_P. tetraphyllum_ var. _densum_ Rouy & Foucaud) was found on the dunes.

_Hypericum linariifoUum_ Vahl. Fiquet Bay. — _H. humifusum_ L. Occurs often as a larger plant with broader leaves than the common English form. I saw no specimens suggesting hybridity.

_Lavatera syUvestris_ Brot. A plant on the railway near Millbrook, Jersey, and another near the Grande Havre, Guernsey;
apparently casual only. — *L. arborea* L. Appears to be native in both islands.

*Malus moschata* L. var. *heterophylla* Lej. St. Ouen's, Jersey.

*Geranium sanguineum* L. Still exists as a patch about two yards across in Alderney. — *G. rotundifolium* L. Near Don Bridge, and in a native-looking situation at the north side of St. Ouen's Bay, Jersey. — *G. Robertianum* L. var. *purpureum* (Vill.). Under this name Mr. Lester-Garland puts a frequent Jersey plant with small flowers, which also occurs at Vale, &c., Guernsey. *G. Robertianum* is absent from Sark.

*Erodium cicutarium* L'Hérl. var. *pallidiflorum* (Jord.). A non-glandular pale-flowered form on the Quenvais, Jersey. — *E. moschatum* L'Hérl. The white-flowered plant is common at St. Ouen's Bay.

*Oxalis corniculata* L. This unstoloniferous plant of Jersey, which is common about St. Helier's, occurs also at L'Ancrese, &c., Guernsey. It is stipulate, and with strongly pubescent carpels. I do not adopt the views recently expressed by Mr. Robinson in *Journ. Bot.* 1906, 390, respecting the reversal of the names for the two *Oxalis* of our lists, but use them in the same sense as Syme, Hooker, and Babington do.

*(To be continued.)*

**NEW CHINESE PLANTS.**

BY S. T. DUNN, B.A., F.L.S.

*Prunus marginata*, sp. nov. Arbor parva, præter novelllos et inflorescentiam glabra. Ramuli cinnamonei. Folia oblongoelliptica, integra, margine cartilagineo, revoluta, 5–6 cm. longa, coriacea, supra nitentia, costa impressa, epunctata, subito obtuse acuminata, basi in petiolum 6 mm. longum gradatim angustata, venis obscuris. Racemi axillares, 2 cm. longi, pedunculo pubescente. Calycis tubus 2 mm. longus, interne sericeus, extus glaber; lobi 5, tubo æquilongi, lanceolati; petala 5, orbicularia, unguiculata, 3–4 mm. longa, staminibus longiora. Ovarium glabrum.

Kwantung, Peak of Lantao Island at 1500 ft. Hongkong Herb. 1430.

A near ally of the following species from which, however, it is at once distinguished by its tapering epunctate leaves.

*Prunus Fordiana*, sp. nov. Arbor parva, præter ramulusjuniores omnino glabra. Ramuli nigri, juniores puberuli. Folia elliptica, integra, margine cartilagineo, nigrescentia, 4–5 cm. longa, subcoriacea, supra nitentia, costa impressa, subito punctata, obtuse acuminata, basi cuneata, venis obscuris, petiolis 3 mm. longis. Flores ignoti. Racemi axillares, pedunculi communes 15 mm. longi; drupæ ovales, 8 mm. longæ, pedicellis 5 mm. longis.

Sanning, S. Kwantung. Dunn’s native collector. Hongkong Herb. 903.
Differs from *P. punctata* Hook. f. in its obscurely veined, margined leaves. The name of this species commemorates the admirable industry in investigating the Kwantung flora of my official predecessor, Mr. Charles Ford, I.S.O.

*Randia acutidens* Hemsl. and Wilson, var. *laxiflora* Dunn, var. nov. Cymae laxe trichomae, 3–5 cm. longae.


A considerable collection of Korean plants was made by the writer in the late summer of 1906, in the neighbourhood of the ports of Fusan and Mukpo and around the capital, with the object of supplying the deficiency of species from that region in the Colonial Herbarium at Hongkong. Although the present species was the only novelty observed, a number of plants were collected which had not been previously recorded as Korean.

*Loxostigma aureum*, sp. nov. Herba perennis. Rhizoma repens. Caulis 6–8 cm. longus, dense brunneo-lanatus. Folia, praeter 1–2, in apice cum bracteis foliaceis pedunculisque aggregata, ovata, breviter crenato-serrata, 6–10 cm. longa, membranacea, in venis tenuiter lanata, acuta, basi obtuse cuneata vel rotundata, nonnunquam obliqua, venis crebri, curvatis, ascendentibus, petiolis 1–2 cm. longis, sicut caulibus vestitis. Pedunculus filiformis, 2–3-florus, 2 cm. longus. Flores magni, pedicellis 5–10 mm. longis; calyx 5-partitus, lobis linearibus, subglabris, 7–8 mm. longis; corolla lutea; tubus medio amplius ore obliquus, breviter 5-lobatus, 6 cm. longus, basi 3 mm., medio 10 mm., ore 15 mm. latus, lobis rotundatis, 3–5 mm. longis. Stamina in media corolla liberata, os haud assequentia; ovarium angustum in stylum longum attenuatum.


*Chirita sinensis* Lindl. var. nov. *angustifolia*. Folia anguste lanceolata, in petiolum alatam gradatim attenuata.

Kwantung, Hongkong New Territories; in crevices of damp rocks amongst the northern precipices of Ma-on-Shan. Dunn's native collector. Hongkong Herb. 1135.
Both the type and variety affect damp mossy hollows, especially where water drips down over vertical rocks, and in such situations the former is common in the island and neighbouring parts of the mainland.

**Beilschmiedia Fordii**, sp. nov. Arbor 6–7 m. alta, omnino glabra. Folia sēpe opposita, lanceolata, integra, margine revoluta, 8–12 cm. longa, crassa coriacea, apice obtuse, basi gradatim acuminata, supra lucida, costa impressa, venis secundaris pluribus, obscuris, pinnatis, ascendentibus, petiolis 10–15 mm. longis. Cymae axillares, dense, 2–3 cm. longae, pedunculis 1 cm. longis. Calyx deciduus; segmenta obovata, 2 mm. longa; stamina eis æquilonga, antheris 2-locellatis; ovarium globulare, stylo brevi. Drupa ovalis, 14–18 mm. longa, utrinque rotundata, pedicello paullo incrassato.

A tree four feet in diameter at base. Happy Valley, Hongkong, 12. 8. 1881. *Ford.*

**Elaeagnus Tutcheri**, sp. nov. Frutex praeter foliorum paginam superiorem, ovaria, corollæque pubescentes omnino vestitas. Folia suborbicularia vel ovata, 4–8 cm. longa, subcoriacea, sēpe bullata, supra nitentia, venis utrinque paullo prominulis petiolis 6–8 mm. longis. Flores in racemis abbreviatis vel fasciculis axillaris dispositi, pedunculis 2–3 mm. longis. Calyx supra ovarium campanulatus, 7–8 mm. longus; tubus basi rotundatus, 3 mm. latus, lobis ovatis, erectis, mucronatis paullo longior; ovarium anguste ovatum, apice constrictum, 3 mm. longum. Drupa oblongo-ovata, utrinque rotundata, endocarpa sericea, utrinque 3-carinata.

Cape D’Aguillar, Hongkong, W. J. *Tutcher*. Hongkong Herb. 2105.

This interesting species appropriately bears the name of its discoverer, my friend and colleague Mr. Tutcher, who has for many years, and with marked success, devoted his spare time at the proper seasons to exploring the flora of the British territory.

---

**ALABASTRÁ DIVERSA.—PART XV.**

**By Spencer le M. Moore, B.Sc., F.L.S.**

(Continued from p. 334.)

4. **Note on some South American Plants.**

In this Journal for 1904 (pp. 33, 100) an account was given of the gamopetalous plants which M. A. Robert had recently sent home from Matto Grosso and northern Paraguay, with descriptions of the supposed novelties therein contained. A few omissions which have come under my notice are here supplied, and the opportunity is taken, while doing this, of remarking upon a few plants from my own South American collections.
Borraginaceae.

Saccellium sp. an S. lanceolatum Humb. & Bonpl. Pl. Equin. i. p. 47, t. 13?

Corumbá; Robert, 804.

This genus was founded by Humboldt and Bonpland in 1808 (l. c.) upon a specimen from Loxa in Peru. The description, however, was faulty in many respects, and it was not till several years after that Kunth's careful study of the fruit (Nov. Gen. et Sp. Pl. vii. 207) gave a clue to the affinity of the plant. Much doubt still remained respecting the genus, till in 1879 appeared Grisebach's Symbola ad Floram Argentinam, and there (p. 270) he describes a Saccellium, identified with S. lanceolatum Humb. & Bonpl., as occurring in the province of Oran. After Kunth's careful examination, the chief uncertainty à propos of Saccellium concerned the flower, Humboldt and Bonpland having described this as polypetalous, with antipetalous stamens. Grisebach, however, found the corolla to be gamopetalous, with the stamens inserted in the throat; and this statement I can confirm, although the flowers at my disposal (they are very small at time of pollination) have not been quite what one would desire.

I am not sure that Grisebach is correct in referring the Argentine plant to S. lanceolatum. To take the leaves alone, which is almost all we have to depend upon, these organs are lanceolate and six inches long in the type, whereas Grisebach's plant, like M. Robert's under notice, has oblong lanceolate leaves. The Göttingen professor gives no measurements; the Matto Grosso plant, in all probability conspecific with the Argentine, has much smaller leaves, only 1½-2½ inches in length. The name given above must therefore be regarded as provisional.

I have failed to find any recent record relating to this rare and interesting genus, and, so far as I am aware, this is the first announcement of a Brazilian habitat for it. But seeing that the neighbourhood of Corumbá has been visited lately by several zealous botanists, specimens of Saccellium most probably form part of their collections.

Bignoniaceae.


Sant' Anna da Chapada; Robert, 419 and 709.

Flowers were gathered in July, fruits in November.

Jacaranda (§ Monolobos) Roberti, sp. nov. Stirps humilis e rhizomate sat crasso caules breves ascendentes piloso-pubescentes et folia perpanca sese longe excedentia gignens, foliis bipinnatis 4-6-jugis pinnis oppositis vel suboppositis vel hac atque illac manifeste alternis imparipinnatis 5-20-jugis, foliolis oblongis vel lineari-ob lanceolatis apice mucronatis basi decurrentibus margine revolutis coriaceis fac. sup. glabris inf. piloso-pubescentibus juvenilibus aliquantulum bullulatis, panicula caulem terminante abbreviata angusta pauciflora piloso-pubescente, bracteis anguste lineari-ob lanceolatis pedicellis subæquilongis, calyce campanulato extus piloso-puberulo intus glabro ultra medium in lobos late oblongos
apice brevissime cuspidulatos ipso obtusiuscos disivo, corolla comparate elongata infundibulari ima basi aliquantulum expansa extus glanduloso-puberula intus pilosa, filamentis basi dense glanduloso-pubescentibus ceterum glabris, antheris unilocularibus apice obtusis basi breviter appendiculatis, staminodio stamina bene excedente dense glanduloso-barbato.

Hab. Matto Grosso, Sant’ Anna de Chapada; Robert, 675.
Caulis summum 4-0 cm. alt., 0-2-0-3 cm. diam., aliquanto angulatus. Foliorum rhachis valida, 10-0-25-0 cm. long., deorsum nuda, pilosa, fac. sup. canaliculata; pinnae 5-0-10-0 cm. long., fac. sup. item canaliculatae; foliola 1-0-1-3 × 0-3-0-4 cm., fol. terminale obovato-oblongum, 0-45-0-6 cm. lat. Panicula circa 3-5 cm. long. Bracteae 0-3-0-4 cm., pedicelli 0-4-0-5 cm. long. Calyx 0-5 cm. long.; hujus lobi 0-4 cm. long. Corolla 4-5-5-0 cm. long.; tubus ima basi 0-5 cm., paullo supra basin 0-35-0-4 cm., sursum adusque 1-5 cm. diam. gradatim augmentatus; lobi circa 1-0 × 0-9 cm., facie interiori pilosi. Filamenta longiora 1-3 cm. long.; antherae 0-3 cm., harum appendix 0-06 cm. long.; staminodium 2-75 cm. long., deorsum glabrum. Stylus glaber.

The only species with which this can be compared is J. decurrens Cham. which also has decurrent pinnules, but its leaves have many more jugae, and the leaflets are different in shape. Among other points, the long corollas of J. Roberti are worthy of mention.

An immature fruit, 3-0 × 2-0 cm., accompanies the specimen.

Podostemaceae.
I brought from Matto Grosso two of these plants, but, by some oversight, no mention was made of them in my Memoir (Trans. Linn. Soc. Ser. 2, vol. iv.). For calling my attention to this matter I am indebted to Dr. Rendle, who also gave me the following names:—
Lonchostephus elegans Tul. in Arch. Mus. Par. vi. p. 198. Fixed to stone in bed of R. Paraguay about Santa Cruz (Barra dos Bugres); 709.

Euphorbiaceae.
A short time ago I saw in the Kew Herbarium a specimen of the South American Croton sparsiflorus Morong, which had, curiously enough, turned up in the neighbourhood of Calcutta, its introduction having been due most probably to transport of grain. Opportunity is taken to mention this fact here as it should be known that Morong’s plant has since been twice redescribed. My own C. nivifer, published a little time after C. sparsiflorus appeared, is undoubtedly the same plant; and more recently M.M. Chodat and Hassler have given (Bull. Herb. Boiss. 1901, p. 395) the name Croton rivicinoides to specimens absolutely identical with those of Morong.
A valuable asset in Gloucestershire botany appears to have been lying unregarded for many years in a collection formed by the late Dr. O. St. Brody during his residence at Gloucester, which is now housed in the City Technical Schools. This herbarium is entirely restricted to plants of the county; it furnishes evidence of most careful and accurate work (which the author's much earlier publication—the Flora of Weston-super-Mare—did not suggest); and it gives us a number of new records. These were made chiefly in the Bristol district, along the Severn shore at the Passages; on that little bit of seaboard which confers upon Gloucestershire some semblance of a maritime county. There the plants seem to have remained unnoticed by Thwaites, Stephens, and other Bristol botanists, although they might have reached the ground more easily than St. Brody could from Gloucester. This reflection, of course, rests on me also, but somewhat less strongly perhaps, for I have had the satisfaction of finding several of the species, without, however, realizing their importance; and one or two had become extinct before my time. The discovery of these specimens is well timed, in view of a recent announcement by Gloucestershire botanists of their intention to prepare a complete county Flora.

The following finds by Dr. St. Brody appear to be topographical additions to vice-county 34:

Vicia lathyroides L. Near the Old Passage; June, 1867.
Eryngium maritimum L. Severn shore; July, 1869. Now extinct in the county. In 1887 there was a fair number of plants on a shingly beach below the New Passage. In October, 1901, one plant only could be found; excursionists and visitors to the neighbouring tea-gardens having rooted out the remainder. One plant still there in 1902, and in 1903. But a little later there came a heavy storm on a high tide; the waves swept the beach from end to end, and then the last trace of this species in Gloucestershire disappeared.

Galium erectum Huds. Heath near Dursley; June, 1864. This antedates my own gathering of the plant on Breakheart Hill, Dursley, by nearly forty years.

Valerianella dentata Poll. var. mixta Dufr. Field at Dursley; July, 1865.
Arctium pubens Bab. New Passage; July, 1864.
Salsola Kali L. Shore, New Passage; July, 1870. Almost certainly extinct. I have never met with a specimen north of Portishead.

Obione portulacoïdes Moq. Shirehampton; July, 1867. Swete likewise records it from Shirehampton in the Flora Bristoliensiis prior to 1854. I also saw a small quantity on the Channel side of Avonmouth railway-station in 1879. This was soon afterwards destroyed when work commenced on the first Avonmouth Dock. None has since been seen in Gloucestershire.
Polygonymum Rent Bah. (as maritimum). Shore, New Passage; July, 1865. The presence of this plant in the county had never been suspected. It is extremely doubtful if another specimen can be found.

Sparagynium natans L. In the Berkeley Canal; July, 1865.

Juncus maritimus Lam. Marshes, New Passage; July, 1869. The species is stated by Swete (Fl. Brist. p. 83) to have been seen by himself in Shirehampton Marshes, West Gloucestershire; but St. Brody's specimens are the only ones I have met with from the county.

Phlctum arenarium L. Sandy shore, New Passage; July, 1866. Another plant that has almost certainly disappeared from Gloucestershire.

There are a number of other interesting items of less importance in St. Brody's collection. A specimen of Salvia pratensis from Wyck Cliffs, dated 1849, forms a curious confirmation of, or coincidence with, Swayne's record for the plant at that place nearly a century earlier.

I cannot hear of any Somersetshire plants which this botanist may have preserved when living at Weston-super-Mare in early life. Could any such be found they would be most welcome. So nomadic and needy a person, however, might not have burdened himself with baggage of the kind. Several of the more unlikely species stated by him to grow in North Somerset—Antennaria dioica and Atriplex laciniata, for instance—have recently turned up, and it seems to me that St. Brody's reputation for botanical accuracy should stand much higher than some of us have been accustomed to place it.

In a "Report of Progress towards the Completion of the Flora of Gloucestershire," communicated to the Annual Meeting of the Cotteswold Naturalists' Field Club, April 2nd, 1878, by G. S. Boulger, F.L.S., F.G.S., it is stated that prior to that date Mr. Harker had made a thorough examination of "this grand collection [of St. Brody's], comprising 1036 species and 105 varieties, which was meant to be the basis of a County Flora, but the plan was abandoned, as was also a Flora of Clifton, commenced by Mr. M. J. Barrington-Ward." I am not aware if any notes that Mr. Harker may have made during his examination were ever published; or, indeed, if any further progress was made with the projected County Flora.

REPORT OF DEPARTMENT OF BOTANY, BRITISH MUSEUM, 1906.

By A. B. Rendle, D.Sc., F.L.S.

The following additions have been made to the collections by presentations:—100 phanerogams from the Director of the Royal Botanic Gardens, Sibpur, Calcutta; fruits of Lodoicea sechellarum, from J. Stanley Gardiner, Esq.; 468 phanerogams from Uganda, from Dr. A. G. Bagshawe; specimens illustrating the life-history
of *Crocus* for the Public Gallery and a species of *Statice* from E. A. Bowles, Esq.; 20 specimens of *Polygala amarella*, illustrating variation from J. Cryer, Esq.; 3 phanerogams from India, from Dr. T. Cooke; 3 specimens of cultivated plants and 3 enlarged photographs, from Hon. Walter Rothschild, M.P.; 126 phanerogams and 7 cryptogams from Jamaica, from Dr. N. L. Britton; 109 phanerogams and 1 cryptogam from South Rhodesia, from Miss L. Gibbs; 22 phanerogams from South Africa and Rhodesia, from H. T. Crosfield, Esq.; 208 phanerogams from South Rhodesia, from Fred. Eyles, Esq.; 3 cultivated plants from Walter Ledger, Esq.; 6 photographs of fossil fruits of *Najas* and *Zannichellia*, from Clement Reid, Esq.; 7 phanerogams from Tropical Africa, from Dr. Engler; 10 photographs of Rubber Forests on Amazon, from H. E. Weaver, Esq., M.I.C.E.; 272 phanerogams, 15 cryptogams, and 28 fruits from South Rhodesia, from C. F. M. Swymerton, Esq.; 261 phanerogams and 7 cryptogams from Mt. Ruwenzori, collected by Dr. Wollaston, from the subscribers to the Ruwenzori Expedition; 9 phanerogams from South Europe, from H. Stuart Thompson, Esq.; 3 phanerogams and 7 cryptogams from British East Africa, from A. Cholmley, Esq.; 4 specimens of cultivated plants, from T. O’Brien, Esq.; 66 phanerogams and 4 cryptogams from Shan States, from S. A. Durie, Esq.; 2 reproduced copies of Roslin’s portrait of Linneas, from W. Carruthers, Esq.; 50 European lichens, from the Council of the Linnean Society; 47 Japanese mycetozoa, from K. Minakata; an apochromatic microscope-objective, from Lady Sendall; a large specimen of *Laminaria* from the Eastern Telegraph Company’s cable near Gibraltar, from V. K. Cornish, Esq.; 24 marine algae from Sidney, N.S.W., from A. H. Lucas, Esq.; portraits of Elias Fries and J. G. Agardh, from G. Murray, Esq.; marine algae and mosses from the National Antarctic Expedition; 54 phanerogams and 9 cryptogams collected in the Great African Lakes by Dr. W. C. Cunnington, from the Tanganyika Committee through Professor Ray Lankester; and single specimens from Prof. J. B. Farmer, Franklin White, Esq., and Herr Per Dusén.

The additions to the British Herbarium by presentation have been:—7 specimens of *Fumaria* from H. W. Pugsley, Esq.; 220 specimens from Rev. E. S. Marshall; 72 specimens from Rev. H. J. Riddlesdell; 15 specimens from C. E. Salmon, Esq.; 49 specimens from G. C. Druce, Esq.; 18 specimens from A. Bennett, Esq.; 5 specimens from H. Stuart Thompson, Esq.; 29 specimens from Prof. D. Oliver; 80 specimens from Rev. E. F. Linton; 60 species of marine algae from near Dover, from Miss G. E. M. Mitchell; 21 hepaticae from Westmorland, from W. H. Pearson, Esq.; 2 mosses and a hepatic from W. R. Sherrin, Esq.; and one or two specimens from W. R. Jeffrey, W. H. Hammond, J. W. White, E. M. Holmes, A. B. Jackson, S. S. Buckman, H. R. Yates, Arthur Lister, Miss A. Lorrain Smith, C. P. Hurst, and Dr. W. H. Lang.

Among the acquisitions by presentation special reference may be made to the lichen-herbarium of the late Rev. J. M. Crombie,
presented by his widow, and containing about 5000 British and foreign lichens, his MSS. and correspondence, and about 30 bound volumes of lichenological pamphlets by Nylander, J. Müller, and other authors.

The following additions have been made by exchange of duplicates:—136 specimens from South Africa from the Botanic Museum, Zurich, through Prof. Hans Schinz; 6 specimens of Allophyllus from Tropical Africa, through Dr. Engler; 3 violas from Texas and Mexico from the National Museum, Washington, through R. Rathbone, Esq.; 33 orchids and 97 cryptogams from the Oakes Ames Botanical Laboratory, North Eastern, Mass., U.S.A.; 384 specimens from California from the University of Pennsylvania, through Prof. John Macfarlane; 240 specimens of Australian plants from J. H. Maiden, Esq.; 96 specimens from North America from the Gray Herbarium, Cambridge, Mass., through Dr. B. L. Robinson; 142 phanerogams and 4 cryptogams from South Africa collected by Penther and Krook, also 10 plates by Ferdinand Bauer, and Cryptogamæ Exsiccatæ, cent. xii, xiii, from the Vienna Hofmuseum, through Dr. A. Zahlbruckner; 249 phanerogams and 30 cryptogams from Botanic Gardens, Singapore, through H. N. Ridley, Esq.; 150 ferns collected in the Philippine Islands by E. P. Copeland, from the Bureau of Agriculture, Manila, through Prof. Elmer D. Merrill.

The principal purchases during the year were:—233 phanerogams from Gunong Tahan, Pahang, from H. C. Robinson; 200 specimens Flora Stirriaca Exsiccatæ (fasc. iii.—vi.), from Hayek; 233 specimens from West Indies, series III., 1904–5, from A. H. Curtiss; 96 specimens from Somaliland, from G. W. Bury; 828 specimens from South Africa, Plantæ Schlechterianæ, from Dr. Loesener; 33 specimens from California, from A. A. Heller; 465 phanerogams and 70 cryptogams from Selkirk, from Chas. Shaw; 165 phanerogams and 39 cryptogams from Bolivia, collected by Fiebrig, from Dr. R. Pilger; 215 specimens, including 10 cryptogams from Siam, collected by Dr. Hosseus, from Dr. Wilms; 1000 specimens including 119 cryptogams, from Yunnan, from Dr. Henry; 763 specimens from Japan, from Rev. U. Faurie; 239 microphotographs of wood structure, from Williams, Weale & Co.; 200 specimens Fl. Carniolica, cent. 7 and 8, collected by Paulin; Graminæ Exsiccatæ (fasc. xix, xx), from Kneucler; 50 specimens (Salicetum Exsiccatum, fasc. i.) collected by Toepffer, from Dulau & Co.; 200 specimens (Batotheca Europææ, fasc. i.—iv.) from H. Sudre; “Wooden Rose” from Guatemala, from Rosenberg; 100 fungi imperfecti, from Kabát and Bubák; 50 North American algae, from Collins, Holden and Setchell; 150 micro-fungi, from Vestergren; 50 ascomycetous fungi, from Rehm; 50 fungi selecti, from Jaap; 100 cryptogams of Germany, Austria, and Switzerland, from Migula; 100 North American fungi, from Bartholomew; 50 mosses of the Malay Archipelago, from Fleischer; 100 Brazilian fungi, from Ule; 100 Uredineæ, from Sydow; 170 cryptogams of N.W. India, from Gollan; 100 Saxon fungi, from Krüger; 12 prepared British fungi, from Hartley-
SHORT NOTES.

LINARIA ARENARIA DC. IN ENGLAND.—This species, hitherto only known from a limited area of the coast of Western France, where it occurs on the maritime sands of Gatteville de la Manche, Neuville, Gouberville, &c., and is represented in the Reliquiae Maill. no. 1502, from Cherbourg, was recently shown to Dr. F. J. Smith by Mr. F. G. Fisher, who discovered it near Westward Ho, in North Devon, and was identified at the National Herbarium, to which specimens were taken by Dr. Smith. Mr. Britten told me of this interesting discovery, and I went down to the locality to form an opinion as to the claims of the Linaria to be considered indigenous there. The plant occurs over a small area, perhaps two hundred yards long, growing among sand and large pebbles, with Trifolium seabrurn, Lotus corniculatus var. crassifolius, Sagina nodosa, Eryngium maritimnum, Glaucium flavum, Plantago Coronopus, P. lanceolata var. spherostachya, Phleum arenarium, Polyg- onum maritimum, &c., but with no introduced species. There are traces of traffic near the place, but I think only to cart away shingle. Although Senecio squalidus has been introduced to Bideford, and there is still some amount of traffic between the French ports and Appledore with Barnstaple, the locality is well away from these places. There is a considerable amount of drifted timber on the beach, but the place where the plant grows is well above the reach of the highest tide. The whole area of this district is not geologically old, as it appears that the dunes are of comparatively recent formation. My opinion is that, unless intentionally sown, the plant is native here, as it has no claims to beauty or utility, which are influencing causes in the introduction of many species. It is to be hoped that anyone visiting this spot will be careful in gathering this plant, so that it may not be eradicated.—G. CLARIDGE DRUCE.

[We hope to publish later a figure and description of this interesting plant.—Ed. Journ. Bot.]

COLCHICUM VARIEGATUM L.—In 1849 Mr. Edward Pearson, of Wilmslow, Cheshire, found a Colchicum, apparently wild, in considerable quantity on the under side of a large plantation very high up on the hill called Norton Camp, near Craven Arms Railway Station, Shropshire. He has had it in his garden ever since, where it flowers freely, but apparently does not perfect seed. It increases rapidly from the root. The plant proves to be Colchicum variegatum L. The same species is also reported as growing about
three miles further south, near Stokesay Castle. Can any local botanist say whether the plant is still to be found in those parts?—W. F. Miller.

Phyllody of the Calyx in Myosotis palustris.—I lately gathered specimens of Myosotis palustris on the banks of the river locally known as the Gipping, where it flows through the Glebe Meadows at Barham, in Suffolk. They showed well-marked phyllody of the calyx, together with a distinct prolongation of the flower-spike. The calyx-lobes were twice the size of those of the ordinary form. Every inflorescence borne by this plant showed this variation in equal degree. The corolla also showed a tendency to remain longer than usual on the plant, and to become somewhat virescent in its older stage. As the Gipping nears Ipswich it is now called the Orwell, though it is said Gi pesso-wyche was the old name of the city.—E. Augustus Bowles.

A proposed Exchange Club for Lichens.—With the exception of Mr. Crombie's Monograph (1895), the second and concluding part of which is in active preparation by Miss A. L. Smith, little progress has been made in the study of the Lichens of these islands since the publication of Leighton's Lichen-Flora in 1871-79. This latter has long been out of date in nomenclature and classification, and our study of Lichens has thus been greatly neglected. It is therefore suggested that it would be stimulated by the formation of a Lichen Exchange Club, on the lines of those already existing for mosses and flowering plants. Another reason for the formation of such a Club is found in the gradual extermination of Lichens through smoke and other means to which I have referred in the September number of this Journal. Mr. A. A. Dallman has already suggested the Club in the circulating notebook of the Moss Exchange Club, and it is desired to obtain further publicity for the scheme through the pages of this Journal. Preliminary steps have already been taken, and I shall be glad to receive the names and addresses of those interested in the scheme, together with any suggestions for the working of the Club. These may be sent to me at Ivanhoe, Gwendolen Road, Leicester.—A. R. Horwood.

Juncus pygmaeus Thun. in Cyprus?—In this Journal for 1905, p. 332, I pointed out that the specimens at Kew collected by John Ball "Ex Cypro prope Larnaka Majo 29, 1877, No. 2436" were certainly J. bifoniurn. The late Mr. Ball added, "The only Oriental specimens seen by Boissier" (see Boissier, Flora Orientalis, vol. 5). I have now seen Boissier's own specimen at Geneva, bearing the same label, and though it bears a more striking resemblance to J. pygmaeus than the Kew specimen, it is only Koeh's variety fasciculatus of Juncus bifoniurn L. Mr. Holmboe, of Bergen, who is studying the vegetation of Cyprus, has also examined the specimen in Herbier Boissier and is quite of the same opinion,—H. S. Thompson.

Limonium recurvum C. E. Salmon.—Readers of the Journal will be glad to learn that this rarest of sea-lavenders still survives
at its original station in Portland Island. In 1902 I could not find any of the plant, and reported its destruction as stated by Mr. C. E. Salmon in these pages (1903, p. 68). Possibly I was then a little too early, or I did not venture near enough to the verge of the cliffs. I now find there remains a short space between two quarries where the cliff-edge has not been cut away; and there, on the extreme overhang of undermined rock, the plant maintains itself, although sadly reduced in quantity from the display I remember to have seen thirty years ago before the demand for Portland stone so destructively revived.—James W. White.

Sagina Reuteri Boiss.—On the 11th August, 1906, I found this plant on the bed of a very old pool, almost dried up, on Skipwith Common, near Selby, in v.-c. 61, with no sign of alien plants of any kind associated with it. Its companions were Mentha Pulegium, Apium nodiflorum var. repens, Limosella aquatica, Rumex maritimus, Veronica scutellata var. hirsuta, and Riccia crystallina. Additional evidence given by Mr. F. N. Williams, who has examined the plant, points, I think, to its being a native plant. He says:—“Although differing in appearance from the very glandular forms of this plant you have previously sent me (vide Ex. Club Rep. 1902), they belong to S. Reuteri, and are, indeed, more like the original Portuguese specimens than the Lancashire plants.” This was in reply to Mr. Wheldon, who sent Mr. Williams a specimen from me. The Skipwith Common plant is quite eglandular, and only a few plants were gathered, as it was thought at the time to be S. apetala.—Wm. Ingham.

Vicia Bithynica L.—I found this plant in August near Garnard’s Bay, Isle of Wight, close to the beach in rough grassy ground. This is I believe the first record for v.-c. 10. The plant was reported from near Gosport in 1899, which is the only record for the mainland of Hants.—J. F. Rayner.

Lachnea Hirto-coccinea Phill. & Plow.—I found this plant on Strensall Common (v.-c. 62) on July 6th, 1907. It was growing on wet sand and on rotten wood on the border of a temporary water-splash, and Mr. C. Crossland, one of the authors of the Fungus Flora of Yorkshire, 1905, regards it as an interesting addition to the county of York.—Wm. Ingham.

NOTICES OF BOOKS.

It can have happened but seldom—if indeed the occurrence be not, as we believe, unique—that two floras of the same county should proceed concurrently, not only without reference to each other, but apparently in ignorance of each other’s existence. Glamorgan, however, is being thus favoured; for simultaneously with the publication in our pages of Mr. Riddelsdell’s enumeration,
modestly entitled _A Flora_ of the county, comes the first part of what is styled _The Flora_, compiled by a special Committee under the editorship of Professor Trow of University College, Cardiff, published in the Transactions of the Cardiff Naturalists' Society. This Committee was appointed in 1903; Mr. Riddelsdell's appeal for help in his compilation appeared in this Journal for February 1904; and the work of both has been carried on independently.

Mr. Riddelsdell's list has, as he tells us in his preface, "mainly a personal character," but includes the specimens preserved in numerous herbaria; he has, in accordance with general practice, divided the county into districts (which has not been attempted by the Cardiff Committee), and has excluded introduced species (which are given in an appendix) among which he places many plants native in other parts of the country but alien here, and doubtful records.

The Cardiff Committee consisted of nine members, who "at once authorized the issue of circulars to local botanists inviting them to become corresponding members and furnish lists of the wild plants occurring in their respective neighbourhoods." It is no disparagement to the Committee to say that few if any of their names or those of the numerous "active corresponding members" are familiar to British botanists, nor is there any indication that their specimens have been submitted to any competent authority. No one who has not had experience in compiling a local flora can have any idea of the extraordinary mistakes in identification committed by local observers; and we note that Prof. Trow says of _Cerastium glomeratum_ and _C. triviale_: "These two common and well-differentiated species are not well understood by our correspondents." The note continues: "Mr. Storrie confuses one of their many forms with _C. arvense_, and is followed in this error by so many others that the complete record is appended. It is almost certainly a case of wrong diagnosis." But in spite of this caution the next entry runs:—


_C. arvense_ does not appear in Mr. Riddelsdell's list; a fact which seems to show that its recorders can hardly claim implicit credence even with regard to "common and well differentiated" (and therefore much less in the case of really critical) species. But would it not have been wiser to suppress the record until confirmation had been obtained?

Although this Journal appears in the list of works consulted, it would appear that this has been done very incompletely. For example, _Viola stagnina_, said to "require confirmation," was duly recorded for Gower by Mr. Riddelsdell in 1904 (p. 312); _Hutchinsia_, for which Pennard Castle is the only habitat given, was recorded from Worms Head by T. B. Flower in 1877 (p. 180).

The list is swelled by the inclusion of aliens and erroneous records, in type not differing from the indigenous species. It is
not easy to see what is gained by such an entry as that of *Stellaria palustris*, where the statement “all the records are probably errors” is followed by the records of three correspondents for three separate localities.

We can only hope that succeeding parts of the Flora, if it be continued, will be conducted on different lines, and that care will be taken to include records only from those who are at least able to discriminate between our common Cerastiums and to identify correctly plants so distinct as *Stellaria palustris*. On the present lines, the only result of the work will be to increase the inaccuracies and uncertainties created by Storrie’s *Flora of Cardiff*. It is only fair to say that Prof. Trow’s own records and observations show that he is a competent and careful observer, but even in his portion we find things that surprise us—the inclusion of *Paeonia*, for example, although it is rightly stated to be a Somerset plant, and the designation of *Corydalis lutea* as “rupestral.”

*The Principles of Horticulture.* By Wilfred Mark Webb, F.L.S.

If Mr. Webb had set himself the task of writing a book on elementary botany, with a spice of entomology and a little nature study, the little book before us would have had some reason for its existence. But when the author tells us that he has written “primarily for the benefit of those engaged” in practical horticulture, we fear he fails to justify his text. The principles of horticulture seem to be conspicuous by their absence, and certainly no attempt is made to explain the scientific reasons underlying some of the most common garden practices. The mere examination of the parts and tissues of a plant is not horticulture but botany, and some of the very best cultivators in the kingdom would find a difficulty perhaps in describing the plants they grow in strictly botanical language. If Mr. Webb had been trained as a gardener he would probably be in a better position to teach the “principles of horticulture,” and to appreciate what gardeners, as gardeners, desire to know. But it is a mistake to think that the botanist pure and simple can ever hope to explain the numerous phenomena that gardeners are accustomed to meet with almost every day. It is true that “rule of thumb” methods obtain to a certain extent even in these days amongst some gardeners, who care little as to why they perform this operation or that; but their number is steadily decreasing. The intelligent gardener knows that all his practice is based on a solid scientific basis, and he therefore knows exactly why he drains his pots, mixes his composts, shades his cuttings, syringes his plants, ventilates his greenhouses or frames, and endeavours to maintain certain temperatures. These are important points that Mr. Webb would have done well to explain; as it is, he has, as we have already said, merely produced a conglomeration of elementary botany, entomology, and what is termed “nature study”—the present craze of many so-called educationists.

J. W.
BOOK-NOTES, NEWS, &c.

Mr. S. A Stewart, who resigned the curatorship of the Belfast Museum, in May last, has presented his herbarium and palaeontological collection to that institution. At the annual meeting of the Belfast Natural History and Philosophical Society on Sep. 27th many tributes were paid to Mr. Stewart's work, especially in connection with the Belfast Naturalists' Field Club, of which he was one of the founders and on whose committee he served for forty years. Mr. Stewart's address is now 342, Springfield Road, Belfast.

Dr. J. Reynolds Green's Introduction to Vegetable Physiology, which was commended in this Journal on its first appearance in 1900, has passed into a second edition. The differences between this and the original issue are very slight, as but few changes were necessary. It is published by Messrs J. & A. Churchill, price 10s. 6d. net.

Flowering Trees and Shrubs, by Henry Hoare (Humphreys; price 7s. 6d.), is a handsomely printed little quarto volume containing a monthly calendar; a descriptive portion arranged alphabetically under the Latin names, and lists of trees and shrubs suited to various localities. It is illustrated with plates by Gertrude Hamilton, somewhat coarsely coloured, but occasionally —e. g. Chimonanthus—excellent. The descriptions are somewhat meagre and sometimes contain quaint remarks—e. g. it is said of Cercis Siliquastrum: "Some say that Judas hanged himself from one of its branches; but one prefers to connect no episode so painful with it"!

Prof. J. B. Farmer, of the Royal College of Science, has been appointed editor of the Gardeners' Chronicle in succession to the late Dr. Masters.

The recently published Census Catalogue of British Mosses (York: Coults and Volans. 63 pp. Price 1s. 6d., or 2s. interleaved), compiled by members of the Moss Exchange Club, is a valuable and useful addition to bryological literature. It provides an almost complete record of the distribution of each species and variety, and is the result of much patient research and careful revision. By means of a series of indicative numbers this distribution is recorded against each of the 619 species and their varieties throughout the 112 Watsonian vice-county divisions of Great Britain and R. Lloyd Praeger's 40 county divisions of Ireland. This record must prove of the greatest value to local collectors, as showing the ascertained flora of each division, and as revealing the districts which call for further investigation. Explanatory notes are supplied by Mr. W. Ingham and by Mr. H. N. Dixon, and are followed by a table of the county divisions with their reference numbers and their boundary limits. The very numerous sources from which the Catalogue has been compiled are duly set forth in detail, carefully arranged in a geographical sequence. This bibliography forms an almost exhaustive record of the very scattered papers on British bryology, and includes also references to many manuscript lists.—A. G.
Germination of Poplars.
THE GERMINATION OF POPLARS.

By Florence H. Woolward.

(Plate 487.)

The genial summer of 1906 is thought to have had a beneficial effect upon trees by maturing and strengthening their young growths, and this may, perhaps, partly account for the unusually large number of Poplars which ripened seed in 1907, although more unfavourable conditions for the diffusion of pollen than the wet cold spring of this year can hardly be imagined. The extreme rarity of Poplar-seeds in this country may be caused by the dioecious character of the genus, for it frequently happens that trees of one sex are abundant in a district, while specimens of the opposite sex are entirely absent. In my experience pistillate trees are generally less common in England than staminate ones, another hindrance to the production of seeds. In natural forests and uncultivated land where the trees are indigenous, the distribution of the two forms would probably be more equal.

There is no doubt, however, that the marvellously fine powder of the pollen-grains is often carried by the wind to a great distance, for I am informed that the large pistillate tree of *Populus nigra* at New Ross, in Ireland, from the seeds of which I have raised young plants, is quite an isolated specimen, and a tree at Kew which ripened seeds abundantly this spring is stated to be a quarter of a mile from any other Poplar. Owing to miscellaneous planting, especially in botanic gardens, and the proximity of trees of different species, natural hybridization might frequently result, and in many cases the complete origin of seeds might be difficult to ascertain.

The first seeds which germinated under my care were from a tree growing in the Queen's Cottage ground at Kew, the flowers of which were developed early in April, and were sent to me under the name of *Populus nigra*. I recognized them, however, to be those of *P. montificera* Ait., to the staminate form of which Moench, twenty-five years earlier, gave the name of *P. canadensis*; and an examination, later in the year, of leaves from the same tree confirmed my opinion. Without going into the vexed question of species, variety, or hybrid, or attempting to discuss synonymy, I shall in this paper refer to the tree as *P. canadensis*.

In June, specimens of the fruit were sent to me, and proved to contain fertile seeds, which ripened in a few days and were scattered about abundantly among masses of cottony down from the bursting capsules. The minuteness of the seeds of this species—and, indeed, of those of all Poplars—in proportion to the great size of a full-grown tree, is remarkable. The largest seed measures less than one-eighth inch in length, and staminate trees attain a height of 130 to 140 ft., and a girth of more than 18 ft., with fine spreading heads visible over the tops of all other trees in the neighbourhood. Specimens of *P. canadensis* as large as...
this are abundant in Lincolnshire, and are not more than eighty or ninety years old. It seems probable that the pistillate form of this tree never attains so great a size, at any rate in this country. In shape the seeds are oblong-oval, the base blunt and porous, and the whole surface minutely tomentose with a few rather longer silky hairs, which apparently serve the purpose of absorbing moisture. In *P. canescens* the seeds are rounder and much more minute, and in *P. nigra* they are narrower and less rounded, but all are of the same dull whitish colour, and tomentose.

Germination is extremely rapid; after the seed has been freed from the cottony down enveloping it and soaked in water, the radicle appears in one or two days, and in the case of the seeds of *P. marilandica* from Kew, ten hours in water were sufficient to cause germination. Reference to the accompanying plate will explain the stages of growth from the seed to the young plant, complete figures being given of one species from the "White Poplar group" (*P. canescens*), and of one from the "Black Poplar group" (*P. canadensis*). The later stage of *P. nigra* and *P. marilandica* resembles, except in minor particulars, that of *P. canadensis*, and is omitted for want of space. A simple radicle with a short length of stem first protruded from most of the seeds, although some showed the cotyledons before the root. Those which developed a central root proved afterwards to be the strongest plants. On the second day a circle or fringe of delicate root-fibres appeared around the base of the stem, and when the young plant was placed upon damp sandy soil, these fibres immediately began to attract to themselves particles of sand and earth. In two days the testa was thrown off, and the minute fleshy cotyledons began to spread apart and to show a tinge of green, the stems becoming reddish. (For these stages of growth see figs. 1b, 2b, 3a, and 4a.)

After five or six days the cotyledons were well developed, flattened out laterally, and bright green. In shape they were orbicular, sagittate at the base, thick and succulent, glabrous, pale yellow at first, then bright green without the tinge of red so noticeable later in the leaves and stems. The central bud then grew rapidly, and in three weeks the first pair of leaves were half-an-inch long. Those of *P. canadensis*, *P. nigra*, and *P. marilandica* were linear-oblong, toothed at the margin—the teeth placed at a much greater distance apart than in the second and third pairs of leaves later developed—the horny incurved tip of each tooth so remarkable in full-grown leaves of these species being distinctly visible, and the whole plant glabrous. In later stages of growth these characteristics were maintained, but the upper leaves of all species gradually became broader, although they were far from resembling in shape those of a full-grown tree.

Later growth and development were less rapid, for, about four months after germination, the largest of the young plants (*P. canadensis*) were only two inches high, although in a flourishing condition, and with three pairs of leaves about one and a quarter
inch long. The stems were woody throughout the three lowest joints, dark red, with a strong terminal bud, and the cotyledons quite withered away. There was no trace of lateral compression of the petioles in the seedling stage.

Young plants of *P. marilandica*, although shorter than those of *P. canadensis*, had much larger leaves, tinged throughout with red, the upper part of the stem being minutely hairy, with strongly marked lenticels.

*P. nigra* was of slower growth and smaller in all particulars; the stem was minutely pilose.

*P. canescens* showed a robust, wide-spreading habit; the leaves flat and broad, each pair at right angles with the next pair; the stem short and stout—all dull green.

I have this summer raised seedlings of Poplars from widely separated localities, and append a list of the species, as follows:—

*P. canescens*, from Colesborne, Gloucestershire; *P. nigra*, from New Ross in Ireland (from an old tree 20 ft. in girth), Bury St. Edmunds, and Bourton-on-the-Water, Gloucestershire; *P. canadensis* and *P. marilandica*, from the Royal Gardens, Kew.

**Explanation of Plate 487.**

Fig. 1. *Populus canescens*, young plant, × 2. 1a. Seed, enlarged and nat. size. 1b. Seed germinating, and young cotyledons, × 2.

Fig. 2. *P. canadensis*, young plant, × 2. 2a. Seed enlarged and nat. size. 2b. Seeds germinating, and cotyledons, × 2.

Fig. 3. Seed of *P. marilandica* enlarged and nat. size. 3a. Seed germinating, and young cotyledons, × 2.

Fig. 4. Seed of *P. nigra* enlarged and nat. size. 4a. Seed germinating, and cotyledons, × 2.

**NOTES ON THE FLORA OF THE CHANNEL ISLANDS.**

By G. Claridge Druce, M.A., F.L.S.

(Concluded from p. 402.)

*Ulex Gallii* Planch. †var. *humilis* Planch. Plentiful on the downs between Grosnez and L'Etac, Jersey.

*Cytisus scoparius* Link †var. *prostratus* (Bailey). Common and typical on the rocks near L'Etac, Jersey. On the Sark cliffs a small but not prostrate form was observed.

*Ononis reclinata* L. I was rather too late in July for this plant in Alderney, but a few plants still showed a flower. On the dunes in Longy Bay it was dwarfed to less than an inch.

*Medicago sativa* L. On West Mount, Jersey, with yellow flowers. Not native.—*M. lupulina* L. †var. *Wilddenoviana* Koch. Alderney.—*M. minima* L. West Mount, Jersey. It is very curious to find that no *Medicago* is recorded for Sark.

*Trifolium hybridum* L. Naturalized at Bel Royal, Jersey.—*T. glomeratum* L. Particularly luxuriant in the beds of quarries near Vale, Guernsey, some specimens being over a yard across;
it is also luxuriant in Alderney.—T. procumbens L. var. majus Koch. Plentiful in Sark; this is probably the T. agrarium recorded by Miller. The Sark plant is probably T. campestris Schroeder.

Anthyllis Vulneraria L. var. ochroleuca (Corb.). On the cliffs of Étretat Bay. The large terminal leaflet and the pale yellow flowers distinguish it. In Alderney a form with quite simple leaves occurred, but it was only the first season’s growth.

Lotus corniculatus L. var. crassifolius Pers. On the Quenvais, Jersey, and L’Ancresse, Guernsey; the flowers often tipped with red.—L. angustissimus L. Beauport, &c., Jersey; Vale, Guernsey.—L. hispidus Desf. Vale, Guernsey; very luxuriant.—L. uliginosus Schkuhr. The very hairy form near Créux, Sark.

Ornithopus pinnatus (Mill.). Still plentiful on L’Ancresse, Guernsey.

Vicia hirsuta Gray. Bel Royal, Jersey.—†Var. angustifolia Druce. L’Èreère, Guernsey.—V. tetrasperma Moench. Mont Orgueil, Jersey.—V. lutea L. Still at Mont Orgueil, where it was found by Mr. Guiton.—V. sativa L. var. canescens mihi. Leaves and stems covered with a dense greyish pubescence, so as to give a hoary appearance to the plant. Growing among turf. Bouley Bay, Jersey.—V. angustifolia L. var. Garlandii mihi. Flowers nearly as large again as the ordinary form, with a more open corolla, and larger and more conspicuous standard of a bright rose purple; it is referred to in Mr. Lester-Garland’s Flora of Jersey, and is sufficiently distinct to be worth a name. The plant occurs along the coast at St. Catherine’s Bay and elsewhere in Jersey.—Var. Bobartii (Forst.). Sark. Grande Mare, Guernsey.

Rubus. I was too early to obtain satisfactory specimens for critical discrimination; the Rev. W. Moyle Rogers has kindly named the following, which were gathered in 1906:

R. affinis var. Briggsianus Rogers. Corbiere, Jersey.—R. argenteus P. J. Muell. Plemont, Jersey.—†R. Lindleianus Lees. In several places in Jersey.—†R. rusticanus Merc. New to Alderney; Sark.—†R. leucostachys Schleich. New to Alderney; also at St. Andrew’s, &c.; and a hybrid perhaps with rusticanus at Vazon, Guernsey.—R. Sprengelii Weihe. St. Helier’s, Jersey, with unusually strong stem-prickles.—R. Boreanus Géné. Bouley Bay, Jersey; also as a lax-panicled plant at Grosnez. A bramble which was not uncommon in the Waterworks Valley, Jersey, Mr. Rogers says is near to R. leucostachys and R. Boreanus.—R. macrophyllus W. & N. var. macrophylloides Géné. Sark; very luxuriant.—R. robustus P. J. Muell. St. Peter’s Barracks, Guernsey.—R. rhamnifolius W. & N. agg. Portelet, St. Aubin’s, Jersey.—†R. rusticanus × cespit. Bouley Bay, Jersey.—†R. anglicanus W. M. R. Grosnez, Jersey.—†R. dumetorum W. & N. Gorey, Jersey.—†R. ?. Gorey Bay, Jersey. Mr. Rogers says this is identical with my "Norgiots, St. Andrew’s, Guernsey," plant, thought by Focke to be near to argyranthus Boul. & Luc. It seems somewhat intermediate between R. leucostachys and R. Boreanus, but so as to go as a variety under the former. In the
Flora of Guernsey the plant from Les Norgiots is referred to R. leucostachys var. angustifolius, but that variety is now placed under R. laesiocladus.

Potentilla reptans L. †var. microphylla Tratt. On the Quenvais, Jersey.—P. procumbens Sibth. Trinity, Jersey.

Poterium polygamum Waldst. & Kit. West Mount, Jersey.


†R. spinosissima L. On the Quenvais in several places occurred a beautiful form with pink flowers.

Crataegus Oxycanthula L. = monogyna was alone noticed in the islands.

Pyrus Malus L. Said to be very rare, only two localities being given in the Flora of Jersey. I saw it in a hedge near Grosnez, and a bush in a hedge near Pont Marquet.—P. germanica Hook. f. The spinous form in the Waterworks Valley, Jersey.

Callitrichie stagnalis Scop. L’Étac alone given in the Flora; I saw it at St. Catherine’s, Trinity, and Grosnez, and near Longy, Alderney.—C. obtusangula Le Gall. Still at Bellozanne, Jersey, where I saw it in 1877. Also at Paradis, in Guernsey.

Œnothera odorata Jacq. Abundant along St. Aubin’s Bay, and spreading inland along the railway, where it is very abundant between St. Aubin’s and Don Bridge, Jersey. Mr. Lester-Garland queries it as being synonymous with OE. stricta Lindeb.—OE. biennis L. The larger pale-flowered OE. is quite naturalized in Jersey, as at St. Helier’s, &c.

Epilobium tetragonum × obscurum. × E. thuringsiacum Haussk. St. Aubin’s, Jersey.—E. parviflorum Schreb. Waterworks Valley, Jersey.—E. lanceolatum Seb. & Maur. Rather frequent; a very pretty form occurred at St. Aubin’s, Jersey, and a broad-leaved form suggesting the presence of obscurum, which was growing near, was seen at St. Martin’s, Guernsey.—E. obscurum Schreb. Waterworks Valley, Jersey; and as †strictifolia Moulin, Huet, in Guernsey.

Sedum reflexum L. Looking native on rocks at the West Mount, Jersey.

Conium maculatum L. St. Ouen’s Bay, Jersey.

Bupleurum aristatum Bartl. Locally common on St. Ouen’s Bay, and on the Quenvais, where it was scarcer and less luxuriant, being indeed the var. nanum (Koch). Also on the sand-dunes at Longy Bay, Alderney.

Carum Petroselinum Bentl. & Hook. f. Quite wild-looking by the road near Corbiere, Jersey.

Æthusa Cynapium L. Corbiere, Jersey; rare.


Rubia peregrina L. Still holds its own in its solitary locality in Alderney; in Jersey at Beauport, and Corbiere.

Gunnera chilensis Lam. Moulin Huet, in luxuriant growth, Guernsey.
Galium palustre L. As a plant about eighteen inches high, gathered at Beaumont, Jersey; has very narrow leaves, few-flowered dense cymes of small flowers, does not come under any of our named forms; to this may also belong a very narrow-leaved dwarf plant which occurred in damp places near Paradis, Guernsey. —Var. Witheringii (Sm.). St. Ouen's, Jersey.—G. verum L. var. maritimum DC. Common on the dunes at St. Ouen’s, &c., at L’Ancresse, Guernsey, and at Longy, &c., Alderney.—G. verum × Mollugo. This hybrid was noticed in the road leading from St. Aubin’s to Portelet; it is nearer verum, and at St. Ouen’s, Jersey, also as a plant nearer to Mollugo at Vale, Guernsey, where the habit was much like Mollugo, and the plant did not blacken in drying, but the flowers were distinctly yellow.

Sherardia arvensis L. †var. maritima Griseb. Near St. Helier’s, Jersey.

Kentranthus ruber DC. Abundant about St. Helier’s, &c., in three distinct colours—dark red, pinkish-purple, the normal tint, and white.

Valerianella carinata Loisel. Common in Jersey; and Guernsey.—V. eriocarpa Desv. Growing on the rocks by the road near St. Peter’s Barracks, Mont à la Brune, Jersey.

Gnaphalium undulatum L. I saw this South African species growing among Pteris on the slope of Portelet Bay, Jersey; quite naturalized.

Filago gallica L. In the locality in which Mr. Hurst discovered it near Vallette, Sark, growing in some quantity.

Inula Helenium L. Near L’Erée, by a house, Guernsey.—I. crithmoides L. Near Grosnez Castle, Jersey.

Matricaria inodora L. As Mr. Lester-Garland says, the maritime form var. salina Bab. is a very distinct-looking plant. It is very abundant round St. Aubin’s Bay, and also at the Corbiere Rocks, Jersey; it also occurs at Vale, Guernsey. The stem is quite woody, and the thick clusters of the old leaves at the base of the stem give it quite a characteristic appearance. Probably it is the M. maritima of the Flore de Normandie; writing of this plant, Corbiere says: “Les graines, semées en terre ordinaire par M. Lloyd, lui ont donné, dès la première année, le M. inodora de l’intérieur.” I looked out rather carefully for transition forms, but did not see them.

Diotis maritima Hook. The locality where I saw this growing in Jersey in 1877 is now covered by the St. Ouen’s sea-wall. It appears now extinct in the islands.

†Seneceio Cineraria DC. On the steep bank of a road near St. Aubin’s, where it has escaped from a garden, but will soon be naturalized.

Cirsium lanceolatum Scop. †var. hypoleucum DC. A pretty form, with leaves very hairy above and covered with a whitish tomentum below, occurred at Millbrook, Jersey.—C. arvense Scop. †var. horridum. St. Catherine’s Bay, Jersey. — Var. mite (Koch). Pont Marquet, Jersey; Vale, Guernsey.

Centaurea nigra L. At St. Ouen’s this occurred as a plant.
with large rayed heads and dark brown strongly fringed phyllaries, which seems to be the *C. pratensis* Thuill. of the *Flore de Normandie*. — *C. paniculata* L. Still in the same locality at St. Ouen's, where I saw it in 1877; this year it was much dwarfed by the drought. — *C. aspera* L. Abundant at St. Ouen's, and I think native; some of the capitula had yellowish-white flowers. Also at Vazon Bay, Guernsey, and in Alderney. — *C. cyanus* L. On the walls at St. Peter's Port, Guernsey; St. Aubin's, Jersey.

*Cichorium Intybus* L. St. Martin's, Jersey.

*Hypochaeris glabra* L. Bel Royal, Don Bridge, &c., Jersey.— *H. radicata* L. Still near Grosnez; it was in beautiful flower.—†Var. hispida* Peterm. St. Helier's; Alderney.

*Picris hieracioides* L. †var. *incana* mihi. Between the town and Longy Bay by the roadside in considerable quantity. This occurred as a well-marked variety with narrow leaves deeply and unevenly cut, with densely aggregated capitula, the centre ones being much overtopped by the lateral ones. The outer phyllaries covered with a short greyish-whiteomentum, resembling that of *Crepis taraxacifolia*.—†Var. *arvalis* (Jord.). Near Pont Marquet, Jersey.

*Leontodon hispidus* L. Babington says it is common in the Channel Isles, but neither Mr. Lester-Garland nor I was able to find this in the islands.— *L. nudicaulis* (L.) ? *Mérat* (L. *hirtum* L.). Very common in Jersey and Guernsey, and very variable.—†Var. *arenaria* (DC.) (sub *Thrincia hirta*). A more glabrous and much branching plant, with strong tap-root and leaves sinuately cut, with hairy phyllaries, grows in the sands at St. Helier's and St. Aubin's, Jersey; near Vazon, Guernsey; and at Longy Bay, Alderney.—†Var. *pristis* mihi. This is a densely-hispidly hairy, subsimple plant, with strong tap-root, the leaves deeply repand-runcinate and covered with long shaggy hairs at the base. The phyllaries are subglabrous. I saw this at Vale, Guernsey, and at Longy Bay, Alderney. I think it is the *L. hispidus* of Babington, but the fruit-characters agree with *Thrincia*. The plant looks specifically distinct from *nudicaulis*. The name is given from the leaf-cutting suggestive of the saw-fish. Another plant with long narrow, nearly entire, leaves and glabrous phyllaries, which grew at Vale, Guernsey, is the †var. *leiolana* (Bisch.).

*Sonchus asper* Hill var. *runcinatus*. Mont Orgeuil, Jersey.

*Crepis capillaris* Wallr. A form of this plant was plentiful by St. Aubin’s Bay, and on the Quenvais, Jersey, and also in Alderney, which had a strong tap-root, with numerous flowers of a deep yellow colour, the outer ligules being tipped with red; the plants from four to six inches high.

*Tragopogon porrifolius* L. Near the harbour, Alderney, quite naturalized, and fruiting freely. Casual at St. Luke’s, Jersey.

†*Symphytum asperum* Lepechin (*aspermum* Donn), the fodder plant. I saw it at St. Catherine’s and St. Brelade’s, Jersey.

*Ancusa sempervirens* L. St. Aubin’s, &c. Apparently native in Jersey.

*Myosotis scorpioides* L. (= *M. arvensis* Lam.). Pont Marquet,
Jersey. *M. repens* Don appears the commoner plant; I saw it in all the islands.

*Echium plantagineum* L. In most beautiful flower on West Mount, &c. On the slope of a hill near Beauport there were some hundreds of a tall fasciated form three to four feet high; in one instance at least the flattened stem was ten inches across, and had on it 438 fully expanded flowers. The plants attracted my attention more than a mile away.

† *Statice maritima* Mill. This holotrichous plant was common on the north coast of Guernsey, at Grosnez in Jersey, at Alderney and Sark.—*S. plantaginea* All. Very abundant over the Quennvais and St. Ouen's Bay, and much increased in quantity since my last visit. I saw nothing of the supposed hybrid mentioned by Syme, but I did not search his locality with care; I believe it was only a form of *S. plantaginea*, which varies at St. Ouen's very much in stature and size which Mr. Lester-Garland drew my attention to, a marked form († *var. bracteata* mihi), with long bracts from 1 to 1½ in. long, giving a very curious appearance to the plant. Naturally there are transition forms, but plants answering the above descriptions are quite common, and especially noticeable before flowering.

*Limonium lychnidifolium* O. Kuntze. I saw this coming into flower in the classic locality.—*L. binervosum* C. E. Salmon. Beauport, Jersey.

*Verbascum virgatum* Stokes. Near Vazon, but not typical.—*V. nigrum* L. Corbiere, Jersey.

*Veronica Anagallis-aquatica* L. A small glabrous form with pale flowers at La Moye, Jersey.—*V. agrestis* L. A form with white flowers, the three upper petals tinged with pink, as described by Mr. Marquand, is frequent in Guernsey.

*Scrophularia Scorodonia* L. Common, not only "in hedges and thickets," but on banks and walls, Jersey.

† *Rhinanthus sternophyllus* Schur. Near Grande Mare, Guernsey.

— *R. Crista-galli* L. is the common form in the islands.

*Bartsia Odontites* L. var. *verna* (Reichb.). Grande Mare, Guernsey.—*B. viscosa* L. Not unfrequent, Corbiere, Jersey.

*Euphrasia curta* Fries var. *glabrescens* Wettst. In all the islands; plentiful at Longy, Alderney; on the Quennvais, Jersey; and at L'Àncresse, Guernsey; and in Sark.—*E. occidentalis* Wettst. Alderney; Sark.—† *E. nemorosa* H. Mart. Sark.

*Orobanche purpurea* Jacq. I think to this must be referred the blue *Orobanche* of Jersey, where I saw it on West Mount, abundantly near Pont Marquet, at Beaumont, L'Etac, and St. Ouen's, Jersey; and also abundantly in Alderney. In both islands the modifications with many stems springing from the same root occurred.—*O. minor* Sm. Mont Orgueil, Beauport, L'Etac, Jersey.

— *O. amethystea* Thuill. Very characteristic at Braye Bay, Alderney, growing on *Eryngium*, and sometimes thirty-three inches high. St. Catherine's Bay, Jersey. Passed by Dr. G. Beck.—*O. Hederae* Duby. On the cliffs near the harbour, Sark, a form with nearly white flowers and stem grew on ivy, which
Dr. G. Beck says is only a luxuriant form. — *O. Ritro* Gren. & Godr. forma hypochoeroides Beck in lit. On the sands of St. Ouen's Bay Mr. Lester-Garland showed me a very beautiful species growing on *Hypochecris radicata*. It was of a bright citron-yellow colour, not only in the flowers, but also the bracts and stem. The older bracts were marked at the midrib with bright yellowish-brown. The curiously conical head of the partially open-flowered spikes was also remarkable. The plant was very glandular. The type has only been found in a few localities near Marseilles. The existence of another undoubtedly native Mediterranean species in the island is very interesting.

*Marrubium vulgare* L. Grosnez and L'Etac, Jersey.

*Melissa officinalis* L. St. Ouen's, but near a house, Jersey.

*Stachys ambigua* Sm. Moulm Huet, Guernsey.

†*Galeopsis Ludanum* L. Near Pont Marquet. New to the island, but only a solitary specimen, and probably casual.

*Salvia Verbenaca* L. In Jersey, Alderney, and Guernsey, common, but offering little variation in character, except such as arises from differing conditions of more or less nutrition and greater or less exposure.—*S. Marquandii* Druce. Vazon Bay, Guernsey; see Journ. Bot. 1906, 405.

†*Thymus Chamædrys* Fries. Between Pont Marquet and St. Brelade's I saw a few plants which I think must be referred to the above, of which it had the habit, the small flowers, and also a character which Corbiere considers to be specific: viz., in *T. Serpyllum* the branches are hairy all round; in *T. Chamædrys* the hairs are arranged in two or four lines only.

*Plantago maritima* L. †var. latifolia. Grosnez.—*P. lanceolata* L. †var. sphærostachya Roehl. Quenvais, Jersey; L'Ancreesse, Guernsey; Longy, Alderney; Sark.—*P. Coronopus* L. forma pinnatifida Wirtg. St. Helier's, Jersey.

*Chenopodium album* L. †var. microphyllum Coss. & Germ. Sark.—Var. candicans (Lam.). Bel Royal, Jersey.—*C. ficifolium* Sm.—† Braye; not recorded for Alderney in the Guernsey Flora. Common in Guernsey.—†*C. opulifolium* Schrad. Vale, Guernsey; Braye, Alderney. New to the islands. — *C. glaucum* L. Only once reported from Guernsey by Mr. H. C. Watson, who found it at St. Sampson's, where it had not again been found. I saw it between St. Peter's and St. Martin's.

*Salicornia herbacea* L. †var. stricta (Dum.). Near Cobo, Guernsey.—*S. ramosissima* Woods. St. Helier's, Jersey.

*Atriplex Halimus* L. Beauport, Jersey. —†*A. hortensis* L. var. rubra Moq. By the railway near Bel Royal, Jersey; casual.

*Polygonum Convoluteus* L. var. alatum Van Hall. Vale, Guernsey. —*P. aviculare* L. var. agrestinum (Jord.). L'Etac, Jersey.

†*Rumex sanguineus* L. St. Aubin's, Jersey, but probably not native; it appears to be native at Vale, &c., Guernsey.—*R. pulcher* L. A red-veined form at St. Aubin's, Jersey.

*Humulus Lupulus* L. La Haule, Gorey, Jersey.

†*Ulmus stricta* Lindl. St. Helier's, &c., not unfrequent, but
almost certainly planted in Jersey; scattered also through Guernsey.

Thesium humifusum DC. Near Don Bridge. Mr. Piquet had only once seen it in Jersey. Rather frequent at Longy Bay, Alderney.

Asparagus officinalis L. var. altitius L. St. Ouen’s as a stray, Jersey.

*Orchis ericotum Linton. Grande Mare, Guernsey; *La Hoye, Jersey.

Potamogeton natans L. Very rare in Jersey. I saw it in the Waterworks Pond.—P. polygonifolius Pourr. Grosnez, as the var. ericotum.—P. interruptus Kit. St. Ouen’s Pond.

Zannichellia pedunculata Reichb. L’Ancresse, Guernsey.

Carex flava L. var. minor Towns. Grosnez; Bouley Bay, Jersey.
—C. binervis Sm. Heathland near Grosnez, Jersey.—C. muralata L. (= contigua Hoppe). Near Portelet, Jersey.—C. Goodenowii Gay var. chlorocarpa (Reichb.). St. Ouen’s Bay, Jersey.—Var. recta (Kukenthal). St. Ouen’s Bay; Grande Mare, Guernsey.

Scirpus pauciflorus Lightf. St. Ouen’s Bay; new to Jersey.—S.fluitans and Eleocharis multicaulis Br. St. Ouen’s Bay, Jersey.


Phleum pratense L. At Bel Royal; rare in Jersey.

Phalaris minor Retz. Abundant in cultivated land at St. Luke’s, Jersey, and in many parts of Guernsey; but it appears to be a colonist rather than a native.

†Agrostis verticillata Vill. On newly made ground near St. Luke’s, Jersey. On disturbed soil near Braye, Alderney. Abundantly, not only on quarry débris, but by roadsides, &c., at Vale, St. Sampson’s, and near the Grande Mare, Guernsey. This Mediterranean species, which has for nearly a century been known at Cherbourg, is well naturalized, if not native, in Guernsey. It is easily known from A. alba L. var. stolonifera (L.), which it somewhat resembles, by the panicle branches being garnished with spikelets to their base, not naked as in A. alba. New to the islands.—A. alba L. var. maritima Meyer. St. Helier’s, Jersey; Cobo, &c., Guernsey; Longy, Alderney.—A. tenus Sibth. (vulgaris With.) var. humilis. Heathland near Grosnez, Jersey; L’Ancresse, Guernsey.

Polypogon monspeliense L. The locality at St. Sampson’s, where I saw this and Sueda fruticosa twenty-seven years ago, is now covered with glass-houses.


Lagurus ovatus L. In 1877 Mr. Piquet showed me a small patch, which could have been covered with a handkerchief, resulting from some seeds which he sowed there one or two years before. Now the plant has spread over the whole of St. Ouen’s Bay, and even some little distance inland on the sand-dunes.


Avena fatua L. †var. glabrata Peterm. St. Luke’s, Jersey.—
A. pubescens Huds. Rare; on the slopes of Beauport, Jersey, with Anthyllis, another Calciete.

Arrhenatherum avenaceum Beauv. var. tuberosum (Gilib.). St. Ouen's, Don Bridge, Jersey. Common in Guernsey, where I did not see the type. †Sark: not recorded for this island; I saw it in several places.

Cynodon Dactylon Pers. Still at Vazon, Guernsey.

Phragmites communis Trin. var. stolonifera Meyer. Paradis, Guernsey; Portelet Bay, Jersey.—Var. subuniflora (DC.). Grande Mare, Guernsey; St. Ouen's, Jersey.

Holcus lanatus L. †var. albovirens Reichb. Bel Royal, Jersey; Alderney.

Briza maxima L. Pont Marquet, Jersey; not native.—B. minor L. Very beautiful in Sark.—†B. media L. In a rich meadow, Grande Mare, Guernsey; new to the island.

dactylis glomerata L. †var. abbreviata Bernh. Quenvais, Jersey; L'Ancresse, Guernsey; Longy, Alderney.—†Var. glauca. A strongly glaucescent form at Portelet, Jersey.

Cynosurus echinatus L. Varying much in frequency in different years. I was unable to find it in 1877. This year it was in great abundance, and very luxuriant, on West Mount, Jersey, and in several places about Vale, Guernsey, where it was shown me by Mr. Marquand.

Poa annua L. †var. picta Beck. St. Ouen's, Jersey. A very tall, lax form at the Grande Mare, Guernsey. A very minute form in fruit at Petit Bot Bay, Guernsey.—P. subcarulea Sm. Quenvais, &c., Jersey; L'Ancresse, Guernsey; Longy, Alderney; near the harbour, Sark.—P. trivialis L. †var. glabra Doell. West Mount, Jersey.

Keweria. The large series I collected of this genus in the Channel Isles await determination. K. albescens DC. was abundant on the Quenvais, Jersey.

Glyceria fluitans R. Br. †var. triticea Fr. St. Ouen's Pond, Jersey.—G. distans Wahl. St. Luke's, Jersey; a recent addition to the island, found by the Rev. W. Moyle Rogers in 1897, at George Town.

Festuca bromoides L. (F. sciuroides Roth). An upright and as a prostrate form at St. Helier's, Jersey, where it was sometimes very luxuriant. As a dwarf prostrate form in Sark.—†Var. intermedia (Hackel). St. Aubin's, Jersey. —F. membranacea (L.) Druce. Common and luxuriant on the mobile sands of St. Ouen's, Jersey; Cobo, &c., Guernsey; and Longy, Alderney.—F. ambiguа Le Gall. The Quenvais in two or three places, and Bel Royal, Jersey. Nearly burned up, so probably commoner than it appeared. There is only one previous record, that by Mr. T. B. Blow in 1876. L'Ancresse, Guernsey; Braye and Corblets, Alderney.—F. rigida Kunth. Bel Royal, Jersey.—F. ovina L. †var. duriuscula Koch. Very abundant on the Creux Rocks, Sark.—Var. tenuifolia (Sibth.) = paludosa Gaud. Grosnez, Quenvais, &c., Jersey. Sometimes very glaucescent. Common in several places in Guernsey, and also seen in Sark.—F. rubra L. var. juncea Hackel. Magnificent specimens on the mobile sands on the slopes above
St. Ouen's Bay, Jersey. Less typical in Alderney.—Var. vulgaris. Common in all the islands, and as a form approaching juncea in Sark; West Mount, Jersey; and Alderney. — F. arundinacea Schreb. St. Ouen's, Jersey; Grande Mare, Guernsey.

Bromus rigidus Roth. In fine condition near the Creux Rocks, Sark, where it was found by Mr. J. W. White.—B. rigidus L. (= B. maximus Desv.). Common in many localities, as at Bel Royal, Jersey; Vale, &c., Guernsey; Braye, Alderney, in magnificent growth.—B. hordeaceus L. (= mollis L.). Common and variable; a very robust form, with large spikelets, at Millbrook, Jersey. —

† Var. Thominii (Bréb.). On the Quenvais, Jersey; on L'Ancresse, Guernsey; and at Longy, Alderney.—B. commutatus Schrad. Grande Mare, Guernsey; St. Helier's, Jersey; near Vallette. —

† New to Sark. A pubescent form was seen near the Grande Mare.

Brachypodium sylvaticum Roem. & Schult. Common about Grosnez Castle, Jersey.

Lolium multiflorum Lam. Millbrook, Jersey; Vale, Guernsey. Not native.

Agropyron repens Beauv. † Var. Leersianum S. F. Gray. Braye, Alderney. — † Var. cesium Presl. St. Luke's, Jersey. — † Var. Vaillantianum Schrck. Braye Bay, Alderney. — † Var. Hackelii mihi = A. repens × juncea. A common hybrid round the coasts of all the islands except Sark, and variable. At Cobo as a dwarfed form, but at the Grand Havre occurring as a form with large wheat-like spikes, which Prof. Hackel has named forma cristata. This hybrid is doubtless the A. acutum of the Floras.—A. juncea Beauv. Common on the mobile sands of the coast.—A. pungens Roem. & Schult. As a small strict form at Vazon Bay, Guernsey; as a very robust form at Perelle Bay, Guernsey; and as a very strict form with much of the aspect of × Hackelii, near Don Bridge, Jersey. This species is new to Jersey.

† Hordeum nodosum L. In a field near Perelle Bay, Guernsey. New to the Channel Isles. Native.

Lepturus filiformis Trin. As a prostrate plant with ascending culm at Vale, Guernsey; and as a slender upright plant at St. Luke's, Jersey, and the Grande Mare, Guernsey.

† Pinus Pinaster Ait. Planted near Beaupto, Jersey.

Athyrium Filix-femina Roth † var. convexum (Newm.). Pont Marquet, Jersey.

NOTES ON LIMONIUM.

By C. E. Salmon, F.L.S.

VI.— LIMONIUM BELLIDIFOLIUM Dum.

This sea lavender is the last of our British species to be dealt with, the other four having been described in former papers. * It seems to have been first noticed in England by Mr. H. Scott in

* See Journ. Bot. 1903, 65; 1904, 361; 1905, 5 and 54; 1907, 24.
Norfolk about 1746 (Blackst. Spec. 47), and a little later in Lincolnshire by Sir J. Banks; and the plant was at first confused with the *Statice reticulata* of Linnaeus, Sp. Pl. 275 (1753).

Under this specific name, but in the genus *Limonium*, Miller (Gard. Dict. ed. 8, 1768) mentions the discovery, and states that it also “grows naturally in Sicily,” the inference being that he refers to the *S. reticulata* L. To show the confusion of species then existing, the specimen illustrating Miller’s plant in his own herbarium is the endemic Spanish *S. dichotoma* Cav.

In the old British Floras, and in the early editions of Babington’s Manual, our plant appears as *S. reticulata* L., but in Ann. Mag. Nat. Hist. 441 (1849), Babington pointed out that Boissier, in DC. Prodr. xii. 656, considered the Linnean plant to be probably identical with *S. cancellata* Bernh., but had rejected the name, as it had been confused with so many species. With this Babington concurred, and, following Boissier, identified our British plant with the *S. caspia* of Willdenow.

We may dismiss for the present *S. reticulata* L., and continue the line of research at the point where Babington left the matter. By the kindness of the Berlin Museum authorities I have seen the type specimens † of Willdenow’s *S. caspia* and compared them with his original description in Enum. Hort. Bot. Berol. 336 (1809), which runs: “Folii spathulatis obtusis subretusis, scapo erecto ramosissimo scabro, ramis sterilibus pectinatim ramosis, floribus confertissimis, bracteis membranaceis diaphanis.”

Mention is made here, also, that the species is synonymous with the “*S. reticulata* M. Bieb. Fl. Taur.-Caucas. i. 250 (1808) (non Linn. nec Boe.)”, a view which M. Bieberstein himself adopts (iii. 253, 1819), where he replaces “*reticulata*” by *S. caspia* Willd.

The description given above may well apply, as indeed the specimens themselves show, to our British plant, with the exception of “folii . . . subretusis”; but, as Babington (l. c. 443) has pointed out, this character may have originated in the apex of the leaf being strongly recurved, as sometimes happens, and I have little doubt that the conclusion arrived at by Babington as regards the correct place for our plant was correct.

Prior to the date of Willdenow’s *S. caspia*, our plant was observed by Gouan in the district of Montpellier, South France, and described by him (Fl. Monspel. 231, 1765) as a variety of *S. Limonium*: “γ folii obovatis. *Bellidifolia.*” The description is brief, but a reference given, “Mag. Bot. 155, hort. 119,” enabled Grenier & Godron (Fl. Fr. ii. 749, 1850) to prove that Gouan’s plant was undoubtedly the species under discussion. Gouan’s herbarium, at Kew, contains no specimens of this plant that may be regarded as “type.”

De Candolle (Fl. Fr. iii. 421, 1805) appears to be the first author who described our plant as a species, *S. bellidifolia*; I have seen

---

* This is sometimes found erroneously written “*caspica* Willd.,” and indeed is so spelt in his own herbarium.
† The cover contains five sheets. Nos. 1-3 and 5 are *S. caspia*; No. 4 is *S. decipiens* Ledeb.
authentic examples so named by him. Dumortier (Fl. Belgica, 27, 1827) seems to have first placed De Candolle’s plant under the genus Limonium; we should therefore label specimens L. bellidi- folium Dum.

The European distribution of our plant, as given by Nyman (Conspec. Fl. Europ. 1878-82, and Supp. 1890), includes Spain (Catalonia), Balearic Isles, South France, Italy, Sardinia, Austria-Hungary (Dalmatia), Turkey (Macedonia), Rumelia (Thracia), Rumania (Dobrudsha), Greece and South Russia; he separates our British plant as an endemic subspecies, “S. reticulata Sm.,” found only in Norfolk and Lincoln.

To find a reason why Nyman should so label our form, I examined numerous examples of the species from all the countries mentioned above (with the exception of Rumelia and the Balearic Isles), and the results were as follows. In Spain, France, Italy, Sardinia, Austria-Hungary, Turkey, and Rumania the plant is usually identical with our native species, varying greatly, as in England, as regards barren branches, laxity of spike, &c.

In Greece and Russia the plant very often assumes a different aspect, and bears short dense spikes of smaller flowers with more rounded calyx-lobes (indeed Halacay, Conspec. Fl. Greece. iii. 22, 1904, describes them as ovate), and is thus (particularly in Greece) nearer to the S. Iconia of Boissier & Heldreich. The latter, however, a rare plant of Asia Minor, has a different habit of growth, a distinctive hairy and small calyx, and other points of divergence. In Greece and Russia one finds that a very great variety of forms exist, which provide links between the extreme state mentioned and our English plant, and I am led to the conclusion that British examples, whilst often possessing larger flowers than those from the Continent (possibly caused by a difference in latitude), cannot be held to be a separate subspecies, as noted by Nyman, but are merely states or forms of this variable species.

A few examples of the varying nature of L. bellidi-folium may not be out of place here:—Wells, England—very few or no sterile branches, spikes short dense; Hunstanton, England—numerous sterile branches with similar spikes; Spain—sterile branches many, spikes lax; South France—sterile branches many or few, spikes short dense or longer and laxer; Italy—sterile branches many, spikes more or less dense, scale often leafy; Sardinia and Austria-Hungary—sterile branches many, spikes rather lax; Turkey and Rumania—sterile branches many, spikes lax, calyx-lobes more rounded; Greece—sterile branches many, spikes very short dense, calyx small with lobes rounded; South Russia—very variable, many sterile branches, lax spikes, calyx of normal size with lobes triangular-acute, or sterile branches few or none, spikes dense, calyx small with rounded lobes.

A variety, patens, of which I have examined a type-specimen in Herb. Boissier is mentioned by him (DC. Prodr. xii. 661) as occurring in the Altai region near Loktiew, Siberia; I have not seen examples from other countries.
The synonymy, description, and distribution in Europe of the plants under discussion may stand as follows:—

*Limonium bellidifolium* Dum. Fl. Belg. 27 (1827).

*Statice Limonium* L. *γ bellidifolia* Gouan, Fl. Monsp. 231 (1765).

*S. reticulata* Sm. Eng. Bot. No. 328 (1796); Sm. Fl. Brit. 342 (1800); Bieb. Fl. Taur.-Cauc. i. 250 (1808); Sm. Eng. Fl. ii. 116 (1824); Hook. Brit. Fl. 146 (1830) (non L., nee al.).

*S. oleafolia*, Host, Synop. Pl. Aust. 177 (1797) (non al.).

*S. cordata* Suffr. Princip. Bot. 132 (1802) (non al.).

*S. bellidifolia* DC. Fl. Fr. iii. 421 (1805)! Poir. Dict. vii. 402 (1806); Willd. Herb.!


Planta tota granulato-scabra, glabra; squamæ rarissime foliaceæ; scapus fere ab imo ramosissimus; rami plurimi inferiores stieriles, multifidi, rario pauci aut rarissime nulli; folia max evanescentia, fere modica, obovata vel lanceolato-obovata; spicæ breves et densifloræ vel longiores et laxifloræ; bractea exterior \( \frac{1}{2} \)–1\( \frac{3}{4} \) l. longa a basi hyalina; bractea interior \( \frac{1}{2} \)–1\( \frac{3}{4} \) l. longa, dimidio et amplius longior quam bractea exterior, marginibus et superiore tertia parte (rarissime dimidio) hyalinis; calyx \( \frac{1}{2} \)–2 l. longus (rarissime minor), lobis albis nuncquam coloratis triangularo-acutis vel rarius abbreviati rotundatis, sæpe subtiliter denticulatis dentibus intermediiis nullis.

Plant 1\( \frac{1}{2} \)–16 in. high or long, not hairy but seabrid-granular, particularly in upper parts. Scape stout or slender, very much branched from near its base; erect or decumbent, and when the latter often forming a circle. Leaves soon disappearing, 1-3-veined, usually 1, 2–2 in. long, usually small, obovate or lanceolate-obovate obtuse or more acute and mucronate; petiole commonly about as long as blade. Branches erect, spreading, or (occasionally) areuate-recurved; many lower usually wholly sterile and much divided, occasionally almost simple or wanting and all branches floriferous. Branchlets often much subdivided. Scales triangular-acute, the larger ones with acuminate points, about 3 lines long at base of scape to \( \frac{1}{2} \) line at summit; very rarely the lower scales are foliaceous (chiefly in Italy). Spikes often scorpioid, either
short and dense-flowered (usually accompanied by few sterile branches), or longer and lax-flowered (with more copious sterile branches), but all variations occur. Spikelets 2-3-flowered, distichously and densely inbricate or contiguous or even distant (rare). Outer bract 1/4-1 1/4 lines long, and about as broad, ovate obtuse, mucronate or not, wholly hyaline with faint veins at base. Middle bract 3/4-1 1/4 lines long, irregularly oblong-ovate, bifid or truncate or rounded, hyaline with veins. Inner bract 1 1/2-1 3/4 lines long, ovate or obovate, broadly hyaline at sides and upper third (in Russia very rarely on upper half), more than half as long again as outer bract. Bracteoles 1 line long, obovate-ovate, hyaline, rounded or blunt. Calyx 1 1/2-2 lines long, irregularly hairy near base, particularly on veins, occasionally almost glabrous, calyx-lobes triangular-acute or (particularly in Greece and Russia) shallowly rounded; veins of calyx not running beyond base of lobes, and rarely so far; lobes white, never coloured, often finely denticulate, with no intermediate teeth. Corolla small, pale lilac.


For the English county records I have noted the earliest occurrences for the plant from herbarium specimens examined.

Limonium bellidifolium Dum. var. patens.

S. caspia Willd. var. patens Boiss. in DC. Prodr. xii. 661.
S. patens Fisch. herb. !

Whole plant, including bracts, calcareously-scaly; branches of scape more patent than in type; sterile branches practically absent; hairs on calyx adpressed.

Found by Fischer on the Altai Plains about Loktiew, Western Siberia!
NOTES ON THE "LIST OF BRITISH SEED-PLANTS."—II.

BY A. B. RENDLE, D.Sc., F.L.S., & JAMES BRITTEN, F.L.S.

Since the publication of our List and of the notes upon it which appeared in this Journal (pp. 99–108) considerable attention has been paid to nomenclature. Messrs. Schinz and Thellung have published in the Bulletin de l'Herbier Boissier a long series of carefully prepared notes, concluding with an article having especial reference to our List; and Dr. Erwin Janchen has a number of suggestions in the Mitteilungen des Naturwiss. Verein. an der Universität Wien, and has communicated others to us by letter. It seems therefore desirable to place on record such corrections of our List as appear to us necessary, with indications of the reasons why, after careful consideration, we do not accept some of the suggestions which have been made. The corrections are more numerous than we hoped would have been the case; some may be accounted for by the unfortunate omission from the Rules of any special reference to what Messrs. Schinz & Thellung have called "still-born" names, as to which a note follows. It was inevitable that the extended investigation by numerous botanists, which has resulted from the publication of our List, should bring to light points which had been overlooked; and we take this opportunity of thanking numerous correspondents—among them Dr. Otto Nordstedt, the Rev. E. S. Marshall, Messrs. W. A. Clarke, G. C. Druce, H. & J. Groves, W. P. Hiern, and others—for many criticisms and suggestions.

Messrs. Schinz & Thellung describe as "still-born" (totgeboren), names "deren Aufstellung von Anfang an unter Verletzung einer Regel erfolgt ist," i.e. which at their origin transgressed the present rules of nomenclature, especially Article 48 which insists on the adoption of the earliest specific name. It is much to be regretted that this point, which arises from the retroactive character of the Rules indicated in Article 2, was not discussed at the Congress. In cases of arbitrary change of names such as occur frequently in Lamarck's Flore Francaise—e.g. Leontodon vulgare Lam. vice L. Taraxacum L., Linum multiflorum Lam. vice L. Radiola L., &c.—and at a later date by Salisbury—Erysimum alliaceum Salisbury. vice E. Alliaria L.—we accept their position. Later authors are not justified in departing from the trivial given by the founder of the species, except in cases where this would involve repetition of the genus-name; and names thus formed cannot be taken into consideration in subsequent changes of nomenclature. Thus the combination Alliaria alliacea published in our List cannot stand, as Salisbury had no right to change the trivial given by Linnaeus. But we cannot agree with Schinz & Thellung (l.c. 506) in regarding as still-born such names as Cucubalus latifolius Miller, which were considered by the author to represent a distinct species; thus Miller has both C. Behen (following Linnaeus) and C. latifolius (as a new species), and is very careful to discriminate between the two. The fact
that C. latifolius is now regarded as a synonym of C. Behen L. does not justify setting it aside as a name established in contra-
vention of the Rules. If we extend the term still-born beyond
cases of the mere substitution of names such as those quoted
from Lamarck, it becomes impossible to set a limit to its use.
It is then a botanical question concerned with the limitation of
species.

A few alterations in the attribution of genera will be corrected
in the next edition of the List. In some cases where we see no
reason to depart from our original position we have made no
note: e.g. as to Malva rotundifolia, about which there is ad-
mittedly a divergence of opinion.

A note may be added on Linnaeus's Flora Anglica. A careful
consideration of this list of plants has convinced us that the
names contained therein must be regarded as bearing the same rank
as they do in the Species Plantarum. Where a species in the
latter contained varieties which occur in the British flora, the
species-name is introduced only with the first variety, e.g.:

Medicago polymorpha arab. Primula veris officin. minima.

elatior. acaulis.

In the ninth edition of Babington's Manual, Messrs. Groves
use P. acaulis L., and in this Journal for 1906 (p. 179) refer this
name to Linnaeus's Flora Anglica. But a comparison of this and
other cases with the Species Plantarum shows that Linnaeus
always inserted varieties in the Flora Anglica in this way—that is,
without repeating the species-name. We should read the refer-
ence in Flora Anglica as P. veris [var.] elatior, P. veris [var.]
acaulis, &c. A further proof is found in the fact that in Spec.
Plant. ed. 2, which was later than the Flora Anglica (1754), these
names occupy the same rank as in ed. 1, i.e. appear as varieties.
It is absurd to suppose that Linnaeus in 1754 raised to the rank
of species plants which a year before he had considered varieties,
to which rank he again reduced them in 1762; yet on no other
supposition can these names be regarded as of specific rank. An
interesting confirmation is found in the method of citation under
Trifolium of the species of the section Melilotus: thus in the
Flora Anglica Linnaeus has

Trifolium Melilotus offic. Ornithopodioid.

Here, as in the previously cited cases, he omits the repetition of
the middle word; the citation in full is Trifolium Melilotus
Ornithopodioides. We assume that no one would quote this as
T. Ornithopodioides L.

As in our previous notes, the number prefixed to the genus is
that which it bears in the List.

4. Adonis annua L. Schinz & Thellung use A. autumnalis
L. Sp. Pl. ed. 2, not A. annua L., which included two species.
We consider that the name given by Linnaeus should, if possible,
be kept for one, and we therefore follow Hudson in restricting it to the British plant. A. annua L. sensu restricto (Hudson Fl. Angl. 209, 1762), moreover antedates A. autumnalis L. Sp. Pl. ed. 2, 771, as is seen from the fact that Linnaeus quotes Hudson’s book in his list of authors, and also refers to it in the text, e.g. under Cistus polifolius, p. 745.

6. Ranunculus divaricatus Schrank. Messrs. Groves have shown (Journ. Bot. 1907, 379) that this is a nomen confusum, and the same remark applies to R. foniculae L. Gilib. adopted by Schinz & Thellung. The plant should stand as R. circinatus Sibth. Fl. Oxon. 175 (1794).

[14. “Actea nigra Miller, Gard. Dict. ed. 8 (1768), n. 1,” adopted by Schinz & Thellung, is non-existent. Miller’s name is A. spicata (= A. spicata var. nigra L.); he distinguishes as A. alba Linnaeus’s var. alba.]

16. Castalia alba. The authority for this name should stand as Wood in Rees Cyclop. vi. (1806).


29. Arabis stricta Huds. (1778) is antedated by A. scabra All. in Misc. Taur. v. 74 (1774).

34. Alliaria alliacea as we have pointed out above cannot stand, being founded on Erysimum alliaceum Salisb., a still-born name. The name to be adopted is A. officinalis Andrzj. ex Bieb. Fl. Taur.-Cauc. iii. 445 (1819).

45. Teesdalea Br. should be Teesdalia.

56. Helianthemum marifolium Miller must give place to H. canum Baumgarten Enum. Stirp. Transsylv. ii. 85 (1816). As Dr. Janchen points out, Cistus marifolius L. is a plant with somewhat pointed leaves, restricted to the south of France, while H. marifolium Mill. is a synonym of Cistus canus L., the British plant.

H. polifolium Mill. In his monograph of Cistaceae in the Pflanzenreich, W. Grosser regards Cistus polifolius L. Sp. Pl. ed. 2, 745, as a form of C. aplaninus L. Sp. Pl. ed. 1, 529, and therefore takes the earlier name for the aggregate species. But we think this extension of the species will hardly commend itself to British botanists.

H. chamaecistus Mill. Janchen (in litt.) suggests replacing this by H. nummularium Mill. (= Cistus nummularius L.). But there is no evidence either from Miller (whose plant has white flowers) or Linnaeus, who cites for the sole habitat Montpellier, that this is the British plant, and the specimen in the Linnean herbarium does not appear to be H. chamaecistus.

57. Viola sylvestris Lam. This should be cited as of Kitaibel in J. A. Schultes Oesterr. Fl. iv. pt. 1, 423 (1814). Lamarck’s name is merely a substitution for V. canina L. in its
unrestricted sense, and is therefore still-born. Kitaibel was the first to separate from *V. canina* the plant in question; and Reichenbach, when further restricting the species by the separation of *V. Riviniana*, quotes Kitaibel for the restricted *V. sylvestris*.

60. DIANTHUS GRATIANOPOLITANUS Vill. (1789.) There is no question that *D. glaucus* Huds. Fl. Angl. ed. 2, 185 (1778) is *D. cesius* Smith (1792), for which *D. gratianopolitanus* was adopted as an earlier name. Hudson refers to it as the Cheddar Pink, and quotes an excellent description and figure from Dillenius (Hort. Elth. 401, t. 298, f. 385). In ed. 1 of the *Flora Anglica*, Hudson merely copied Linnaeus’s diagnosis and his citation from Dillenius (Hort. Elth. 400, t. 298, f. 348 [384])—the latter referring to an entirely different plant—with the addition of the Cheddar locality. *D. glaucus* of Linnaeus Sp. Pl. 411 is thus very doubtful; the specimen in his herbarium is certainly not *D. cesius*. We therefore abandon him as the authority for *D. glaucus*, and cite it as of Hudson, ed. 2; plants in Herb. Mus. Brit., “from Curtis as glaucus Huds.” are noted by Smith, “This glaucus Huds. is a new species.” Linnaeus gives “Anglia” as the habitat, but this, as appears from his *Flora Anglica* (p. 16), was based on a reference to Ray Syn. iii. 336, n. 2, which includes more than the Cheddar plant.

62. SILENE MARITIMA With. (1796) is antedated by *S. AMENA* Huds. Fl. Angl. 164 (1762).

72. CERASTIUM VISCOSUM L. and C. VULGATUM L. Owing to the undoubted confusion which has arisen from Linnaeus onwards in the use of these names, Schinz & Thellung abandon them; but after careful consideration we prefer to retain them, as we are unwilling to abandon names given by Linnaeus unless it seems absolutely necessary.

75. ALSINE. We retain the generic name *Alsine*. It is true that *Spergularia* occurs in the list of names to be retained which forms an appendix to the Vienna Rules, but it is inserted in that list only with reference to the two genera of Adanson—*Buda* and *Tissa*—and not to the Linnean genus *Alsine*. We also follow Hiern (Journ. Bot. 1899, 317) in regarding the British species as congeneric with *Alsine segetalis* L.

85. HYPERICUM QUADRANGULUM L. Schinz & Thellung wish to substitute for this *H. acutum* Moench Method. 128. This, however, is a still-born name, being an absolute synonym of *H. quadrangulum* L., which Moench cites. He occasionally substituted new trivials for those previously given, e. g. on p. 129 three other Linnean species of *Hypericum* are renamed. *H. acutum* cannot therefore be used in the restricted sense of the later name, *H. tetraphyllum* Fries. We follow Crantz (Stirp. Austr. ed. 2, 98, 1769), who retains the name *quadrangulum* for part of the original Linnean species (he cites the Linnean synonymy of Bauhin), and makes a second species, *H. maculatum*, which we also retain.

89. OXALIS STRICTA L. and O. CORNICULATA L. There is no doubt as to the identity of these plants. Linnaeus copied his diagnosis of *O. stricata* from Gronovius Virg. 161, and gives the
habitat as Virginia. We cannot follow Schinz & Thellung in their statement, "O. stricta L. Sp. Pl. ed. 1, 435, ex minima parte quoad syn. Gron. Virg.," for how can the diagnosis be regarded as minima pars? It is impossible to dissociate the diagnosis "caule ramoso erecto" from Gronovius's plant as do Schinz & Thellung, since Linnaeus took his diagnosis from Gronovius, and no doubt had Gronovius's plant before him. We agree with these authors that O. Dillenii is synonymous with the Gronvian plant, i.e. true O. stricta. Again we agree in regarding "O. corniculata L. Sp. Pl. quoad Hort. Cliff." as synonymous with O. europaea Jord., but we cannot follow him in regarding the Hort. Cliff. reference as "O. corniculata L. ex minima parte," because the diagnosis is from Hort. Cliff. p. 175, of which we have the type; this is not a matter of synonymy, but the original diagnosis. It is true that Linnaeus adds the word "diffuso" in the Sp. Pl., but this is merely to distinguish the species from his additional species O. stricta taken from Gronovius and described as "erecto." It was as a result of the study of these original specimens in the National Herbarium that Dr. Robinson arrived at the conclusions which we follow.

101. Medicago minima L. must be cited as of Desrousseaux in Lam. Encycl. iii. 636 (1789) (see note on Flora Anglica, p. 494). We cannot follow Schinz & Thellung, who cite the name as of Bartalini Cat. piant. Siena 61 (1776). Bartalini gives in addition to the name only two references, one to the general description of polymorpha given by Linnaeus (who made minima a var. of polymorpha), and the other "Medica echinata glabra cum maculis nigricantibus, l. B. 3 [ii.] 384," which does not refer to minima of Linnaeus, as that plant has not black spots. Further, Bartalini does not quote the right synonym for minima from J. Bauhin, cited by Linnaeus, viz. Medicago echinata minima, of which Bauhin has a good figure on p. 386.

102. Melilotus. We follow Schinz & Thellung in the alteration of the names of the yellow-flowered Melilots. M. officinalis Lam. Fl. Fr. ii. 594 (1778) includes three plants, two with yellow and one with white flowers. Desrousseaux in Lamarck's Encyclopedie iv. 63 restricts the name to the two yellow-flowered species, and Thuillier (Fl. Paris, ed. 2, 378 (1799)) separates M. altissima from M. officinalis, which therefore remains for the plant called in our List M. Petitpierreana Hayne. The names therefore stand thus:—M. altissima Thuill. l.c. vice M. officinalis Lam.; M. officinalis Lam. l.c. vice M. Petitpierreana Hayne.

103. Trifolium medium L. and T. squamosum L., and Vicia angustifolia L. (109). These names are quoted by Schinz & Thellung in error from the first edition of Linnaeus's Flora Anglica; they appear for the first time in the second edition published, as cited by us, in the Amoenitates (iv. 1759). As we have already pointed out, it is absurd to call these names nomina nuda. In the case of V. angustifolia the identification is based on somewhat slender evidence, but has always been accepted by British botanists.
123. *Potentilla sylvestris* Neck., as Schinz & Thellung point out, must be replaced by *P. erecta* Hampe in *Linnaea*, xi. 50 (1837); it was the *Tormentilla erecta* L. Sp. Pl. 500.

P. *verna* L. Schinz & Thellung, following Ascherson & Graebner (Syn. Fl. Mittel-Europ. vi. pt. 1, 792), abandon this as a "nomen omnino confusum." But in view of the facts that the Linnean species is generally admitted to include the plant known to British botanists as *P. verna*, and that the specimen in the Linnean herbarium is that species, we have retained the name in preference to *P. Tabernæmontani* Aschers., which is adopted by Schinz & Thellung.

129. *Rosa villosa* L. We do not follow Schinz & Thellung in abandoning this name on the ground of confusion. There is no confusion as regards British botany, though the name is admittedly a group name.

136. *Epilobium parviflorum*, *roseum* and *obscurum* Schreber Spicil. Fl. Lips. 1771. It is necessary to quote these names from the Conspectus at the end of the volume which serves as an index; in the body of the work the species stand under *Chamaenerion*.

E. *alpinum* L. We agree with Mr. E. S. Marshall in following Haussknecht's monograph of the genus (p. 159), where it is shown that the plant in the Linnean herbarium is *E. lactiflorum*, and that the Linnean description includes both *anagallidifolium* and *lactiflorum*; therefore the name *alpinum* should be retained for *lactiflorum*, and the British plant stands as *E. anagallidifolium* Lam. Encycl. ii. 376 (1788).

143. Coptis *Coptis umbilicus* should stand as *C. umbilicus-Veneris* L.

148. *Drosera*. Schinz & Thellung have called in question our use of Hudson's names. There is no doubt, from the citation of Ray and the English name—Great Sundew—that Hudson's *D. anglica* (ed. 2) is our largest sundew, and that his *longifolia* represents *intermedia*, in spite of his citation of Parkinson's figure of the Great English Sundew. In his first edition Hudson followed Linnaeus in applying the name *longifolia* to the aggregate species, and in his second edition separated *D. anglica*.

177. *Daucus gummifer*. The reference should be to Allioni in Misc. Taur. v. 182 (1774).

179. *Torilis Anthrisci*. The reference should be to Gmelin Fl. Bas. i. 615 (1805).

184. *Physospermum Cusson* (1787). An earlier name for this genus is *Danaa* All. Fl. Pedem. ii. 34, t. 63 (1785). The species therefore stands as *D. cornubiensis* Burnat Fl. Alp. Marit. iv. 99 (1906), where an exhaustive account of the synonymy is given.

196. *Galium saxatile* L. Schinz & Thellung abandon this name in favour of *G. hercegnicium* Weigel Obs. 25 (1772), on the ground that *saxatile* is localized by Linnaeus as a Spanish coast plant. However, botanists generally consider the two synonymous,
including Willkomm and Lange (Prodr. Fl. Hisp. ii. 316), and the plant in the Linnean herbarium is our British species.

G. asperum Schreber Spicil. Fl. Lips. iii. (1771) is an earlier name for G. umbellatum Lam. (1788) and G. sylvestre Poll. (1776).

205. Petasites ovatus Hill. For this must be substituted P. hybridus Gaertn. Mey. & Schreb. Fl. Wett. iii. 184 (1801). Linnaeus distinguished the female plant as Tussilago hybrida (Sp. Pl. 866); the male plant he called T. Petasites.

211. Linosyris vulgaris DC. The synonym Aster vulgaris Bernh. should read A. Linosyris Bernh.

212. Inula vulgaris Trev. For this name must be substituted I. squarrosa Bernh. ex Schinz & Thellung in Vierteljahrs. Naturf. Ges. Zurich, li. 498 (1906). I. squarrosa L. Sp. Pl. ed. 2, 1240 (1763) is universally recognized as a synonym of I. spireci-folia L. Syst. (1759), hence the original trivial squarrosa (Conyza squarrosa L.) must be adopted. It cannot, however, be cited, as is usual, as I. squarrosa Bernh., as that name occurs only in synonymy under I. Conyza DC. (Prodr. v. 464).

213. Pulicaria prostrata Aschers. is based on Inula prostrata Gilib., a still-born name for I. Pulicaria L. The name must stand as P. vulgaris Gaertn. Fruct. ii. 461 (1791).


219. Matricaria discoidea DC. For this must be substituted M. suaveolens Buchenau Fl. Nordwest-deutschl. 496 (1894) (= Santolina suaveolens Pursh Fl. Am. Sept. ii. 520 (1814)).

230. Arctium purens Bab. (1856). A. intermedium Lange Danske Fl. 463 (1851) is an earlier name for this species if the plants are identical.

237. Arnoseris minima. The reference should be to Schweigg. & Koerte Fl. Erlang. ii. 73 (1811).

240. Thrincla nudicaulis Britten. The authority for this combination depends upon whether T. hirta Roth and T. hispida Roth are regarded as distinct species, as is the custom with British and most continental botanists. If combined, as suggested by Schinz & Thellung, the authority will be Lowe in Trans. Camb. Phil. Soc. iv. 28 (1831).

237*. Lactuca muralis Gaertn. Fruct. ii. t. 158. Schinz & Thellung say this reference cannot be regarded as publication, but, apart from the fact that the figure gives details of the diagnostic characters, there is on p. 363 a description with reference to Linnaeus’s Systema under the name “Chondrilla (Lactuca in Icon.) turalis.” Turalis, as shown by the plate, is a misprint for muralis, but by a further error is corrected in the errata to ruralis.

241*. Crepis succisifolia Tausch. This must be replaced by C. mollis Aschers. Fl. Brandenb. 385 (1864) (= Hieracium molle Jacq. Fl. Austr. ii. 12 (1774)).
242*. Hieracium sabaudum L. This should be replaced by H. boreale Fries Novit. Flor. Suec. 77 (1819).

256. Azalea L. Sp. Pl. 150. Linnaeus has six species, the first five of which are now referred to his genus Rhododendron (l.c. 392); the last is A. procumbens. In the list of "nomina conservanda" (Vienna Rules) Loiseleuria Desv. (1813 not "1840") appears as superseding "Chameceristis Oeder. Fl. Dan. t. 9 (1761)," which however has no existence as a genus in the work cited. We do not understand the Rules to say that Linnaeus's genus Azalea must disappear, which it would do if A. procumbens were not retained.

267. Anagallis tenella. The authority should stand as Murray Syst. Veg. 165 (1774).

276. For Centaurion Gilib. read Centaurium Hill.

278. Gentiana amarella L. There is no doubt that the Linnaean species includes the British plant which some continental botanists prefer to distinguish as G. axillaris F. W. Schmidt, abandoning the Linnaean name as an aggregate species.

283. Cuscuta epithymum should be cited from Murray Syst. ed. 13, 140 (1774).

294. Myosotis. Schinz & Thellung regard M. lutea Pers. Enchir. i. 156 (1806) as synonymous with M. versicolor Sm., but Persoon regarded it as distinct, as also do Willkomm & Lange, ii. 504, who may be assumed to know what is an exclusively Spanish plant. The reference to M. versicolor should be to Engl. Bot. t. 2558 text.

Mr. Druce (in Ann. Scott. Nat. Hist. 1907, 243) takes exception to our use of M. scorpioides L. for the Water Forget-me-not. Linnaeus (Sp. Pl. 131) included under M. scorpioides the British species of Myosotis, recognizing two varieties, arvensis and palustris, the latter being the water form. Hill (Veget. Syst. vii. 55, 1764) separates the land and water species, using Linnaeus's species-name scorpioides for the latter. Later, in his Herb. Brit. 170 (1769), he substitutes Linnaeus's varietal name palustris for scorpioides, which he cites as a synonym.

306. Scrophularia umbrosa Dum. (1827). We follow continental botanists in assuming the identity of this with the earlier S. alata Gilib. Fl. Lit. i. 127 (1781).


331. Stachys officinalis. The reference should be to Trevisan Prosp. Fl. Eugan. 26 (1812).

337. Limonium reticulatum Mill. (1768) must be replaced by L. bellidifolium Dumort. Fl. Belg. 27 (1827); see Journ. Bot. 1907, 428.

338. Statice Armeria L. must be replaced by S. maritima Mill. Dict. ed. 8, n. 3 (1768).
367. Ulmus glabra Huds. (1762). Schinz & Thellung wish to substitute for this U. scabra Mill. (1768). Hudson's plant is the Wych Elm; he has only two species, campestris and glabra.


372. Alnus glutinosa Gaertn. 1791. For this must be substituted A. rotundifolia Mill. Dict. Abridgm. ed. 6, n. 1, 1771.

386. Potamogeton Zizii Koch (1827). For this must be substituted P. angustifolius Bercht. & Presl Rostlin, 19 (1823) (see A. Bennett in Journ. Bot. 1889, 265). Schinz & Thellung quote P. Zizii as of Mert. & Koch in Röhlings Deutscl. Flora, 1823, 845, but the name is only mentioned there in synonymy.

P. Flabellatus Bab. (1851) is antedated by P. interruptus Kitaibel ex Schult. Oesterr. Fl. ed. 2, i. 328 (1814).

393. Alisma Plantago should be A. Plantago-aquatica L.

404. Habenaria montana. As shown by Celakovsky (Lotos, 1870, 177), Orchis montana Schmidt is not a synonym of H. chlorantha Bab. but a form of H. bifolia; hence the name H. montana must be abandoned. The earliest name is Orchis virescens Zollikofer in Gaud. Fl. Helvet. v. 497 (1829); and the plant must stand under Habenaria as H. virescens Druce in Ann. Scott. Nat. Hist. 1907, 244.

[405. Ophrys fuciflora H. G. Reichenb. Schinz & Thellung abandon this name as a nomen odiosum, which they say could not be used in Swiss school-floras.]

411. Epipactis. In his Dillenian Herbaria, 115, Mr. Druce substitutes Helleborine Hill for Epipactis, and we agree with this substitution, the reasons for which will be pointed out in the next number of this Journal. The species will therefore stand thus:

Helleborine Hill (Brit. Herbal, 477) 1756
1. H. latifolia Druce Dill. Herb. 115 (1907).
2. H. media Druce l.c.
3. H. violacea Druce l.c.
4. H. atrorubens Druce l.c.
5. H. longifolia comb. nov.

Schinz & Thellung retain the name palustris for the last species, as they consider that the use of Serapias longifolia by Linnaeus in Sp. Pl. ed. 2 as an aggregate precludes its use by him in a more restricted sense in the Systema, ed. 12. We however adhere to the view already expressed in this Journal (p. 105).

412. Cephalanthera grandiflora S. F. Gray. Schinz & Thellung, following Janchen, employ his new combination for this species—C. latifolia (Miller) E. Janchen in Mitteil. Naturw. Ver. Univ. Wien, v. 111 (1907)—on the ground that Serapias Damasonium Miller (= C. Damasonium Druce) is complicated and confused, while S. latifolium is clear and obvious. Any confusion
that might arise attaches not to S. Damasonium but to S. latifolia, which has been referred to C. longifolia Fritsch and was from the first a doubtful plant (see Journ. Bot. 1907, 240). Any doubt that might remain is, however, removed by Miller’s specimens of his two plants which are in the National Herbarium and both represent C. grandiflora.

With regard to this name, it represents as we have already pointed out (see Journ. Bot. 1907, 105) the Serapias grandiflora L. as further restricted by Scopoli (in full citation it would read S. grandiflora L. emend. Scop.). The suggestion that failing C. latifolia the name should stand as C. alba (Crantz) Simonkai is untenable, for Crantz’s genus Epipactis has no claim to consideration, including as it does not only the Serapias of Linnaeus, but other Linnean genera, namely Ophrys, Neottia, and Herminium. We note that Schinz & Thellung quote us incorrectly as citing Cephalanthera grandiflora as of Babington.

414. Corallorrhiza. This genus was established by J. J. Chatelain “Specimen inaugurale de Corallorrhiza” 1760. He names the species C. trifida, which must stand, as the Linnean trivial Corallorrhiza (under Ophrys) is inadmissible.


422. Crocus officinalis Hudson (1778). Schinz & Thellung substitute the name C. albiflorus Kitaib. (1814), but we see no reason for departing from the view we have taken, the grounds for which we have stated in this Journal (p. 106).

428. Asparagus officinalis L. For the British plant the restricted name A. maritimus Mill. Gard. Dict. ed. 8, n. 2 (1768), must be adopted.

430. Polygonatum officinale All. Mr. Druce (in Ann. Scott. Nat. Hist. 1907, 242) points out that Janchen adopts his suggestion, which we did not accept, that P. odoratum (Mill.) Druce should supersede P. officinale All. He adds that doubts have been expressed as to the identity of Miller’s plant, and these doubts are confirmed by reference to Miller’s specimen which is a form of P. multiflorum. Mr. Druce unfortunately proposes another name P. angulosum, “since Convallaria angulosas Lam. Fl. Fr. iii. 268, 1778, is earlier than P. officinale All. Fl. Ped. [i.] 131 (1785),” but C. angulosas Lam. is a still-born name, being an arbitrary change by Lamarek for C. Polygonatum L.

431. Maianthemum bifolium must be cited as of Schmidt Fl. Boem. iv. 54 (1794).

443. Muscari racemosum Mill. Schinz & Thellung point out that Miller’s name is of doubtful application, and in view of the additional fact that Miller’s specimen is an immature plant of M. conosum, it seems best to cite the name as of Lam. & DC. Fl. Fr. ed. 3, iii. 208 (1805).

447. Juncus obtusiflorus Ehrh. An earlier name for this is J. subnodulosus Schrank Baiersch. Fl. i. 616 (1789).
457. Eriophorum polystachion L. Sp. Pl. 52 (1753). Linnaeus cites Fl. Suec. 1755, which includes the following:—

"Linagrostis panicula ampliore Tournef.

β. L. panicula minore Tournef.

γ. L. palustris angustifolia, &c., Scheuch."

Lamarck (Fl. Franc. iii. 555 (1778)) alters Linnaeus’s name to Linagrostis paniculata; this is a still-born name. Roth (Fl. Germ. ii. 63 (1789)) separated the plant with narrow channelled leaves—E. polystachion γ of Linnaeus—as E. angustifolium, retaining the original name E. polystachion for the plant foliis planis of Linnaeus’s diagnosis (Linagrostis panicula ampliore Tournef.). But later authors have apparently neglected Roth and taken E. latifolium Hoppe (Taschenb. 1800, 108) for the flat-leaved part of E. polystachion L., and have used E. polystachion for the plant distinguished as E. angustifolium Roth.

Linnaeus’s E. polystachion therefore represents the following:—

E. polystachion L. (restrict. Roth (1789)) [ = E. latifolium Hoppe].


E. angustifolium Roth (1789) = E. polystachion L. var. γ [E. polystachion Auctt.]. In our List, therefore, E. polystachion L. should stand as E. angustifolium Roth Fl. Germ. ii. 63 (1789), and E. paniculatum Druce as E. polystachion L. Sp. Pl. 52 (restrict. Roth).

459. Carex.

11. C. muricata L. We retain this name notwithstanding Mr. E. S. Marshall’s note in this Journal (p. 364). We consider that he lays too much stress on the specimens in the Linnaean herbarium, neither of which, as he points out, is the plant which we understand by the name.

22. C. vitilis Fr. is not a British plant.

26. C. acuta L. In view of the generally expressed doubt as to the Linnaean species, we follow Ascherson & Graebner (Syn. Mittel-Eur. Fl. ii. pt. 2, 90) and other continental botanists in abandoning this name in favour of C. gracilis Curt. Fl. Lond. fasc. 4, t. 282 (1783).

33. C. fusca Allioni. Allioni gives no description of this, but puts it in a section with spicis sexu distinctis, whereas the plant of his herbarium, which is the plant known as fusca in Britain, has the top spike androgynous (see L. H. Bailey in Mem. Torr. Bot. Cl. i. 63). Allioni cites Haller & Scheuchzer, but these references do not represent the plant of Allioni’s herbarium (see Bull. Herb. Boiss. 1907, 399). The earliest available name is C. polygama Schkuhr Riedgr. 84 (1801).

61. C. Hornschuchiana Hoppe. An earlier name is C. Hostiana DC. Hort. Bot. Monsp. 88 (1813), but De Candolle cites C. fulva Host Gram. iv. t. 95, p. 53 (1809). As C. fulva Good-enough in Trans. Linn. Soc. ii. 177 (1794) is, as he himself states
(op. cit. iii. 77 (1797), founded on error, the name must be cited as C. fulva Host, who accurately defines the plant.

66. C. filiformis L. Ascherson & Graebner (Syn. Mittel-Eur. Fl. ii. 2, 221) point out that this is a very doubtful plant and adopt the name C. lasiocarpa Ehrh. in Hannöv. Mag. ix. 132 (1784).

69. C. pulla Good. Mr. E. S. Marshall points out (Journ. Bot. 1907, 366) that this is identical with C. saxatilis L. Sp. Pl. 976 (1753).

71. C. rostrata Stokes (1787). An earlier name for this plant is C. inflata Huds. Fl. Angl. ed. 2, 412 (1778). In his first edition Hudson included references to Morison Hist. Oxon. and Ray's Synopsis, which do not represent this plant; in ed. 2 he omits these references, and alters the English name to Bottlecarex. He also adds the locality of Wales on the authority of Davies, whose specimen is in the National Herbarium.


474. Phragmites communis Trin. Mr. Druce (Ann. Scott. Nat. Hist. 1906, 228) proposes a new combination, P. vulgaris, which is accepted by Janchen. This is based on Arundo vulgaris Lam. Fl. Fr. iii. 615, a still-born name (= A. Phragmites L.).


482. Weingaertnera. This name being excluded by the Rules, the species stands as Corynephorus canescens Beauv. Agrost. 159 (1812).

489. Melica. We follow Hudson (Fl. Angl. ed. 2, 37, 1778) in our use of the names for the two species, which he was the first to distinguish.

498. Festuca.


10. F. elatior L. Schinz & Thellung abandon this name in favour of F. arundinacea Schreb.; but Hudson, who separated F. pratensis (Fl. Angl. 37, 1762), retained the name elatior for the plant known later as P. arundinacea Schreb., and there seems no reason to abandon it.

reduces *B. hordeaceus* to a variety β of *B. secalinus*, which (see Hackel in Kerner *Schedae* iii. 142) is regarded as a synonym of *B. mollis*. Therefore *hordeaceus* is the earliest trivial for the species, and the name stands *S. hordeaceus* Gren. & Godr. Fl. Fr. iii. 590 (1856).

516. *Polypodium molle* All. (1785). In restoring this name we followed Luerssen & Christ. Schinz & Thellung do not regard Allioni’s plant as sufficiently defined, and prefer to adopt the name *Athyrium alpestre* Rylands (in Moore *Ferns Great Brit.* t. vii. 1857) based on *Aspidium alpestre* Hoppe. Moore, however, merely quotes the name in synonymy.

**SILENE ELONGATA** Bellardi.

By Robert Paulson, F.R.M.S.

This plant, which occurs on rocks in shady places in the Tarentaise, Savoie, was flowering during last August in the higher parts of the Vallée de Chavière and on the upper part of the route from Pralognan to the Col de la Vanoise. In habit it is quite distinct from typical *Silene acaulis* L. in not forming moss-like cushions, in spreading as a loose mat over the surface, and in hanging from the crevices of rocks. The flowers are on long peduncles, which carry them far above the general level of the procumbent stems; the petals are deeply notched, and of a light reddish-purple colour. The capsules were not fully formed so late as the third week in August, so that no comparisons of those could be made. In the valley stretching from Pralognan to the Col de Chavière (fifteen kilometres) three closely associated forms of *Silene*—*S. elongata*, *S. exscapa* All., and *S. bryoides* Jord.—may be seen growing at about the same altitude.

The specimens which were collected in August last correspond exactly with Bellardi’s type, dated 1788, in the Herbarium of the Natural History Museum, South Kensington. The plant seems to have been generally overlooked, but it differs so much from *S. acaulis* that authors, even if they regard it as an extreme form of that plant, should not omit to mention such a distinct form when dealing with the flora of the district in which it occurs. Apart from the question as to what constitutes a species, it seems well that attention should be called to a plant that must frequently puzzle the botanist in the Alps of Savoie and Dauphiné.

Occasionally intermediate forms may be found, but they were not very evident in the valleys mentioned. In a letter from the Baron Perrier de la Bâthie, Professor of Agriculture at Albertville, he says: “Je reconnais qu’on trouve quelques spécimens embarrassants entre ces formes, surtout entre les *S. bryoides* Jord. et *S. exscapa* All.” May it not be that such closely allied forms hybridize?

*S. elongata* is omitted from De Candolle’s *Prodromus*, and from
Mr. Williams's monograph of Silene (Journ. Linn. Soc. xxxii.), but it finds a place under S. acaulis in Grenier et Godron's Flore de France (ii. 215), to which it is also referred in the Index Kewensis. It may be worth while to reprint Bellardi's description, as his Osservazioni Botaniche (1788), in which it appears (p. 60), is not commonly accessible:—


"Luogo. Ho trovato questa pianta sopra le più elevate montagne di Usseglio, vicino a Lautaret, e nell'anno scorso ne' monti subalpini di Montpanté.

"Osserv. Questa Silene ha molta affinità colla specie chiamata dal Linneo Silene acaulis, e colla Silene exscapa della Flora Pedemontana. Si diversifica però da tutte due par essere fornita di un fusto, che si eleva all' altezza di tre o quattro dita, e sostiene due o tre conjugazioni di foglie lineari. Non forma un cespuglio denso come le due precedenti, ed ha i rami distanti alquanto gli uni dagli altri. Il suo fiore è un po' più grande, ed il calice è più turgido; del resto è affatto simile a quello della Silene acaulis. Con tutto ciò subbene alla stessa elevazione abbia osservato cespugli della S. acaulis e della elongata in siti poco distanti, non vorrei sostenere che non possa essere un' insigne varietà di quella, e della exscapa del Signor Allioni, dopo le replicate osservazioni fatte intorno alle varietà, a cui va soggetta la S. acaulis, la quale nello stesso cespuglio proveniente da una sola radice mi presenta esemplari simili alla Silene exscapa, altri con il fusto alto un' oncia e più, altri con fiori rossi, altri di un rosso più dilavato, ed altri perfettamente bianchi. Ho creduto intanto conveniente distinguerci, affinché consti appresso i Botanici la memoria di tal pianta e possano meglio sopra di essa determinare il loro giudizio colla scorta di ulteriori osservazioni."

RUBUS MUCRONATOIDES.

By the Rev. Augustin Ley, M.A.

The plant noticed under this name by Rev. W. M. Rogers (Handbook of British Rubi, p. 55) as a form of R. mucronatus having recently proved to possess a wide range in the British Isles, it becomes desirable to direct further attention to it. I have the concurrence of Mr. Rogers in publishing it as a separate species, and append a full description:—

RUBUS MUCRONATOIDES Ley in Rogers Handb. Brit. Rubi, 55 (1900). Stem low, arched, angular, with few scattered hairs and acicles; prickle unequal, not confined to the angles, the larger rather stout, long, declining. Leaves ternate or quinate, petioles prickly, leaflets large; terminal leaflet 2½–3 times as long as its petiolule, broadly oval, gradually acuminate, margin often sublobate in the upper half, base cordate; serration rather coarse.
with mucronate crenate teeth. *Panicle* pyramidal, or straggling with the side branches, much lengthened, and their flowers very long peduncled; primordial flower always very short stalked. *Rachis* wavy, its prickles many, unequal, the larger rather strong, long, declining, passing into gland-tipped acicles and stalked glands. *Flowers* large, cup-shaped, petals usually rose, narrow, distant long, externally hairy, margin ciliate. Stamens white, soon rose-coloured at base, longer than the green styles. Sepals reflexed in flower and fruit.

From its nearest ally, *R. muconatus* Blox., this plant is distinguished by the angled stem, stronger and more unequal armature of stem and rachis, gradually acuminate and partly lobate terminal leaflet with coarser serration, broader straggling panicle, and reflexed sepals.


The Scottish plant is a rather stouter form; the Irish agrees in all points with the plant of Hereford and Radnor.

**BOTANICAL EXCHANGE CLUB REPORT, 1906.**

The Report of the Botanical Exchange Club for 1906, "by the Editor and Distributor, the Rev. W. R. Linton," issued in April, is prefaced by the "Secretary's Report," containing a summary of "the chief items of botanical interest of the year." This is signed by Mr. Druce, who, although only announced as Treasurer of the Club, apparently combines with this the secretarial office. Here, in at least one instance, and more frequently in the list of desiderata, Mr. Druce finds an opportunity for indulging his passion for new combinations—with, it is to be feared, the too frequent result of encumbering nomenclature with useless synonyms; an example of this has already been given in this Journal (p. 240). But even should the names stand, we cannot think it right to publish them in such a list; and nothing can justify the erection of the slip by which Messrs. Colgan & Scully wrote *Polygonum sagittifolium* instead of *P. sagittatum* into a synonym as "*Polygonum sagittifolium* Colgan & Scully"! This, by the way, appears in a note of Mr. Druce's in the Report proper, and we are surprised the editor allowed it to pass. If such synonymy is to be recognized, Mr. Druce may add yet further to the names for which he stands in loco parentis: we find in the desiderata list "Agropyron lepens," which by analogy must be quoted in future as "*Agropyron lepens* Druce." We note that Mr. Druce has anticipated criticism and secured another name by giving as a synonym of his *Salvia Marquandii*, published in this Journal as recently as December last, "*Salvia Verbenaca var. Marquandii*."
The Report as usual contains a variety of interesting notes on the specimens received and distributed, from which we extract a few of those of more general interest. As usual, there are a number of opinions about critical forms of Rubus (4 pages), Rosa (4 pages), Hieracium (5 pages) and other genera, but for these reference must be made to the Report itself.

The Editor and Distributor for 1907 is the Rev. H. J. Riddelsdell, St. Michael's College, Llandaff.—Ed. Journ. Bot.]

Tilia cordata Mill. Leaves from stump-shoots; and fruit, King's Wood, near Yatton, North Somerset, Sept. 19th, 1906. When underwood is cut in the old limestone woods below Bristol the stumps quickly produce an abundance of strong succulent shoots. These, in the earlier years of their growth, whether they be oak, hazel, aspen or lime, bear leaves of unusual size and shape. In the case of the two last-mentioned trees the difference in area, outline, and texture between these stump-shoot leaves and ordinary foliage is so great that the former would hardly be recognized if the conditions that produced them were not known. I send herewith examples from T. cordata stumps in illustration. Most of them are 5–7 in. in length and nearly as broad. They several times exceed their petioles, in contradiction to one of the main characters that distinguish the species. There is, moreover, an exaggeration of tooting and of basal one-sidedness, besides the attenuation into an acuminate point, which makes the leaf longer than broad, whereas the length of a typical adult leaf is commonly less than the breadth. This attenuation into a long point is also well marked in the stump-shoot leaves of Populus tremula, which make a still greater contrast with the suborbicular normal leaves of that tree. I think one must assume that these are examples of hypertrophy due to an excessive supply of water and food-material under pressure. When a tree is coppiced the stump is so surcharged with sap that many adventitious buds form along the vitally active cambium layer, and these buds, stimulated by the concentrated nutriment available, develop into vigorous shoots bearing abnormal leaves. As the shoots lengthen year by year the hypertrophy diminishes until the bush once more attains full stature, and it then bears only typical foliage. It has been said that the small-leaved lime produces fruit but rarely, and a walk through our woods might support that idea. The fact is, however, that this tree does not flower until of good age, and that it is often coppiced before reaching that age. Older trees as well as coppice-bushes that escape the usual fate of underwood for a sufficient time flower freely and bear plenty of fruit.—James W. White.

Alchemilla vulgaris var. filicaulis (Buser). Near Ingarsby Tunnel, Leicestershire, May 12th, 1906, v.-c. 55. The specimens sent for distribution last year being of rather abnormal size, a few are contributed for this year of the usual type for comparison, though in all other respects they exhibit the characters of the variety to an equal extent. It may almost be said to be the type of the
species locally, *A. pratensis* Schmidt being of comparatively rare occurrence in Leicestershire or the Midlands generally, whilst it seems that the converse obtains in the southern and western counties, the var. *alpestris* (Schmidt) being also confined more or less to the north and west of England, and seldom or rarely in the central counties.—A. R. Horwood.

**Erica Mackaiii Hook.** On Craigga-more, a stony moorland hill of about 250 ft. elevation, and on the adjoining heath on peat, apparently avoiding the wetter portions, and in profuse flower in the drier places. Abundant over a limited area, and keeping remarkably true in its botanical characters. Near Roundstone, Galway, September.—G. Claridge Druce.

**Limosella aquatica L.** Port Meadow, Oxford, August, 1906. *Limosella* was first found near Oxford by Sir Joseph Banks about 1760, but Sibthorp records it in *Fl. Oxon*, 1794, from Noke and Binsey Common, the latter doubtless the locality where Banks found it. In 1820 Baxter found it on Port Meadow, and by the towing-path near Medley Lock, which is close to the Binsey locality, and also on Cowley Marsh on Sept. 11th of that year. Since that time till 1905 we had no record of its being re-found in any of these localities. Year by year I have made search for it in vain, nor has any one of the numerous workers at our local flora been rewarded by finding it. In 1905, however, I discovered two or three plants on the south-east of Binsey Common, growing on the muddy margin of a ditch. This year Mr. A. B. Jackson found it on the muddy bed of a dried-up pond on Binsey Common in abundance, and I also found it near Upper Wolvercote on Port Meadow, and on the dried-up site of a pond at Noke. The prolonged drought appeared to be favourable to its appearance, as it prevented the plant being overshadowed by *Lemma* or *Glyceria*, &c. It is not a little singular that the plant should have for so long a period been able to exist without being noticed. I may say that, although in August the plant almost made a carpet on the mud, seeding very copiously, by the middle of September there was hardly a vestige left, the plant having been scorched by the sun. Does it exist, like *Eleocharis acicularis* is capable of doing, for many years without flowering, and then, when brought to the light and air, only produce its seeds?—G. Claridge Druce.

**Liparis loeselii Rich. var.** From the Glamorgan locality, July, 1906. Less in quantity this year, and not so fine; the rabbits had bitten down a great many plants, and many others did not flower. The broader, shorter, blunter leaves and fewer flowers give the west county form of the species a distinct look. It perhaps merits a distinct name, and I would suggest var. *ovata*, if that is available.—H. J. Riddelsdell. "We approve of this plant being varietally distinguished from the type; it is well marked off from it by the features to which Mr. Riddelsdell calls attention."—A. Ley & W. R. L.

**Crocus nudiflorus Sm.** Trent Meadows, Nottingham, March

*Journal of Botany.*—Vol. 45. [December, 1907.]
19th and Oct. 4th, 1906. This plant is likely soon to become extinct in this locality, as the meadows by the embankment on which it grew are rapidly being built over. It is now confined to two fields, where it grows abundantly with *Crocus vernus*.—F. L. Foord-Kelcey.

**Ornithogalum pyrenaicum** L. Ursleigh Hill, North Somerset, April 18th and June 14th, 1906. Complete specimens may be useful to those members who do not live within reach of the growing plant, and who may not have seen its leaves. The long flask-shaped bulb sends up in March a tuft of leaves something like those of the bluebell, but which grow to a length of about two feet. They are too weak to support themselves, and wither before the flowers appear in June. It is therefore difficult for a stranger to the locality to procure any unless he have marked down flowering plants during the previous summer.—James W. White.

**Cyperus fuscus** L. On the mud of a partly dried-up pond on Dorney Common, Bucks, in considerable quantity; also sparingly on the muddy margin of slow stream on the southern side of the Common, and very sparingly by a pond nearer Huntercombe, Bucks, August, 1906. A very interesting addition to the county flora, and a notable extension of its range in Britain, this being now its most easterly and most northern locality. Surely it will be found in Berks. 1906 was a specially favourable year in the Thames Valley for the observation of aquatics, owing to the prolonged drought; many places were dried which normally are under water.—G. Claridge Druce. "Little Chelsea, where it used to occur, is more easterly than Bucks."—W. R. L.

**Agrostis verticillata** Vill. Vale, Guernsey, July, 1906. New to the Channel Islands, and not hitherto recorded for Britain. Description: Stoloniferous, stem 6 in. to 24 in. high, geniculate-ascending, leaves flat, glaucous, ligule short truncate, panicle compact thyrsoid-lobate, 1 to 4 in. long, whitish green or often richly purple, the branches of the panicle short and covered with spikelets to their base, glumes puberulent-seabrid over their whole surface, pales equal obtuse. Last July, when in the company of Mr. E. D. Marquand, at Vale, I saw a grass which I recognized as distinct from any known British species, growing plentifully in the excavated soil near the Vale Castle, and we afterwards found it plentifully not only in such situations but also by the sides of roads, and other dry bare places in the northern part of Guernsey, and also extending westward to Vazon and the Grande Mare. On my visit to Alderney I found it in Braye Bay, and about quarry débris farther east. I have also detected a piece among some plants I gathered at St. Luke's, Jersey, in the previous June, but this was on some recently disturbed waste ground. In Corbière's *Nouvelle Flore de Normandie* it is reported as a southern species naturalized for upwards of forty years at Cherbourg. From the fact of it not being a native of Western France it may be held to be also adventitious in the Channel Islands, and in an area so disturbed by the operations of man as these small islands it must be difficult to decide upon the indigeneity of the species. On the
one hand there are the facts of its absence from the opposite coast of France as a native species, and that it has hitherto escaped observation in these islands, while the geographical range is not strongly in favour of it being native here; yet, on the other hand, it may be urged that it extends up the western coast as far as Spain and Portugal, that it is extremely like *Agrostis alba var. stolonifera* in appearance, and chooses similar situations, while in its undoubtedly native area it prefers ground which has been disturbed by man, and that it is now very abundant in Guernsey.—G. Claridge Druce.

**SHORT NOTES.**

*Linaria arenaria* DC. not a native (p. 411).—About fourteen years ago a resident at Westward Ho! sowed on Northam Burrows, in the only part where I have found *Polygonum maritimum*, some seeds of *Linaria arenaria*, which he had brought from Brittany. When he was leaving the neighbourhood soon after, the sower told me what he had done and took me to the spot, and expressed a wish that I would visit the place occasionally and note how the plants were getting on. This I have done, and have had the satisfaction of seeing that they have spread over a larger area than they at first occupied.—Thos. Wainwright.

[We fail to share our correspondent's "satisfaction" at the success of his unnamed friend's mischievous and misleading attempt, which merits and will doubtless receive the hearty condemnation of every British botanist.—Ed. Journ. Bot.]

*Polystichum Braunii* in England. —During his visit to England last year Dr. Kümmerle of the Botanischen Institut, Budapest, determined as a small form of this species a specimen collected by the Rev. W. H. Painter in Leigh Woods, Somerset, in June 1881, distributed as *Aspidium angulare* and now in the National Herbarium. The plant is mentioned by Dr. Kümmerle in the account of his travels in Europe published in *Jelentés, a Magyar Nemzeti Museum*, 1906, p. 210. The following description of the plant, translated from Garcke's *Flora von Deutschland* (ed. 17, 719, 1895), may be of interest:—"Frond lanceolate, shortly acuminate, at base gradually attenuate, membranaceous, somewhat flaccid, bipinnae; *pinnae* at base somewhat unequal and dilated on the upper or on both sides, above longly or shortly pointed or often obtuse, the lowest pinnae far shorter than the rest; *pinnales* tolerably large, almost sessile, decurrent, at base entire and truncate on the upper side, above obtuse, the lowest upper pinnule a little larger than the rest; *sorus* moderately large, very convex, indusium very small, almost membranaceous."

*Lycopodium clavatum* L. in Bedfordshire.—The only published record for this species in Bedfordshire is that given in Abbot's *Flora Bedfordiensis*, 1798, since which there is no evidence of the existence of this plant within the county. The station given by Abbot is Potton Heath, which is situated in the north-
east of Beds. On Oct. 6th I found it in fine fruit in Birchin
Grove Wood, on the south-west border of the county, about
twenty miles distant from Abbot's station. Here it is distributed
over several square poles, on sandy soil, associated with brambles,
young birches, and Polytrichum formosum. This record removes
the query associated with this species in the lists of the flora of
the various river systems published in the Victoria County His-
tory, Beds, vol. i. p. 50, compiled by Messrs. G. C. Druce &
J. Hamson. The distribution of Lycopodium clavatum in Beds and
Herts suggests that probably it grows in Bucks, possibly in the
Lower Greensand area of Bow Brickhill and Little Brickhill.—
James Saunders.

Ranunculus tripartitus DC.—Mr. C. E. Salmon has kindly
lent us a series of excellent specimens of the Ranunculus collected
by Mr. E. S. Salmon at Catspred, East Sussex, in 1894, and
referred by Mr. C. E. Salmon to R. tripartitus in a note in the
Report of the Watson Exchange Club for 1905–6, reprinted on page
161 of this Journal for the present year. An examination of these
specimens confirms the opinion we had already formed that the
plant is R. lutarius Bouvet = R. intermedius "Knaf" Hiern.
Mr. Salmon's plant has more completely multifid lower leaves
than we had previously seen in R. lutarius, but they are few in
number and the segments are distinctly flattened and of an appre-
ciable width, besides apparently diverging more or less in the
same plane, whereas in R. tripartitus the segments are truly
capillary, extremely fine, and more or less tassel-like, and under
normal conditions of growth the multifid leaves are fairly nume-
rous. There are a number of other less defined characters in
which Mr. Salmon's plant agrees with R. lutarius rather than
R. tripartitus; the upper leaves are more nearly peltate, being less
deeply divided and the lobes being broader and more rounded,
forming with those of large robust forms of R. lutarius; in
several specimens there are well-marked transitional leaves such
as occur in the New Forest lutarius when it produces multifid
leaves, and which are absent in R. tripartitus; the stems, petioles
and peduncles are stouter, the stipules larger, and the carpels are
larger and broader. We do not see any near affinity between Mr.
Salmon's plant and R. ololeucos Lloyd. Up to the present we
have only seen true R. tripartitus from four localities in the
British Isles, viz., Mullion, Cornwall W., J. Cunnaek (1879);
Innes Moor, near Roche, Cornwall E., R. V. Tellam (1876); near
Wadebridge, Cornwall E., where it was discovered last year by Mr.
Clement Reid, from whom and from Dr. Vigurs we have received
a good series of specimens; and near Baltimore, Co. Cork, R. A.
Phillips (1896).—H. & J. Groves.

Ecology of Montia fontana (pp. 211, 282, and 306).—I
agree that Mr. Riley's kind of habitat is excellently described,
except that, as Mr. West points out, Montia does not grow in
spongy bogs, even "with a very slight trickle of water." Neither
in the streams on the Quantock Hills in Somerset, quoted by Mr.
Riley, nor in similar places in North Devon and Cornwall have I seen Montia growing in bogs properly so called, and certainly never on Sphagnum, as Miss Armitage points out. But in the West of England it flourishes well in the damp borders of rivulets by roads and lanes, and especially in gravelly or sandy soil. Nor have I ever seen Montia growing in bogs on the Continent. In France and Switzerland it grows in similar places on siliceous ground and occasionally in damp fields, and in Norway it is often seen in damp farmyards among the mountains. Montia grew in a typical habitat as high as 6000 ft. on the French side of the Mont Cenis Pass, viz. on a wet slope between a stony path and stream into which water was constantly trickling from the mountain path. Here it was associated with Juncus triglumis (eight inches high) and a dozen good Carices, including such rarities as Carex incurva Lightfoot, C. bicolor All., C. fetida All., C. capillaris, C. vaginata, C. clavaefornis, and C. ustulata Wahlenb., a new station for this extremely rare Carex in France.—H. S. THOMPSON.

PO TAMOGETON SPATHULÆFORMIS MORONG.—In his North American Naiadaceæ (1893), p. 27, Dr. Morong says that "neither of its supposed parents occurs in Mystic Pond." Mr. Fryer's determination of this as a hybrid (P. heterophyllus × Zizii) is now sustained by Mr. Fernald (Rhodora, viii. 224 (1906)), who finds "very characteristic P. angustifolius (Zizii) collected by the late Wm. Boott in Mystic Pond, Aug. 26 (presumably in the 60's), and that in both the Gray Herbarium and in that of the N. England Bot. Club there are characteristic specimens of P. heterophyllus collected in Mystic Pond by Messrs. E. and C. E. Faxon."—ARTHUR BENNETT.

NOTICE OF BOOK.


Dr. Oswald Richter's paper reminds us of the unnecessary and rather weary occupation of preaching to the already converted: we had hardly thought that any one now required to be convinced of the usefulness and desirability of pure culture experiments. When the author recapitulates as he does, however, the various occasions in which pure cultures have been successfully employed to advance exact knowledge, he attempts a much more grateful task. So viewed, his pamphlet is a compendium of information as to the cases in which such cultures have achieved the desired results. In the course of the work, instances are cited in many different branches of botanical and zoological science in which cultures have been absolutely essential for the elucidation of various biological problems: in algae, fungi, bacteria and lichens among plants, as well as in protozoa among animals. The history and results of the experiments have been gathered from literature widely dispersed in various journals, and the student is thus enabled to see at a glance what has been attempted and done in
any particular field, and to follow the lines on which these researches are carried out. Tables have been prepared presenting such work in chronological order, and full bibliographical notes refer the reader to the original sources. A copious index completes this useful compilation.

A. L. S.

BOOK-NOTES, NEWS, &c.

The number (18) of Notes from the Royal Botanic Garden, Edinburgh, published in August, contains an interesting list of "Eighteenth Century Records of British Plants" derived from two note-books of Dr. John Hope, who was Regius Keeper of the Garden from 1760-1786. The records, which extend over 64 pages, are preceded by an introductory note, from which we extract the following:—"One of [the note-books] contains a number of records, of date 1764 and 1765, of stations for plants about Edinburgh and in other parts of Scotland. The fly-leaf at the beginning of the book bears, in Dr. Hope's writing, 'List of plants growing in the neighbourhood of Edinburgh, collected, in flower, 1765, as a sketch of the Calendarium Florae of Edinburgh.' The writing of the manuscript is not that of Dr. Hope, and internal evidence seems to show that he was not the compiler of the list, but it is manifest that he had looked through it, interpolated stations, and pointed out doubtful records. Upon the first page there is the heading, 'A list of plants as they were collected and prepared during the year 1764, with ye place of growth.' Dr. Hope has interpolated the words 'in flower' after 'plants' in the heading—an expression we must accept in its widest signification as used by botanists in the eighteenth century, and as referring to the sporiferous condition of Thallophytes as well as to the flowers of Spermophytes. The list continues in calendar form from March, 1764, until January, 1765, when a couple of pages are blank; and the calendar recommences with the date 14th May, and goes on until 30th October, 1765, under the new heading, 'A calendar of plants as they were found and prepared in the year 1765.' The first portion of the list is emphatically one of plants in the vicinity of Edinburgh. There are in it but a few records of stations far afield. The second portion of the list has a much larger proportion of citations of localities distant from Edinburgh. The second note-book has on the fly-leaf, in Dr. Hope's writing, 'A Catalogue of British Plants in Dr. Hope's Hortus Sieceus, 1768,' and the catalogue is in the same writing, with occasional interpolations, and there are entries of date subsequent to 1768. These lists of eighteenth-century records have many features of interest, botanical and topographical, and they show us also that at the period referred to considerable attention was given to the flora of Scotland, and that field botany was a definite part of the teaching of botany by John Hope."

Miss Emily Margaret Wood, who was born in India on August 23, 1865, died at Higher Tranmere, Birkenhead, on
October 28, and was buried in Wallasey Cemetery. She was eminent as a field naturalist and science teacher, and during her twenty years' connection with the Liverpool Naturalists' Field Club she has taken a leading part in the conduct of the business of that Society. She filled the office of botanical referee since the death of the late Robert Brown, and at the time of her death had been for some years one of the Hon. Secretaries. She adapted Prof. Atkinson's *First Studies of Plant Life* for the use of English students, and drew the illustrations to Mr. C. T. Green's *Flora of the Liverpool District*, noticed in this Journal for 1902 (p. 394); her portrait appears in the group forming the frontispiece to that work. Miss Wood's pleasant *résumés* of the botanical work of each session formed an attractive feature of the annual *Proceedings* of the Field Club.

**William Nation** could hardly lay claim to be considered "a well-known botanist," under which heading his recent death (at Clapham, at the age of 81) is recorded in the *Gardeners' Chronicle* of Nov. 9. He was born at Staplegrove, Somerset, in 1826, and entered Kew Gardens in 1840, whence he proceeded to Peru in 1850, when he entered the service of a Spanish gentleman as head gardener. He contributed plants to the Kew Herbarium from 1862 to 1880: letters from him between 1853 and 1865 are also at Kew. Nation does not seem to have published any botanical papers, but contributed notes on Peruvian birds, &c., to the *Proceedings of the Zoological Society* from 1866 to 1874.

The valuable collection of *Diatomaceae* formed by the late Thomas Glazebrook Rylands (b. 1818, d. 1900), of Warrington, and recently presented by his daughter, Miss Martha G. Rylands, to the British Museum Herbarium, contains some 6000 microscope-slides, a large quantity of diatomaceous material, and an extensive correspondence. In the slide-collection is included that of the late Dr. Christopher Johnson, of Lancaster, bequeathed to Rylands. Dr. Johnson was the translator of Meneghini's paper "Sulla animalità delle Diatomee" (Venice, 1845), published under the title "On the Animal Nature of Diatomæ" by the Ray Society in a volume of *Botanical and Physiological Memoirs* (1853). Others of the slides were prepared by Walker Arnott, Greville, Gregory, G. Norman. Forty to fifty years ago there was a period of very great activity in the study of diatoms, as is well shown in the above-mentioned correspondence. This is divisible into four groups:—(1) Letters to Rylands from Walker Arnott, G. Norman, Greville, Ralfs; (2) to Christopher Johnson from Walker Arnott and Rev. William Smith; (3) to Greville from the same two writers; (4) to Walker Arnott from more than sixty of his correspondents, the chief of whom are De Brébisson (Falaise), Brightwell (Norwich), G. M. Browne (Liverpool), T. Comber (Liverpool), H. D. Crozier (Mauritius and Shorncliffe), T. Eulenstein (Canstadt), W. Gregory (Edinburgh), R. K. Greville (Edinburgh), Miss E. Hodgson (Ulverstone), F. Kitton (Norwich), G. Norman (Hull), F. Okeden (Swansea), J. Ralfs (Penzance), F. C. S. Roper (Maida Vale), T. G. Rylands (Warrington), J. Staunton (Longbridge), and G. C. Wallich (Guern-
sey). Most of these diatomists and other botanists are represented in the interesting set of photographs received with the Rylands collection. There is also a medallion of William Wilson, the bryologist, a fellow-townsmen with Rylands.—A. G.

Under the title Plant-Biology, the University Tutorial Press have issued a small botanical text-book by Dr. F. Cavers, of Hartley University College, Southampton. The book is described as a text-book of elementary botany arranged for modern methods of teaching, and contains about 460 pages in small 8vo and 201 text-figures. Within this small compass Dr. Cavers has compressed a great deal of information, accompanied by suggestions and directions for a large number of illustrative experiments. The study of the plant is approached from its physiological aspect, and in this connection the author has introduced a considerable amount of purely physical and chemical subject-matter, such as the description of the thermometer and barometer, the determination of the chemical composition of water, &c. It is admittedly impossible for a student to appreciate plant-physiology without an elementary knowledge of chemistry and physics, but there are numerous elementary text-books in these sciences from which information might be gained and space saved in the botanical text-book. The two chapters dealing respectively with flowers and their work and fruits and seeds are exceptionally well illustrated, and the last three chapters—ecology of plants, biology of the soil, and principles and problems of plant-biology—form an introduction to the study of the ecological aspect of plant-life. The appendixes on the Greek and Latin roots of botanical terms and the glossary of terms will be useful; another appendix gives suggestions for practical work during the various months of the year. The index is not comprehensive. The price of the book is 3s. 6d.—A. B. R.

Our Woodlands Heaths and Hedges by W. S. Coleman was a useful book fifty years ago, when it was issued at a shilling in an attractive cover of paper boards, uniform with one of the best popular books ever written—J. G. Wood's Common Objects of the Country. In these days of reprints it is not surprising that Messrs. Routledge have reissued it in a neat cloth cover as a "new edition, entirely reset"; and it remains a good and useful book as far as it goes, although the field in which it was a pioneer is now abundantly occupied. The references to the insects which frequent the various trees and shrubs described will make it useful to entomologists. It is, however, unfortunate that some steps were not taken to bring the little book up to date; it saves much trouble, of course, if we can lump all our brambles under the heading Rubus fruticosus, but it might have been indicated that the name covers, according to modern estimate, just a hundred species, although of course it would be unreasonable to expect any attempt at their differentiation in a popular book of this kind. The plates should have been lettered, and it is difficult to explain the meanness of the publishers in printing them, in two cases, on both sides of the page. Nor do we see why it should not have been produced at its original price of a shilling—it now costs eightepence.
INDEX.

For Classified Articles, see—County Records; Obituary; Reviews. New genera, species, and varieties published in this volume, as well as new names, are distinguished by an asterisk.

Aceras anthropophora, 343
Achyrolpernum parviflorum,* 97
Aldrotheca canescens,* 169
Adams's 'Wild Flowers' (rev.), 349
Adhatoda Bagshawei,* 333
Æolanthus crenatus,* 94
African Gamopetala, 41, 114, 154, 197, 263, 329; lakes, botany of, 76
Agrostis canina var. laevis, 249; verticillata, 450
Alchemilla vulgaris var. filicagliis, 448
Alnus rotundifolia, 125, 163
American Nomenclature, 123
Antilles, Plants of, 118
Armitage, E., Montia fontana, 308
Arnold's 'Flora of Sussex,' ed. 2, 287
Asacculus-affinis, 368
Asconyctes, Interesting, 169
Asplenia Lillei, 35
Asplinia Eylesii,* 45; polycephala,* 45
Australian Plants, 68; MSS. in Dept. of Botany, 70; Halorrhagaceae, 135
Babiana spathacea, 76
Bagnall, J. E., 'Wild Flowers,' 349
Bailey's 'Poisonous Plants of Queensland,' 256
Baker, E. G., Revision of Bersama, 12; Limonia ugandensis,* 61
Baker, J. G., portrait, 67
Balaearia Plants, 53
Banff, Proposed Flora of, 215
Barleria Eunii,* 229; jubata,* 229; lanceolata, 230; matopensis,* 91
Bartram, W., 5, 7
Batters, E. A. L.† (portrait), 385
Beilschmiedia Fordii,* 404
Bennett, A., 'Norges Flora' (rev.), 120; Potamogetons new to Britain, 172; new Potamogetons, 233; notes on Potamogeton, 371, 453
Berberis-Hybrid, 393
Journal of Botany.—Vol. 45.

Berger, A., 'Sukkulente Euphorbien' (rev.), 212
Berkheya Adlami, 46
Bersama, Revision of, 12; andongensis var. ugandensis,* 21; angolensis,* 18; coriacea,* 15; Gossweileri,* 17; nyassae,* 19; Precussii,* 16; Swynnertonii,* 14; ugandensis var. serrata,* 69
Bibliographical Notes, 68, 118, 246
Blepharis grisea,* 228
Blytt's 'Norges Flora' (rev.), 120
Botanical Exchange Club Report, 1906, 447
Boulenger, G. A., Variations of Enothera biennis, 353
Bowies, E. A., Phyllody in Myosotis, 412
Brachystelma Bagshawei,* 330
Brachystephanus coerulescens,* 332
Brandis, Sir D.,† 288; his 'Indian Trees' (rev.), 36
Brasica, Cornish, 60, 119
Brillantaisia grandidentata,* 331
British Museum, Report of Dept. Botany, 1905, 29.—1906, 408; MSS. in Dept., 70; Notes from Herbarium, 313; Plants, List of, 126; Linnean exhibition at, 385; additions to, 455
British Seed-plants, List of, 99, 126, 433
Britten, J., Plantago lanceolata var. sphærostachya, 22; Vienna Rules for Nomenclature, 26; Thrincia nudicaulis, 31; Cystopteris fragilis, 33; 'Indian Trees' (rev.), 36; F. J. Justen (portr.), 62; 'Illustrations of Australian Plants,' 68; Cheeseman's 'N.New Zealand Flora' (rev.), 74; 'List of Seed-plants,' 99, 126, 433; Huckleberry, 114; Plants of Antilles, 118; American Nomenclature, 123; Halorrhagaceae, 135; Carex echinata, 163; Lyonsia, 235; Cephalanthera

[Dec. 1907.] 2 L.
longifolia, 240: Nomenclature, 244; Brown’s Prodromus, 246; Some Introductions (rev.), 249; ‘The Dillenian Herbaria’ (rev.), 282; Rosa hibernica, 304; Notes from the National Herbarium, 313; ‘Trees of Great Britain’ (rev.), 382; Flora of Glamorgan (rev.), 413

Brooks, W. E., appointed to National Herbarium, 352
Brown, Robert,† 126
Brown’s Prodromus, 246
Bucknall, C., Spanish and Balearic Plants, 53
Bury’s Somaliland Plants, 232
Buxus in England, 346

Calamagrostis lanceolata, 380
Callymenia Lartheria*, (t. 484), 85
Camellia axillaris, 313
Canthium myrtifolium,*, 266
Capararia frutescens,*, 315
Carex rorulenta, 59; Paiera, 163
Carices, Spanish and Portuguese, 211; Perth and Aberdeen, 295; hybrid, 301; in Herb. Linn., 364
Caveis’s Plant Biology, 456
Census Catalogue of British Mosses, 416
Cephalanthera longifolia, 240
Cephalozia integragna, 66; patula, 279; piriflora, 66
Ceratites amena, 313
Ceropegia albertina,*, 57
Channel Islands Flora, 395, 419
Cheeseman’s ‘New Zealand Flora’ (rev.), 74
Chittenden on Essex Mosses, 215
Christensen’s ‘Index Filicium’ (rev.), 35
Churchill, G. C.,† 40, 78
Clematis Vitalba, 160
Clorodeudon melanophyllum,*, 93; oreadum,*, 93
Climate, Effect of (rev.), 307
Coffee Engleri, 115, 197; eugenioides,*, 43
Colchicum variegatum, 411
Coleman’s ‘Our Woodlands,’ 456
Colens matopensis,*, 96; polyanthus,*, 96; toroensis,*, 95
Colgan, N., Senecio abseens, 306
Conophyrynge Holstii, 50
Cooke’s ‘Flora of Madras,’ 384
Coryne urinalis (t. 485), 170
Coste’s ‘Flore de la France,’ 80
Cotoneaster microphylla, 60, 119

Cotton, A. D., British Phaeophyceae, 368

County Records:—
Angelsea, 25
Bedford, 451
Berks, 72, 248
Bucks, 112, 120, 450
Cambridge, 452
Cardigan, 72, 159, 170
Carmarthen, 71
Carnarvon, 21, 344
Chester, 33, 163, 212
Cornwall, 60, 119, 158, 161–2, 210, 368, 372, 452
Cumberland, 8
Derby, 63, 306
Devon, 86, 159, 161, 212, 219, 287, 371, 411, 451
Dorset, 159, 370, 384, 413
Essex, 311, 380
Flint, 138
Glamorgan, 159, 163, 280, 413, 449 (Supplement)
Gloucester, 306, 346, 407
Hants, 92, 71, 72, 159, 210, 306, 344, 413
Herts, 421
Hereford, 307, 447
Kent, 183, 159, 212, 248, 278, 282, 342, 346
Lancaster, 212, 256, 381
Leicester, 160–2, 334–9, 448
Lincoln, 432
Norfolk, 43
Nottingham, 447
Oxon, 34, 449
Pembroke, 72
Radnor, 447
Salop, 411
Somerset, 25, 159, 221, 307, 343, 378, 393, 448, 449, 450, 451
Stafford, 306
Suffolk, 33, 71, 388, 412
Surrey, 164, 248, 346, 347
Sussex, 63, 66, 161–2, 277, 279, 287, 452
Warwick, 169, 171
Westmorland, 8, 163
Yorks, 39, 64, 413
See also Hieracium Notes, 109–112; Potamogeton, 172–176; Ross, 204–210; Hepaticae, 63, 258; Hybrids, 268–276, 296–304

Crabbe as a botanist, 77
Crategus, N. American, 289
Crepis præmorsa, 313
Crocus nudiflorus, 450
Croton sparsiflorus, 406
Cryptogams, Disappearance of, 334
Cyanophyceae, Studies in (rev.), 284

Cymathere, 214
Cyperus fuscus, 450
Cyphia mazoeensis, 46
Cytandra glabrate, 314
Cystopteris fragilis, 33, 71

Dallman, A. A., Flintshire Flora, 183; Schistostegia osmundacea, 212; Sisymbrium pannonicum, 212; Orchis pyramidalis, 381
Dasyscypha canescens (t. 485), 169
Davey, F. H., Notes from Cornwall, 119; Euphrasia Vigursii (t. 486), 217
Davies’s ‘Introduction to Botany,’ 342

Diciplerta frondosa, 314
Dieranum Scottianum, 305
Dillerian Herbaria (rev.), 282
Disappearance of Cryptogams, 334

Dixon, H. N., L’erisome of Splanchnobryum, 82; S. delicatulum (t. 484a), 84, 165; Fissidens algarvicus, 297; Hypnum riparium, 281; Seed-dispersal in Euphorbia Chamaesyce, 251

Dörfler’s Botaniker Porträts, 257
Donax, 242; Arundastrum, 243; canneformis, 243

Drabble, E. & H., Lithospernum officinale var. pseudo-latifolium, 162; Fumaria Boraei, 163; Sisymbrium pannonicum, 164; Hypericum humifusum var. Liotardi, 212; Phleum pratense, 306

Druce, G. C., Plantago lanceolata var. sphærostachyia, 21; Cheshire Plants, 38; Ophrys Trollii, 34; Huckleberry, 112; Alnus rotundifolia, 163; Stipa membranacea, 164; Spanish and Portuguese Canices, 211; Irish Plants, 248; Calamagrostis lanceolata, 380; his Dillenian Herbaria (rev.), 282; Koeleria, 306; Channel Islands Plants, 395, 419; Linaria arenaria, 411

Dunn, S. T., New Chinese Plants, 402
Dyschoriste alba, 89

Dysemone, 137

Ecology of Montia, 211, 282, 306, 452
Ectocarpus Padinae, 371
Eeri’s Acanthaceae, 226

Elaeagnus Tutcheri, 404
Elaeophoria, 80
Eleutheromyces longisporus, 171
Elentherosphaera longispora (t. 485), 171

Elliott, C., ‘Johns’ Flowers of the Field’ (rev.), 347
Elwes’s ‘Trees of Great Britain’ (rev.), 382

Epilobium in Linnaean Herbarium, 365; hybrids, 278
Erica Mackai, 449
Erigeron, hybrid, 164
Erinnis frutescens, 314; tomentosus, 315

Eriospermae Oeulcus-cati, 76
Erythrea capitata, 71
Euclea Eyalesii, 47

Euphorbia Chamaesyce, 251; imbricata, 58; Peplis, 158
Euphorbias, succulent, 212
Euphrasia Vigursii (t. 486), 217; hybrids, 276

Fernald, M. L., Dr. Sarrasin, 117
Fissidens algarvicus, 237
Flintshire, Flora of, 188
Fockea capensis, 75

Formosa plants, 80
Fumaria hybrid, 120; Boraei, 163

Gall-formation in Ramalina, 344
‘Garden Anthology,’ 287
Gardenia lanciloba, 264; pomo-dora, 264

Gardner’s ‘Cytological Studies’ (rev.), 284
Geldart, A. M., Cystopteris fragilis, 71

Geopanax, 80
Gepp, A., Christensen’s ‘Index Filicium’ (rev.), 35; Catalogue of British Mosses (rev.), 416

Gepp, A. & E. S., ‘Postelsia’ (rev.), 121; Cytology of Cyanophyceae (rev.), 284; E. A. L. Batters (portr.), 385

Gepp, E., Cymathere, 215
Gerard on Climbing Plants, 125
Germination of Poplars (t. 487), 417

Gibson’s (Jost’s) ‘Plant Physiology’ (rev.), 310

Gilbert, E., British Rubi, 129, 339

Glamorgan, Flora of (rev.), 413 (Supplement)

Glück’s ‘Wasser- und Sumpfwächse’ (rev.), 73
INDEX

Glyceria Foncavdii, 210; pedicellata, 162
Gooseberry Disease, 168, 214, 256, 312
Gordon's British Grasses (rev.), 349
Gregory, E. S., Seed Production in Violets, 155; Pollen of hybrid Violets, 377
Griggs on Cynathare, 214
Grimmia maritima, 305
Groom, Percy, 'Der Einfluss des Klimas' (rev.), 307
Grove, W. B., Three Ascomycetes (t. 485), 169
Groves, H. & J., Ononis reclinata, 280; Ranunculus divaricatus, 379; R. tripartitus, 452
Grunvillea saltensis, 44
Gymnadenia × Le Grandiana, 278
Halliera caudantha, 384
Haloragis, 135; simplex, 136
Halorrhagaceae, Note on, 135
Hanbury, Sir Thomas, † 216
Heath's Postcards, 213
Hecatonema diffusum, 370; globosum, 369,—var. nanum, 370
Helleborine, 263; longifolia, 441
Hemsley, W. B., Notes from Cornwall, 60
Henry's 'Trees of Great Britain' (rev.), 382
Henslow's 'Ecology' and 'Wild Flowers' (rev.), 249
Hepaticae, British, 63, 258
Herbaria. The Dillenian (rev.), 282
Hind's Suffolk Flora, Notes on, 388
Hieracium anfractum subsp. caeminiatum, 111; britannicum var. ovale, 109; ciliatum var. venosum, 109; conspersum, 111; Notes, 105; ornatum, 112; pinnaatifidum, 110; saccicnnum, 111; serratifolium var. Cinderella, 109; of Perth and Aberdeen, 293; hybrids, 274
Hill, A. W., appointed to Kew, 352; hybrid between Cowslip and Oxlip, 384
Hoare's 'Flowering Trees,' 416
Holmes, E. M., Callymenia Lar- terie (t. 484 B), 85; his herbarium, 79
Holtermann's 'Einfluss des Klimas' (rev.), 307
Hope's (John) Records, 454
Horwood, A. R., Disappearance of Cryptogams, 334; Exchange Club for Lichens, 412
‘Huckleberry,’ 112
Hulme's 'Wild Flowers' (rev.), 251
Hybrids among British Phanerogams, 268, 296; between Cowslip and Oxlip, 384; Berberis, 383
Hypericum humifusum var. Liotardi, 212
Hypnum riparium, 281
Hypoestes toreoensis, 92
Ilysanthes albertina, 331
India, Imperial Gazetteer of, 255
Indokingia, 80
Ingham, W., Sagina Reuteri, 413; Lachnea hirtococcinea, 413
Irish Plants, 159, 210, 248, 304, 306, 345, 346, 391, 447, 449, 450
Isoglossa rungoides, 356
Jacaranda Roberti, 405
Jackson, A. B., Berks and Hants Rubi, 72; Silene conica, 347
Jasminum abyssinicum, 48
Johns' 'Flowers of the Field' (rev.), 347
Jost's 'Plant Physiology' (rev.), 310
Juncaceae, hybrid, 299
Juncus pygmaeus, 412
Justen, Frederick † (portr.), 62
Keeble, F., 'Plant Physiology' (rev.), 310
Kew Bulletin, 78
Kæleria, 306
Krause, K., Coffea Engleri, 197
Kuntze, Otto, † 127
Lachnea hirtococcinea, 413
Lake District Plants, 8
Lancashire, South, Proposed Flora of, 256
Leonotis longidens, 98
Lett, H. W., Rosa hibernica, 346
Leucana Forsteri, 315
Ley, A., Hieracium Notes, 108; Roues of mollis-tomentosa Group, 200; Herefordshire Plants, 317; Rubus mucronatoides, 446
Lichens, Flintshire, 152; rare, 345
Disappearance of, 337; Exchange Club, 412
Limonia ugandensis, 61
Limonia, Notes on, 24; bellidi- folium, 428; binervosum, 24, var. humile, 25; recurvum, 412
Limosella aquatica, 449
Linaria arenaria, 411, 451; supina, 161
Lindernia Gossweilleri, 87
Orchis ericetorum, 344; pyramidalis, 381
Ornithogalum pyrenaicum, 450
Orobancha purpurea, 72
Orthosiphon Büryi, 233
Oxyanthus Bagshawei,* 266; oxycarpus,* 265

Palms, Branching in, 380
Parasita Thomasii, 154
Parietaria officinalis, 34, 381
Parkinson's 'Paradisus,' 127
Paulson, R., Silene elongata, 445
Pavetta albertina,* 267; graveolens,* 267; lastorachis, 115
Pearson, W. H., 77
Peirson, H., Gymnadenia × Le Grandiana, 278
Pentamisia crassifolia, 115, 198
Perréédès's 'London Botanic Gardens,' 255
Petaldium Eenii,* 227; damarense,* 227
Pfitzer, Ernest, 40
Phaeophyceae, British, 368
Phleum pratense var. precox, 306
Phyllody in Myosotis, 412
Piper's 'Flora of Washington,' 123
Plantago lanceolata var. sphaerastachya, 21
Electronia longistaminea, 115; microterantha, 115
Pelecarcha Bagshawei,* 49
Polygala amarella, 39
Polygounum sagittatum, 240
Polystichium Braunii, 451
Poplars, Germination of (t. 487), 417
Populus glanca, 37
Potamogetons new to Britain, 172; altitude of, 373; hybrid, 299;
alpinus × and var. lacustris, 155;
Friesii ×, 175; Franchetti,* 234;
floridanns, 373; Fryeri,* 234;
 gracilis, 173; intermedius, 174;
luenz, 374; mascarenensis, 376;
nitens var. maximus,* 173; obtusifolius var. flavialis, 170; ocreatus,
375; pectinatus var. salina, 174;
praelongus, 173; pusillus var. acuminatus,* 173; × ripennis,
375; Robbinsii, 376; salignus,
212; spathuliformes, 376, 453;
× Tiselii, 173; upsaliensis, 175;
× venustus, 375
Prunus hybrids, 275, 384
Prionolobus striatulus, 65
Prunus Fordiana,* 402; marginata,* 402
Psychotria albidoocalyx, var., 116
Pyrus hybrids, 273
Ramalina, Gall-formation in, 314
Randa acutidens var. laxiflora,* 403
Rammneusus divaricatus, 379; tripartition, 161, 452
Raphionacme Bagshawei,* 50
Rayner, J. F., Vicia bithynica, 413
Reid's 'Scots Gardiner,' 127
Rei Botanici' (rev.), 38, 252;
Glück's 'Wasser-und Sumpfpflanzen' (rev.), 73; 'List of Seed-
plants,' 99, 126, 483; 'Sukkulenten
Euphorbien' (rev.), 212: 'Memo-
rials of Linnaeus,' 383

Reviews:
Index Filicinum. C. Christensen, 35
Indian Trees. D. Brandis, 36
Progressus Rei Botanici. J. P.
Lotsy, 38, 252
Ueber Wasser-und Sumpfpflanzen. H. Glück, 73
Manual of New Zealand Flora.
T. F. Cheeseman, 74
Haandbog i Norges Flora. A.
Blytt & O. Dahl, 120
Postelsia, 121
Die Selbsterhitzung des Heus. H.
Miehe, 122
Flora of State of Washington.
C. V. Piper, 123
Variation, Heredity, and Evolution.
R. H. Lock, 165
Sukkulenten Euphorbien. A. Ber-
ger, 212.
Plant Ecology. G. Henslow, 249
Wild Flowers. F. E. Hnhme, 250
Wild Flowers. G. Henslow, 252
The Dillenian Herbaria. G. C.
Druce, 282
Cytological Studies in Cyanophy-
eeae. N. L. Gardner, 284
Der Einfluss des Klimas. C.
Holtermann, 307
Plant Physiology. L. Jost (transl.)
R. J. Harvey Gibson, 310
Flowers of the Field. C. A.
Johus, 347
Wild Flowers of the British Isles.
H. I. Adams, 349
Manual of British Grasses. W.
J. Gordon, 349
Die Purpurbakterien. W. Mo-
lisch, 350
Trees of Great Britain and Ireland.
H. J. Elwes & A. Henry, 382

Digitized by Microsoft®
Flora of Glamorgan. A. H. Trow, 413
Reinkultur. O. Richter, 458
Rhizocarpon Lotum, 35
Riccia Huebeneriana var. pseudo-Frostii, 63
Richter’s ‘Reinkultur’ (rev.), 458
Riddell, Maria, 118
Riddelsdell, H. J., Flora of Glamorgan (Supplement); Parietaria, 34; Caeranthem Plants, 71
Ridley’s Malayan Flora, 384
Riley, L. H., Ecology of Montia fontana, 211
Rogers, W. M., Plants of Lake District, 8; British Rubi, 210
Rolfe, R. A., Donax and Schumannanthus, 242; Ophrys muscifera var. virescens, 282
Rosa, Mollis-tomentosa group of, 200; hybrids, 272; arvatica, 221; Andrzejovi, 207; cinerascens, 209; euspidatoides, 209; farinosa, 209; hibernica, 304, 345; obrita, 201; mollis, 204; obovata, 204; omissa, 205; ponifera, 204; pseudomollis, 205; scabriuscula, 208; Sherardi, 207; suberecta, 206; submollis, 205; sylvestris, 208; tomentosa, 208; uncinata, 207; Woodsiana, 208
Rubí, Berks and Hants, 72; Herefordshire, 318; Notes on British Suberecti, 129, 211, 248, 339; hybrid, 271
Rubiaceae, Africa, 114, 197
Rubus fissus, 181; Idens, 181; integribasis, 134; lacinistris, 9; mucronatioides, 446; plicatus, 152; Rogersi, 132; suberectus, 151; sulcatas, 132
Ruellioptis damarenensis, 277
Rumex hybrizes, 206
Rylands’s Diatomaceae, 455
Sacellium, 405
Sagina Reuteri, 413
Salicornia, 224; appressa, 162
Salix hybrizes, 297
Salmon, C. E., Notes on Limonium, 24, 438; Euphorbia Peplis, 158; Salsola kali, 277; Notes on Suffolk Flora, 388
Salmon, E. S., on Gooseberry Disease, 168, 312
Salsola kali, Forms of, 277
Sarcoccephalus sambucusin, 316
Sargent, C. S., North American Cratgei, 289
Sarracenia, The name, 1; Catesbeii, 4; Drummondii, 4; minor, 6; variolaris, 6
Sarrasin, Dr., 1, 117
Saunders, J., Lycopodium clavatum, 451
Saussurea setidens,* 403
Seapania obliqua, 262
Schistostega osmundacea, 212
Schizoglossum cordatum,* 380
Schenus nigricans, 307
Schrebéra mazœnisis,* 48
Schumannanthus, 242; dichotomus, 244; virgatus,* 244
Sentellaria alpina, 345
Seed-dispersal in Euphorbia, 281
Seed-production in Violets, 155
Senecio × alboseens, 306
Shoolbred, W. A., Scottish Plants, 292
Sideroxylon oblaneolatum,* 47
Silene conica, 347; elongata, 445
Sinclair, Archibald, 381
Sinowilsiona, 80
Sisymbrium pannonicum, 168, 212
Sisyrinchium californicum, 248
Smith, A. L., *Die Selbsterhitzung des Huns* (rev.), 122; Gall-formation in Ramalina, 344; Rare Lichens, 345; ‘Die Purpurbakterien’ (rev.), 350; ‘Reinkultur’ (rev.), 453
Solander’s MSS., 32
Somerville, A., 288
Sonchus littoralis, 384
Spanish Plants, 53
Spergula arvensis var. nana,* 380
Splachnobryum, Peristome of, 81; ‘dedicalnum,* (t. 484), 84
St. Brody, Dr., 487
Statice ovatifolia, 57
Stemodia tomentosa,* 315
Stewart, S. A., 416
Stipa membranacea, 164
Streblonema effusum, 372; volubile, 372
Strychnos myrceoides,* 52
Swertia angustifolia, 245
Taesonía micradena, 316; pinnati-stipula β pennipes, 816
Thompson, H. S., Vicia monosperma, 34; Sentellaria alpina,
INDEX

345; Juncaus pygmaeus, 412
Montia fontana, 452
Thompson, R. F., 78
Thrinicia nudicaulis, 31
Thunbergia microchlamys, 88
Tilia cordata, 418
Townrow, R. F., Orobanche purpurea, 72
Trow, A. H., his Flora of Glamorgan (rev.), 413
Urtica Dodartii, 162
Vaccinium Myrtillus, 112
Vangueria Bagshawei, 42
Verbascum hybrids, 275
Vernonia pumila, 44
Viburnum Opulus, 161
Vicia bithynica, 413; lanciformis, 55; monosperma, 34
Violets, Seed-production in, 155; hybrid, 270; pollen of hybrid, 377
Vitex Eylesii, 154

Wainwright, T., Linaria arenaria, 451
Waltham's coloured photographs, 128
Watson Exchange Club Report, 166, 256
Weathers, J., 'Horticulture' (rev.), 415
West, H. Montia fontana, 282
Wheldon, J., A., S. Lancashire notes, 381
White, J. W., Aceras anthropophora, 343; Ophrys Trollii, 343; St. Brody's work in Gloucestershire, 407; Limonium recurvum, 412
Williams, F. N., 'Variation, Heredity, and Evolution' (rev.), 165; his Flora Gambica, 126
Wilson on the Primrose, 215
Witches' Broom, 254
Wollaston's Ruwenzori plants, 351
Wood, E. M., 454
Woolward, F. H., Germination of Poplars (t. 487), 417

ERRATA.

P. 25, top line, for "5" read "6,"
P. 28, l. 4 from bottom, for "more" read "now,"
P. 33, l. 2 from top, for "47" read "42,"
P. 85. In Explanation of Plate, figs. 1, 2 should be x 50, figs. 3-5, x 250.
P. 94, l. 23 from top, for "isotjensis" read "Eylesii" (see p. 151).
P. 96, l. 15, 16, 29 from bottom, transpose "anticum" and "posticum."
P. 133, l. 7 from bottom, for "Costa" read "Coste."
P. 236, l. 11 from bottom, for "521" read "821."
Pp. 331-333, for "Lake Albert Edward" read "Lake Albert."
P. 343, l. 16 from bottom for "Hegenb." read "Hegetschw."
P. 366, l. 5 from bottom, for "russa" read "ruffa"; l. 15 for "Nasselquist" read "Hasselquist."
P. 382, l. 6 from bottom, for "manifest" read "wanting."
P. 405, l. 13 from top, for "Oran" read "Salta."
A FLORA OF GLAMORGANSHIRE.

By H. J. RIDDELSDELL, M.A.

The following list of the flowering plants and vascular cryptogams of Glamorganshire (v.-c. 41 of Watson), proceeds, wherever possible, upon the lines of my own observations. Only in very rare cases is the history of a plant's discovery touched upon. Nearly all occurrences which I have established myself are given on that authority alone, regardless of previous records. On the same principle, records of plants seen in herbaria are preferred to mere written records. The list has, therefore, in the main, a personal character. Plants or localities recorded otherwise than by myself bear indications to that effect.

For convenience sake the county is divided into nine districts, which mostly correspond with the drainage areas of the principal rivers. A geological arrangement would have been hopeless, in spite of the great mass of the coal measures in the northern half of the county: for the series in the other parts of the county are split up—except in the case of the Triassic series, and of the Gower mountain limestone—into very small areas. The districts are:

1. Gower: comprising the Peninsula, and marked by the arbitrary boundary, on the east, formed by the L.N.W.R. from Mumbles Road Station to Gowerton; thence by the G.W.R. to where it crosses the county boundary at Loughor. The district has a large sea-board, and no very high hills; but a number of elevated commons in the centre and west, and a great range of limestone sea-cliffs, with numerous bays and extensive sandy burrows. The old red sandstone occurs in large patches on Cefn Bryn, Rhosili Down, &c.: the coal measures occupy the whole eastern part of the district: otherwise the soil is the mountain limestone.

2. Loughor: A narrow strip bounded on the south by a line running from the summit of Swansea Town Hill westwards to a point about one-third of a mile north of Dunvant Station of L.N.W.R. The eastern boundary begins at Penller Castell on the Caermarthenshire border, and follows the watershed over Mynydd Gwair, just east of Llangyfelach Church, over the Cockett Tunnel. It is confined to the coal measures, which rise to 1226 ft. at Penller Castell.
3. **Tawe:** The eastern boundary proceeds from a point in the Glamorgan-Brecon border very close to where the latter is crossed by the Neath and Brecon Railway, passes over the summit of Farteg Hill, through Cil-y-bebyll and west of Mynydd March Hywel; and goes south and south-west to the slope of Mynydd Drymau, through Skwen and along the road to Briton Ferry Road Station and the sea. It is all comprised within the coal measures, and includes the famous Crumlin Bog and the sands of Swansea Bay.

4. **Neath:** Including a small portion of the millstone grit, but otherwise limited to the coal measures. The east boundary goes from a point on the Brecon border within a mile of Hirwaun Ponds, due south on to Hirwaun Common; thence turns west over the highest ground in the county (Carn Fach, 1969 ft.) above Craig-y-llyn, and follows the old mountain road, Cefn foldrd, over Cefn Grog; south-west and west over Cefn Mawr, keeping above Glyn Corwg and Cwm Blaen Pelena; and from Cefn Morfydd takes an arbitrary line south-west to the point of Baglan Bay.

5. **Afan:** again mostly on the coal measures, which consist of lofty hills cut up by densely populated colliery valleys, and fronted by a considerable width of marsh, and extensive burrows. East and south it is limited by a line drawn from Carn Fach southwards to about Graig Fawr at Treorchy; there it turns westward sharply to the tunnel near Spelter, and takes an irregular southward direction over Rhiw Tor Cymry, past Twmpath Dwilith; and so follows the mountain road to the G.W.R. above Laleston. Thence it follows the railway to Pyle, and turns through North Cornelly to the sea at Sker Point. The glacial gravel drift is found at the foot of the hills between Margam and Kenfig; Sker Point itself is composed of a conglomerate limestone belonging to the Triassic series; and very small portions of the lias and mountain limestone come in at Pyle.

6. **Ogmore or Ogwr:** including colliery districts, a narrow band of millstone grit and some mountain limestone tracts (Ewenny Down, Stormy Down, Porthcawll, &c.), and a good part of the lias of the Vale of Glamorgan with Bridgend as centre. Glacial drift, the alluvium of the river beds, and a large tract of blown sand at Porthcawl, complete the tale. The eastern boundary goes from Graig Fawr, Treorchy, over Mynydd William Meyrick above the sources of the Ogwr Fach to the top of Mynydd Maendy; thence to Mynydd Garth Maeldwlg, and past Llanharan and Llanilid by the road to Nash; and westwards through Wick to the sea at Whitmore Stairs.

7. **Ddaw:** which lies mostly in the Vale on the beds of the Triassic series, with, however, considerable tracts of glacial drift, patches of mountain limestone at St. Hilary, &c., and traces of the old red sandstone. It marches with district 8 from a point near Llanilid, through Ystradowen, Welsh St. Donat's, Bonvilstone, St. Nicholas, Leckwith, to Lavernock Point, and includes the Flat Holm. The only considerable centre of population is Barry. There are no high hills.
8. **Taff**: the largest of the districts, comprising the drainage areas of the Taff and Ely Rivers. Its northern boundary follows the county line till within a mile or two of the River Rhymney; and the eastern boundary runs over Gelligaer Hill nearly to the church; thence to Eglwysilan Hill, keeping a sinuous line over the summit between Pontypridd and Senghenydd, and so to Caerphilly Common. It then takes the Cardiff Road as far as Whitchurch, and so strikes south-east to Roath and the Bristol Channel. The greater part of the area is on the coal measures, but millstone grit, limestone, and a small quantity of old red sandstone occur near Merthyr Tydfil, and a band of limestone again at Taffs Well and along the line of hills which continues through district 9 past Llanishen. The Rhaetic beds, lias, and old red sandstone all appear in the country north of Cardiff, and the gravel drifts cover considerable areas in the same district.

9. **Rhymney**: A very narrow strip lying between district 8 and the Rhymney River. The greater part is on the coal measures; but the lower part from Caerphilly downwards comprises the limestone hills of Llanishen and Rudry, the underlying old red sandstone, a small area of the Ludlow beds about Penylan and Roath, and a considerable acreage of gravel drifts, as well as the interesting marshes at the mouth of the Rhymney River.

The chief authorities quoted for records are:

- **Wats. Outlines**: Outlines of the Geographical Distribution of British Plants, 1832, by H. C. Watson.
- **Wats. MSS.**: Manuscript material for Topographical Botany, preserved in the Botanical Department of the British Museum (Natural History).
- **Flower & Lees**: List supplementary to the preceding, by T. B. Flower and Edwin Lees, Phyt. vol. i. (1842) 377.
- **Westcombe, Thomas**: List in Phyt. i. 780 (1843).
- **Moghridge, Matthew**: List in Proceedings of Royal Institution of South Wales, 1844.
- **Dilwyn, L. W.**: Materials for a Fauna and Flora of Swansea, 1848.
Ball, John: Swansea Plants, in Bot. Gazette, i. 108 (1849).  
Woods, Joseph: Phyt. vol. iii. 1053 (1850).  
Sorrite, John: Flora of Cardiff, 1886; a book to be used with much caution.  
Rhondda Fl.: Flora of the Rhondda Valley, by H. Harris, 1905.  
Lloyd: MS. lists of Porthcawl and Mumbles Plants, by the late Rev. J. B. Lloyd, of Liverpool. For the loan of these I am indebted to Mrs. Lloyd.  

The initials of well-known living botanists, such as the Revs. E. F. Linton, W. R. Linton, W. Moyle Rogers, Augustin Ley, E. S. Marshall, and Messrs. G. C. Druce, H. & J. Groves, C. E. Salmon, H. W. Pugsley, quoted as authorities, will be easily recognized where they occur. To these gentlemen, with many others, I am deeply indebted both for records, and for assistance in identifying plants.  

Herbaria consulted are those of the British Museum; of H. C. Watson, at Kew; of E. Downing Esq., of Barry (quoted as D.); of James Motley, of Aberafan, and J. E. Bicheno, of Swansea (both in the keeping of the Royal Institution at Swansea); and of the Cardiff Museum. Mr. Druce explored the Babington Herbarium at Cambridge for Glamorgan records; and Miss Geldart, of Norwich, has sent me some localities extracted from the Herbarium of the late H. D. Geldart, Esq. To both of them my thanks are due.  

The species are, as a rule, recorded in the order of the ninth edition of the London Catalogue; but Rubi follow that of Mr. Rogers's Handbook, and Hieracia that of Mr. Liiton's. The nomenclature for species is that of the List prepared by Mr. Britten and Dr. Rendle and issued by the Trustees of the British Museum. The numerous aliens found in the county will form the subject of a separate paper.  

Forms recorded, as I believe, in error or on insufficient evidence, are placed in brackets.  

Names of native species which are not recorded as native, or as certainly native, in Top. Bot., are starred.  

**Ranunculaceae.**  
T. collium Wallr. 4. Craig-y-lyn, in plenty. 8. Graig Fawr,
Treorchy. The record in Dillwyn, p. 42 (as T. minus), is almost certainly from Breconshire.


(*R. fluitans* Lam. All records, *e.g.* Storrie’s from the Taff, Ely and Rumney Rivers, must be considered uncertain or erroneous.)


*R. trichophyllus* Chaix. 1. Llangenydd marshes. 7. Cowbridge.

(*R. Drouetii* F. Schultz. 7. Cowbridge; specimens doubtfully placed here by H. & J. G.)


*R. lutarius* Bouv. 1. Rhosili Down in some quantity. (8. Storrie’s records are probably in error for *R. Baudotii.*)

*R. lenormandi* F. Schultz. Frequent in districts 1, 2, 3, 4, 5, 8, 9. Among the hills occurs a form approaching *R. lutarius* in its more deeply divided upper leaves, and cup-shaped flowers. 1. At Rhosili, a plant which Messrs. Groves suggest is a hybrid *R. lenormandi × lutarius*, growing with both species.

*R. hederaceus* L. 1. Frequent at the sea level, on the sands and elsewhere; also on the downs; often with *R. lenormandi*. 2. Loughor, Mynydd Garn Goch. 3. Crumlin Bog and the enclosing hills, but


_R. aeris_ L. Probably general; ascending to the high mountain cliffs of Glyn Neath and Treorchy. Recorded from all districts. Our most frequent forms are:—


_R. repens_ L. Common; rising to the high mountain cliffs of Craig-y-llyn.


* _R. parvijlorus_ L. 1. Cliff at Penard, the Tor and other cliffs at Llanmadoc, Whitford Burrows. 6. Coast, Sully to Southerndown, Storrie. 7. Sully Island, Swannbridge Cliffs, Dinas Powys, Pontigary. 8. Penarth, _Hb. Cardiff._

_R. Ficaria_ L. Probably general; but no records for district 9, and few for 2, 3, 5, 6. Frequently fruiting at Aberdare.

_Caltha palustris_ L. Generally distributed in suitable spots, which include hollows of sandhills by the sea (e. g. 1. Whitford Burrows), and the swampy parts of the upland moors; not however rising much above 800 ft.—Var. _Guerangerii_ Bor. 3. Crumlin Bog, scarce. 8. Hirwaun, Nant Hir, near Aberdare. 9. Llanishen, _Hb. Cardiff._


Nymphaeaceæ.


Papaveraceæ.


Chelidonium majus L. Seen in every district, almost always near houses. But 1, on Clyne Common, W. M. R., and 5, by stream side, ditches, and roadsides between Port Talbot and Margam (where it also occurs fil. pleno), probably native.

FUMARIACEAE.


CRUCIFERÆ.


Radicula Nasturtium-aquaticum Britten & Rendle. Well distributed; and common in watery places, on low ground.—Var. microphyllum (Reichb). 8. Aberdare.


*Armoracia amphiloba* Peterm.—Var. (*Nasturtium*) *variifolium* DC. Canal bank, Aberdare, very rare.

*Barbara lyrata* Asch. Recorded from all districts except no. 5; plentifully in 7 and 8.


*C. hirsuta* L. Very common.


Of the named forms of this species we have:—


*E. praecox* DC. 5. Sands at Kenfig in no great quantity.

*Cochlearia officinalis* L. 1. Penard Castle westwards to Llan- *Journal of Botany, 1907.* [Supplement.]

b


Alliaria alliacea Britten & Rendle. In every district.


B. monensis Huds. 1. Three Cliffs Bay, Oxwich Bay. All the records from Flower (1839) onward refer to this locality or the immediate neighbourhood. 7. Aberthaw, Storrie, and 8 Ballast, Storrie, are probable errors for B. Cheiranthos.


B. Sinapisstrum Boiss. Records from all districts except 5.—Var. orientalis Asch. 4. Aberdylais. 8. Cardiff Docks.


Thlaspi alpestre L. 4. About Pontneddfechan and Aberpergwm, B. G.

Teesdalea nudicaulis Br. 3. Swansea, occasional, Dilwyn. ? extinct.


Resedaceæ.

and waste ground. 5. Port Talbot Docks. 6. Porthcawl sandhills.
9. Llanbradach to Caerphilly.

R. Luteola L. Well distributed throughout the Districts, and native on the Gower coast and elsewhere.

CISTACEÆ.

Helianthemum marifolium Mill. Mostly on limestone sea cliffs.


VIOLACEÆ.


*V. calceatae Gregory. 6. Ogmore Down.

*V. sylvestris Lam. 1. Shadier spots on limestone in Gower, plentiful, though less abundant than V. riviniana. Seldom close to the sea. Behind Pwlldu Head, Parkmill, Llanmadoc, &c. 6. Ewenny. 7. Porthkerry, Wenvoe, Dinas Powys. 8. Morlais Castle, both on


*V. lactea* Sm. 1. Rhosili, Frog Moor. Mr. Beeby has so named the plants recorded in *J. Bot.* 1904, p. 312, as *V. stagnina* Kit.; the latter record therefore disappears.


*V. variata* Jord. 8. Aberdare.


Polygalaceæ.


*P. serpyllacea Weihe. Frequent in the county.

Caryophyllaceæ.


Lychnus alba Mill. 1. Rhoesili, native. 7. Swanbridge, native. Otherwise apparently adventitious. No records for districts 2 and 9.—dioica. 5. Port Talbot. 7. Sully.

L. dioica L. General.

L. Flos-cuculi L. General and fairly frequent.

(Moenchia erecta G. M. & S. 8. Rare, E. Moors, Storrie. Needs confirmation.)


C. pumilum Curtis. The only record is that of Top. Bot. Supp. 1905, which Mr. Bennett says refers to a plant gathered in 1885, by Rev. E. F. Linton, who, however, tells me that he cannot recollect it, or locate it.

5. Aberafan, Port Talbot, Kenfig sands. 6. Porthcawl sands.
C. viscosum L. Apparently general. — Var. apetalum Dum.
C. vulgatum L. Recorded generally; ascending to the high mountain cliffs.—Var. penandrum Syme. 1. Broughton Burrows.

*Myosoton aquaticum Moench. 3. Frequent in watery places about Swansea, Flower & Lees. Not accepted by Watson. 8. Peters-
ton, rare.
Stellaria nemorum L. 3. Gutch’s record refers to Breconshire as it stands, though it is not impossible that the plant occurs in Glamorganshire, which is only a few miles away. Top. Bot. very justly queries for v. c. 41. 8. Rare; near copper-works, Cardiff, Storrie. A very unlikely locality. Bodringallt Woods, 1900, Rhondda Fl. At present we must exclude the plant from the county list.)

S. Holostea L. 1, 4, 8, 9. General and fairly common. Records from all districts.
(S. palustris Retz. 9. “Common in wet places. Llanishen, &c.,” Storrie. Evidence not good.)
S. uliginosa Murr. Frequent in 1, 2, 4, 8, 9. Also in 3 at Ystal-
yfera. 7. Stalling Down, Cog. Barry, D!
A. serpyllifoia L. Found in all districts, especially on sand-
dunes.—Var. glutinosoa Koch. 1. Penard, Oxwich Bay, Rhosili.—Var. leptoclados (Guss.). 1. Not uncommon near the coast. 5. Pyle to Port Talbot, Mawdiam. 6. Porthcawl and S. Cornely frequent, Merthyr Mawr. 7. Barry Island, Sully Island. 8. Aber-
dare, Ystradowen.
Honkenya peploides Ehrlh. 1. Swansea Bay, Oxwich. Pavil-
Sagina maritima G. Don. 1. Three Cliffs Bay. Oxwich Marsh, 


S. procumbens L. Very common, ascending well up the hills.


*A. rupicola Hiern. 1. Mewslade Bay, Worms Head, Burry Holm.

*Polycarpon tetraphyllum L. 5. Sandy wastes between Pyle Inn and the sea, B. G. Hb. Bicheno contains a specimen from “S. Wales.” Of course Dr. Turton (the authority for B. G.) made serious mistakes. But I do not believe that in the above situation any possibility of introduction exists. The likelihood of error is
much reduced, if not eliminated, by Bicheno's specimen. And I believe the record to be a good one. 8. Near Canton Common, Storrie. Probably introduced.

**Portulaceae.**


**Hypericaceae.**

*Hypericum Androsaemum* L. Frequent.


*H. quadrangulum* L. Frequent, all districts.

*H. humifusum* L. All districts except 6, frequent in 1. 2. 8.


**Malvaceae.**


*Journal of Botany, 1907.* [Supplement.]


M. sylvestris L. 1. Native on cliffs at Port Eynon. Generally distributed throughout the county.


Tiliaceae.

(Tilia platyphyllos Scop. 6. Porthcawl, Lloyd. Not native, even if correct.)


Linaceae.


Linum catharticum L. A dwarf compact form grows on the cliffs of Gower. Records of type from all districts.


Geraniaceae.


G. molle L. All districts except 2. It is a favourite plant of the Burrows, where it often varies with nearly white flowers.


G. dissectum L. Probably common, but with considerable gaps in distribution. No record for district 4.


Oxalis Acetosella L. Generally distributed in shady spots; up to Craig-y-llyn. In all districts.

I. i. E. L. Common.

Celastrineæ.


Sapindaceæ.

* Acer campestre L. Frequent; but no records from 3 & 5.

Leguminoseæ.


Ulex europæus L. Common, but not ascending to the very high ground.

U. Gallii Planch. Well distributed and locally common. Records from all districts. It rises to the top of the hills at Aberdare, say 1600 ft.
(U. minor Roth. Mr. F. A. Lees, in J. Bot. 1879, p. 84, says that he found it in Glamorgan, in 1871: but in 1904 he wrote to say that he now withdraws the record as uncertain. Specimen labelled Ulex naus from Worms Head, 1844, in Hb. Motley, is, I believe, very stunted U. Gallii.)


Medicago lupulina L. Common, but no records from high ground or from district 9.


Trifolium pratense L. Common. The var. sativum Schreb. occurs on ballast and waste ground in many places.


*T. repens* L. Common.


*T. procumbens* L. and *T. dubium* Sibth. Common.


*L. tenuis* Waldst. & Kit. 8. Cardiff marshes.

*L. uliginosus* Schkuhr. Frequent in both glabrous and hairy forms.

(L. *angustissimus* L. 6. Porthcawl, *Lloyd.* Evidence insufficient.)


*Hippocrepis comosa* L. 1. Limestone cliffs near Penard.


*V. Cracca* L. Common.—Var. *incana* Thuill. 7. Nash Point.


*L. pratensis* L. Common.


**Prunus spinosa** L. 1, 2, 4, 6, 7, 8, 9. Frequent. 3. Ystalyfera.

5. Port Talbot.


*P. Cerasus* L. 1. Llangenydd. 2. Penllergaer. 7. Wenvoe.

8. Taffs Well, Storrie.


(S. *Filipendula* L. 8. Penarth, Heolymynydd, near Ham, Storrie. I have seen no specimen.)

Rubes. In addition to the records made in *Journ. Bot.* 1906, p. 90, the following have been noted:—


*R. nitidus* Weihe & Nees subsp. *opacus* Focke. 2. Mynydd Garngoch, a plant which only differs from good *opacus* in having the basal leaflets sessile or nearly so.


R. *incurvatus* Bab. 3. Ystalyfera.


R. *pulcherrimus* Neum. 8. Ystalyfera.


R. *gratus* Focke. 3. Ystalyfera.

foliolatus Rogers & Ley. 3. Ystalyfera, Crumlin Bog and the surrounding hills. — Var. robustus (P. J. Muell.). 1. Clyne Common, a form with very round leaflets. 4. Pontwhalby, Rhigos Hill.


*R. pubescens* Weihe. 4. Pontwhalby, form.


*R. ibericus* Rogers. 2. Loughor River, several places between Pantyffynon and Pontardulais, differing from the Irish plant in the "long petiolated and somewhat cuspidate-acuminate term. It., and in the strongly ascending panicle branches," W. M. R.

*R. pyramidalis* Kalt. 1. Reynoldstone to Paviland, Port Eynon, Horton, moor near Burry Green. 2. Pantyffynon to Pontardulais. 3. Sketty.


*R. adenanthus* Boul. & Gill. 8. Aberdare, a plant which resembles the Gorey Bay plant more closely than the Cheshire plant does, W. M. R. First record for Wales.

*R. cinerosus* Rogers. 2. Pontardulais, not typical.

*R. Gelertii* Frider. 4. Pontwhalby, possibly this. 8. Aberdare, "though usually the panicle rachis is less densely prickly and hairy," W. M. R.


*R. infestus* Weihe. 3. Ystalyfera.

*R. Borreri* Bell Salt. 6. Monknash, nearly type.


3. Above Sketty. 4. Pontwhalby, Rhigos Hill.


JOURNAL OF BOTANY, 1907, (Supplement)
*R. serpens Weihe. 4. Stony hillside, Glyn Neath, 1897, A. Ley.
R. horridicaulis (P. J. Muell.) Rogers & Ley. 4. Pontwhalby, Rhigos Hill.
R. dumetorum Weihe & Nees var. diversifolius (Lindl.). 2. R. Loughor in some quantity Pontardulais to Pantyffynon. — Var. raduliformis A. Ley. 1. Llaurhidian.
Pötentilla sterilis Garecke. Common.
P. verna L. 1. Caswell Bay. Cliffs between Port Eynon and Worms Head, B. G.
P. reptans L. Common.—\var x erecta (= P. italicca Lehm.). 9. Caerphilly, Craig Llanishen.
P. Anserina L. Common; the var. sericea Koch being rather commoner than the type, I believe.


Potentilla Sanguisorba L. Frequent on the limestone and sands, and old red sandstone in 1, 6, 7, 8. Also 3. Sketty. 5. Kenfig Sands. 8. Welsh St. Donat's, Grangetown. Penrhys, Ffaldau, Ferndale, &c., Rhondda Fl.


*R. obtusifolia* Desv.  4. Glyn Neath.  5. Shore at Port Talbot.
8. Llwydcoed.

*R. canina* L. The aggregate very common.—*a. lutetiana* (Leman). 1. Langland Bay, W. M. R. Port Eynon to Oxwich, Parkmill, &c.


*P. Aescularia* Ehrh. Common in the uplands, and recorded for all districts.


*Saxifraga.*

(Saxifraga *aizoides* L.  6. Maesteg, *Hb. Motley*. Perhaps should be confirmed before being definitely admitted.)
(Ribes alpinum L. 7. St. Donat's, Storrie. 9. Caerphilly Castle, Storrie. Gutch's record is from Caermarthenshire.)

Crassulaceae.
Cotyledon Umbilicus-Veneris L. Common.
*Sedum roseum Scop. 4. Craig-y-llyn.
(S. villosum L. 6. Glynn Corrwg, Storrie.)
S. acre L. Very common.

Droseraceae.


HALORAGAE.


LYTHRABIEAE.


Welsh St. Donat's, Ystradowen. Cefn On, Pontypridd, Storrie. Lythrum Salicaria L. Well distributed, but not common.
A FLORA OF GLAMORGANSHIRE

Onagraceae.


E. parviflorum Schreb. Well distributed; locally common.—
× roseum. 8. Aberdare.

E. montanum L. Common.—f. minor aprica. 8. Aberdare.—
× obscurum. 3. Swansea, J. Bot. 1892, p. 297. 8. Aberdare.—


*E. adnatum Griseb. 5. Port Talbot, Aberafan (f. stenophylla).

8. Aberdare, Lavernock, Grangetown. 9. Caerphilly Castle.—
× obscurum. 5. Port Talbot. 8. Aberdare.

E. obscurum Schreb. Apparently frequent, but no record for
6.— × palustre. 1. Oxwich, probably this.


Circaea lutetiana L. Common.

Cucurbitaceae.


Umbelliferae.

Hydrocotyle vulgaris L. Common; no record from 7.


Sanicula europaea L. Fairly common.


*Smyrnium Olusatrum L. 1. Oystermouth, hedges about Brough-


6. S. Cornely.


*Agropyron Podagraria* L. Frequent; probably native in 4. Perddyn Gorge.


(*P. major* Huds. 6. Porthcawl, Lloyd. No specimen seen.)


*Charophyllum temulum* L. Common.
C. Anthriscus Lam. 1. Llanmadoc, cliffs. 8. Penarth and Cardiff, Storrie.

C. sylvestre L. Common.


(E. pimpinelloides L. 3. Landore, B. G. 8. Cardiff, Storrie, = next species, probably.)

(E. Lachenalia C. Gmel. Common in the salt marshes and sandy burrows all along the coast. Also 7. Merthyr Dyfan, Cadoxton.

(E. crocata L. Common.


Silaus pratensis Bess. 5. Pyle. 6, 7. Frequent. 8. Aberdare, Lavernock, Penarth.

Angelica sylvestris L. No record for 5. Otherwise common.

Pastinaca sativa L. Always an escape except 8. Cliffs, Lavernock to Penarth, plentiful and native.


Journal of Botany, 1907. [Supplement.]
**Araliaceae.**

*Hedera Helix* L. Common.

**Cornaceae.**


**Caprifoliaceae.**


**Samhucus nigra** L. Common.


**Lonicera Periclymenum** L. Common, from seashore up to highest mountain cliffs.

**Rubiaceae.**


*G. saxatile* L. Common on the hills, scarcer elsewhere.

*G. umbellatum* Lam. 8. Morlais Castle, plentiful.

Witheringii (Sm.). 3. Swansea, Flower & Lees. 4. Neath, W. M. R.
8. Aberdare.


G. Aparine L. Common; but no record for 9.


Valerianæ.


*V. carinata Loisel. 4. Aberpergwm. ? Native.


Dipsaceæ.

5. Port Talbot. 6. Porthcawl to S. Cornely, near Merthyr Mawr, Ogmore Castle, Ewenny. 8. Off the coal measures.

*D. pilosus* L. 7. Llandough, Cowbridge.

*Scabiosa Succisa* L. Common.

*S. Columbaria* L. 1. Coast from Langland Bay to Llanmadoc.

6. S. Cornely.

*S. arvensis* L. Well distributed; and in 6 and 7 common.

**Compositae.**

*Eupatorium cannabinum* L. Common.—*Var. indivisum* DC.

5. Port Talbot.


Bellis perennis* L. Common.


9. Caerphilly.


*Gnaphalium uliginosum* L. Widely but sparsely distributed.


*I. crithmoides* L. 1. Mumbles to Rhosili, locally plentiful.

Pulicaria dysenterica S. F. Gray. Frequent.


Achillea Millefolium L. Common.


Chrysanthemum Leucanthemum L. Frequent.

Matricaria inodora L. Fairly frequent; often introduced.—Var. salina Bab. 1. Penclawdd, Black Pill. 2. Loughor marshes. 3. Crumlin Burrows. 6. Porthcawl sands. 7. The Leys.


3. Port Tennant, Saltshouse Point, B. G.


Tussilago Farfara L. Common.


S. Jacobaea L. Common.

S. aquaticus Huds. Rather common.

(S. palustris DC. 5. Aberafan, Ray (3rd Itinerary). Ray afterwards says that the locality is in Merionethshire; but I cannot trace an Aberafan there. The marshes at Aberafan (Glam.) might easily have produced the plant, though I can see no sign of it now.)


* A. nemorosum Lej. 8. Aberdare.


C. lanceolatus L. Common.

5. Port Talbot Docks. 6 and 7. Frequent on calcareous soil.


*C. palustris L. Common: also fl. albo.

*C. tuberosus L. 7. Nash Point and neighbourhood. Apparently this species, and so first recorded by Westcombe (Phyt. i. 780); though afterwards referred to C. Woodwardii H. C. Wats.


(C. heterophyllus L. 7 or 8. Road between Llandaff and Cowbridge, B. G. ? Error.)


C. axennis Robson. Common: also fl. albo.—Var. mitis Koch.


Centaurea nigra L. Common. The rayed form is the more common about Bridgend, &c.; the less common in districts 1, 2, 3, 4, 8, 9.—Var. decipiens (Thuill.). 6. Ewenny. 7. Barry to Bonvilstone.


Lapsana communis L. Rather common.


In Hieracium the starred forms are those not given for Glamorgan in W. R. Linton’s Handbook.


*H. argenteum Fr. 4. Craig-y-llyn. 8. Graig Fawr, Treorchy.


H. casium Fr. 4. Craig-y-llyn.


*H. irriquum Fr. 8. Hirwaun.


*H. radicata* L. Common.

*Thrinicia nudicaulis* Britten. Well distributed; common in 1, 8.

*Leontodon hispidus* L. Common.


S. arvensis L. Frequent (no record for 2) and native on the coast, e.g., at 9. Pembrok Marshes.—f. angustifolius. 3. Swansea. 6. Porthcawl.—Var. glabrescens Hall. 5. Port Talbot Docks.


Campanulaceae.

Lobelia Dortmannia L. 4. Lllynfawr, Lllynfach.

Jasione montana L. Well distributed and common in the hills.—Var. littoralis Fr. 5. Aberfan. 6. Sker.


(C. patula L. Reported from the Vale of Glamorgan, Dilwyn.)

Vacciniaceae.

waterfall, Rhondda Fl. Top. Bot. record is from Caermarthenshire (Llyn-y-fan-fawr).  
\[V. Myrtillus\] L. Frequent in the uplands. Also \[L.\] 1. Clyne Wood.  
8. Taffs Well, Pentyrch. No records from 6 and 7.  

\[ERICACEÆ.\]  
\[Calluna vulgaris\] Hull. Common; no records from 7.  
\[Erica ciliaris\] L. 8. Llantwit Fardre, D. I have seen no specimen.)  
\[E. Tetralix\] L. Common; no records from 7.  
\[E. cinerea\] L. Common in the lowlands; much less common in the hills. No records from 9.  
\[E. vagans\] L. 1. Near Newton, B. G. 2. Pontardulais, B. G.)  
\[E. mediterranea\] L. 2. Pontardulais, B. G.)  
\[Pyrola minor\] L. 4. Near Ysgwd Eynon Gam, Dillwyn. This may be Breconshire.  
\[x P. secunda\] L. 4. Craig-y-llyn.  

\[MONOTROPEÆ.\]  
\[Monotropa Hypopitys\] L. 5. Margam Woods, Dillwyn. 8. St. Fagan's, Storrie. I have seen no specimen.)  

\[PLUMBAGINÆ.\]  
\[Limonium vulgare\] Mill. 1. Whitford Burrows, Oxwich Bay.  
\[Statice Armeria\] L. All, I believe, in the form \[A. pubescens\] Link.  

\[PRIMULACEÆ.\]  
\[Primula vulgaris\] Huds. Common except on the coal measures.  
No record from 2.—Var. caulescens (Koch). 1. Llanmadoc.  
\[P. veris\] L. 1, 5, 6, 7, 8, 9, common off the coal measures.  
No records for 2, 3, 4.—\[x vulgaris\]. 1. Llanmadoc. 5. Baglan.


*L. nemorum* L. Common.

*Glaux maritima* L. On the coast in every district.


**OLACEÆ.**

*Fraxinus excelsior* L. Common.

*Ligustrum vulgare* L. Common. Native on limestone.

**GENTIANAE.**


C. capitatum Rendle & Britten.—Var. sphaerocephalum Towns.
8. Welsh St. Donat's, six miles from the sea.

(Gentiana Pneumonanthe L. 1. Oystermouth to Newton, Nicholson.)

G. campestris L. 6. Porthcawl, J. Bot. 1902, p. 317. Maesteg,
Storrie.) 8. Rhigos. Some of these probably refer to G. baltica
Murb.

Menyanthes trifoliata L. 1. Oxwich, Fairwood Common, Killay,
Llangenydd. Rhosili, F. H. Worsley-Benison. 2. Penlbergaer,
Mynydd Garngoch. 3. Crumlin Bog. 4. Jersey Marine, Lllyn-
fawr, Llynfach. 5. Marshes all along the coast. 6. Porthcawl,
Lloyd. 7. Gigman Bridge, Storrie. 8. Not uncommon. 9. Llanishen,
D. Lisvane.

Boragineæ.

Cynoglossum officinale L. Frequent on sea-sands: also on the
limestone. No record for 9.—Var. subglabrum Mérat. 5. Kenfig.

8. Ystalyfera. 5. Port Talbot. 6. Merthyr Mawr. 7. Aberthin,
Cadoxton. 8. Aberdare, Mountain Ash, Cwmparc. Blaenrhondda
Brook, Rhondda Fl. Cardiff, Storrie. 9. Kuperra.—Var. patens
(Sibth.). 3. Swansea, Flower & Lees. 5. Port Talbot. 8. Taffs
Well.

Anchusa sempervirens L. 4. Neath Abbey, Flower. 5. Baglan,
B.G. Briton Ferry, Dilwyn. 6. Cornely, Dilwyn. Merthyr
Mawr. Bridgend, Storrie. 7. Aberthin, Mareross. 8. Fairly
frequent. Perhaps a native.

Lycopsis arvensis L. 1. Sandy and pebbly beach from Penard
to Whitford Burrows. 3. Tennant's Canal, Hb. Cardiffl. 5 and 6.
The sands. 7. Sully, Storrie. 8. Aberdare. E. Moors, St. Fagan's,
&c., Storrie. Undoubtedly native in 1, 5, 6.


Motley. 6. Ewenny. 7. How Mill, Cadoxton, Barry to Bonvil-
stone, Flemingstone Moor. 8. St. Fagan's, Culver House, Storrie.
8. Aberdare.

M. repens G. Don. Not common but widely distributed. Not
in dist. 6.

M. arvensis Lam. Common.—Var. umbrosa Bab. 7. Sully
Island.

M. collina Hoffm. Common on sands of 1, 5, 6. Also
7. Barry and Sully Islands, Swanbridge. 8. Aberdare. 9. Caer-


**CONVOLYLACEÆ.**


*C. arvensis* L. Common. On sea-sands certainly native.


**SOLANACEÆ.**

*Solanum Duleamara* L. Common.—Var. *marinum* Bab. 1. Oxwich. 7. Sully Island.


Scrophularineæ.

Verbascum Thapsus L. Not uncommon. No record for 2.


L. vulgaris Mill. Locally common: no record for 4.—f. peloria.


S. nodosa L. Common.

Linoseilla aquatica L. b. tenuifolia Hook. fil. 3. Crumlin Bog.


Digitalis purpurea L. Very common off limestone.


V. arvensis L. Common.
V. officinalis L. Common.
V. Chamedrys L. Common.
V. Beccabunga L. Common.
Euphrasia officinalis L. Aggregate common.
E. stricta Host. 8. Aberdare.
E. scottica Wettst. 8. Aberdare, apparently this.
E. occidentalis Wettst. 7. Barry Island; name agreed to with some doubt by E. S. M.


P. sylvatica L. Frequent; no records from 5 and 6.

Rhinanthus Crista-galli L. Frequent. Apparently all R. minor Ehrh.


Orobanchaceae.


(O. caryophyllacea Sm. 1. Gower, Lloyd.)
7. Cwrt yr Aha, Storrie.
*O. minor Sm. 1. Llangenydd. 6. Porthcawl Sands, Tythegston.

Lentibulariæ.

*U. neglecta Lehm. 8. Grangetown, Hb. Cardiff!

Journal of Botany, 1907. [Supplement.]

j

(P. lusitanica L. 6. Llangynwyd, Storrie.)

**Verbenaee.**


**Labiate.**


*M. hirsuta* Huds. Fairly well distributed; hardly common.


*M. rubra* Sm. 8. River below and road above Hirwann.


*Scutellaria galericulata* L. Fairly common; no record for 7.


*Prunella vulgaris* L. Common.


*Stachys officinalis* Franch. Common; no records for 3 and 5.


*S. sylvatica* L. Common.


*L. album* L. All districts; doubtfully native, except perhaps
7. Cliffs at Swansea.


*Ballota nigra* L. 1. Llangenydd. 3. Swansea, Gutch. 5, 6, 7. 8. Rather frequent.

*Teverium Scorodonia* L. Very common.

*Ajuga reptans* L. Frequent.

**Plantagineae.**


*P. maritima* L. On the coast in all districts.

*P. Coronopus* L. On the coast, common. Also 6. S. Cornely.

Chenopodiaceae.


*S. appressa Dum. 1. Three Cliffs Bay, Llanmadoc. 5. Port Talbot.

(S. radicans Sm. 3. Swansea, B. G. 7. Barry, Storrie.)

(Suada fruticosa Forsk. 3. Port Tennant, Gutch. 7. Flat Holme, Bay, Cat. 8. Cogan Pill, Storrie.)

S. maritima Dum. Common; no record for 9.—Var. procumbens Syme. 1. Whitford Point, Penclawdd, Three Cliffs Bay. 7. St. Athan's Road.

Salix Kali L. Frequent in 1, 3, 4, 5, 6, 7, 8.

Polygonaceae.


(8. All along the coast, Storrie.)

(P. maritimum L. 8. Cardiff and Penarth, Storrie.)

P. Hydropiper L. Common; no record for 4.

*P. minus Huds. 3. Swansea, Gutch. 5. Port Talbot.

(P. mitre Schrank. 3. Swansea, and 4. Neath, Flower & Lees.)


diff, Storrie. Penrhys Farm, Rhondda Fl. — f. incana. 2. Near
Gorseinon.
*P. maculatum Bab. 5. Port Talbot. 8. Aberdare, native.
Cardiff Docks.
P. amphibium L. Rather common. — Var. terrestre Leers. 1.
Broughton Sands. 3. Crumlin Burrows. 5. Margam Marshes.
P. Bistorta L. 1. Penrice, native. 2. Pantyffynon. Gorseinon,
perrgwm. 6. Bridgend to Pyle, Ogmore Castle. Pencloed to Llan-
Aberdare, Penydaren. Greenmeadow, St. Fagan’s, &c., Storrie.
Mostly introduced.

Rumex conglomeratus Murr. Rather frequent; no record for 4.
M. Dyfan, &c., and 8. Penarth, Storrie. — Var. viridis (Sibth.).
Very frequent.
*R. maritimus L. (1. Port Eynon, Dilwyn.) 7. Barry, ballast,
Portheawl. 8. Cardiff, Storrie.
R. obtusifolius L. Common.
R. crispus L. Common.—Var. trigranulatus Syme. 1. Salt-
4. Jersey Marine. 5. Aberafan and Port Talbot. 6. Portheawl to
Sker. 7. Cold Knap, The Leys, Llantwit Major, St. Donat’s.
R. Hydrolapathum Huds. 1. Oxwich, Parkmill, Rhosili,
R. Acetosa L. Common.
R. Acetosella L. Fairly common.

Thymelæaceæ.
* Daphne Laureola L. 6. Merthyr Mawr. 7. Lavernock. Dinas
Powys, D. Porthkerry, Gigman Bridge, Llantwit Major, &c.,
Storrie. 8. Penarth, Storrie.

Loranthaceæ.
1873. Crockherbtown, St. Fagan’s, &c., Storrie.

Euphorbiaceæ.
E. Helioscopia L. Fairly frequent; no record for 9.
(E. platyphylllos L. 8. Lavernock, Storrie.)
(E. stricta L. 8. Penarth, Storrie.)
E. amygdaloides L. 1. Oxwich and Nicholaston Woods, Park-
mill. 3. Swansea, Flower & Lees. 5. Port Talbot. 7. Llandough.

_E. Paralias_ L. Frequent on the sandy coast. No record from 2 and 9.—_E. portulandica._ 5. An intermediate plant, growing with both species on Margam Moors, was apparently this.


*E. Lathyris_ L. 1. Nicholaston Woods; native, I believe.

_Mercurialis perennis_ L. Common.

**URTICACEAE.**


*U. campestris_ L. Uncommon in the hills; more frequent in the lowlands. No record for 2.


**MYRICAECÆ.**


**CUPULIFERÆ.**


_Alnus rotundifolia_ Mill. Common.

_Corylus Avellana_ L. Common.

_Quercus Robur_ (Ehrh.). 1. Killay to Penard, G. C. D. 4. Glyn...
57


Q. intermedia D. Don. 8. Aberdare.


_Fagus sylvatica_ L. Frequent; often planted. No record for 3 and 5.

**Salicineæ.**


_S. fragilis_ var. _britannica_ F. B. White. Frequent.—× _trian- 


8. Aberdare.

_S. cinerea_ L. Very common.— _× nigricans._ 8. Aberdare.


* S. Caprea L. Common.— _× cinerea_ (≡ _S. Richardti_ A. Kern.).

8. Aberdare.


* S. viminalis L. Common.


_S. stipularis_ Sm. 3. Crumlin Burrows, _J. Bot._ 1886, p. 376.


8. Taffs Well.


**Empetraceæ.**

_Empetrum nigrum_ L. 4. Hills above Pontneddfechan, _Dillwyn._


_The Journal of Botany, 1907._ [Supplement.] 9
CONIFERE.


*Pinus sylvestris L. Largely planted, but, I think, native on the hills 8. above Aberdare.

HYDROCHARIDEE.


ORCHIDEE.

*Liparis Loelei Rich., var. ovata, Riddelsdell. One spot only in the county; see J. Bot. 1905, p. 274.


Listera ovata Br. Frequent.


O. latifolia L. Common.— × maculata. 8. Aberdare.


(O. muscifera Huds. 7. Barry Island, reported; also St. Nicholas, Storrie.)

(Herminium Monorchis Br. 7. Beaupré, Cardiff Nat. Soc. Proc. 1882.)


(H. albida Br. Near Cwm Ffrwd, Storrie.)


(H. montana Durand & Schinz. (H. chlorantha Bab.). 7. Sully Wood, and 8. St.-y-Nyll, Storrie. I have seen no specimen.)

Irideæ.


Amaryllideæ.


Dioscoreæ.

Tamus communis L. Common.

Liliaceæ.


*A. oleraceum L. 9. Penylan, D.!


Narthecium ossifragum Huds. Rather frequent; no records for 6 and 7.


Juncaceae.


J. Gerardi Loisel. 1. Frequent on the coast. 2. Loughor. 3. Swansea, Gutch. 4. Jersey Marine. 5. Port Talbot. 6. Estuary
of R. Ogmore, Newton Sands. 7. St. Athan’s Road, Porthkerry. 9. Pengam Marshes.

J. inflexus L. Frequent.

J. ephusus L. Frequent; no record for 6.


8. Peterston Moors.


J. articulatus L. Frequent; no record for 9.


J. acutijororus Ehrl. Rather frequent; no record for 3.—Var. multiflorus Weih. 4. Craig-y-llyn.


*L. campestris Lam. & DC. Frequent; no records for 2 and 9.


Typhaeae.


town. 9. Caerphilly, Pengam Marshes.

Aroideae.

Arun maculatum L. Frequent; no records for 2 and 9.
*Acorus Calamus L. 2. Penllergaer. 4. Briton Ferry, Flower.

Lemnaceae.

(Wolfia arrhiza Wimm. 8. Roath Dock, Storrie.)

Alismaceae.

Alisma Plantago-aquatica L. Common.
Naiadaceae.


T. maritimum L. Fairly common by the sea; no record for 6.


(P. coloratus Hornem, P. alpinus Balb., P. praelongus Wulf., P. obtusifolius Mert. & Koch are included by Storrie, but no specimens are available.)


8. Cardiff, Storrie.


8. Peterston. St.-y-Ny Yr, Storrie.


7. St. Athan's Road. 8. Hirwaun to Penrhieweeiber.


5. Port Talbot and Margam Moors. 7. The Leys.


Cyperaceae.

(Eleocharis acicularis Roem. & Schultes. 3. Swansea, Gutch. 5. Graigafan, Hb. Motley. 8. Taffs Well, Storrie. 9. Caerphilly Castle, Storrie. This record must remain doubtful. Gutch's specimens so named are S. setacea.)

E. palustris Roem. & Schultes. Common in low ground.

E. multicaublis Sm. 1. Frequent. 2. Gowerton Common.


*S. setaceus* L. Rather frequent; no record for 7.

(S. *Holoschanus* L. 8. East Moors, *Storrie*.)


*Eriophorium vaginatum* L. Rather frequent; no records for 6 and 7.

*E. polystachion* L. Common; no records for 6 and 7.—Var. *longifolium* Hoppe. 1. Fairwood Common.


*C. arenaria* L. Common; no records for 2 and 9.


*C. paniculata* L. 1. Fairwood Common, Rhosili Down.

*C. vulpina* L. Rather frequent.
*C. muricata* L. Not unfrequent; no records for 3 and 4.


*C. flavia* Schreb. Common.

*C. montana* L. 6. Ewenny Downs in great abundance.

*C. panicosa* L. Rather frequent; no records for 6 and 7.
*C. strigosa* Huds. 3. Crumlin and Sketty Bogs, *Flower.*

*C. binennis* Sm. Common on moors and hills in 1, 2, 4, 5, 8.
*C. distans* L. 1. Three Cliffs Bay, Llanmadoc, Llanrhidian.


*C. Oederi Ehrh. 3. Swansea, J. Bot. 1886, p. 112. 5. Aberafan, Port Talbot.

C. hirta L. Rather common; no record for 3.—var. hirtiformis Pers. 5. Margam Moors, Port Talbot. 8. Merthyr Tydfil.


C. riparia Curtis. Rather frequent; no record for 9.

C. inlata Huds. (rostrata Stokes). Rather frequent; no records for 7 and 9.


Gramineae.

[I owe much of the following information to Professor Hackel, of St. Poelton.]

Phalaris arundinacea L. Frequent.

*Anthoxanthum odoratum L. Common.


(A. aqualis Sobol. 8. Grangetown, Leckwith, &c., Storrie.)

A. geniculatus L. Common; no record for 6.


Agrostis setacea Curtis. 1. Cefn Bryn, Frog Moor, cliffs Ox-


A. alba L. Frequent; no record for 9.—Var. stolonifera (L.).

A. tenuis Sibth; Common; no record for 9.—Var. pumila (L.). Frequent; no record for 2 and 9.


(C. lanceolata Roth. 3. Common at Swansea, Gutch. Probable error; specimen so labelled in Hb. Motley is Trisetum flavescens, and I have never seen the species in Glamorgan.)

Ammophila arenaria Link. Sands in 1, 3, 4, 5, 6, 7.

Aira caryophyllea L. Common.
A. praecox L. Common; no record for 6.
*Corynephantus canescens Beauv. 5. Aberafan and Port Talbot, native. 8. Cardiff Docks, Storrie; introduced.

Deschampsia caespitosa Beauv. Common.—Var. brevifolia Parn.
3. Ystalyfera, Peterston.

D. flexuosa Trin. Common.
Holcus molis L. Frequent, especially in 8 and 9.
H. lanatus L. Common.
Trisetum flavescens Beauv. Frequent on the limestone; less so elsewhere. No records for 2 and 4.


Steglingia decumbens Bernh. Common.
Phragmites vulgaris Druce. Fairly common.


Molinia caerulea Moench. Frequent; no record for 6.
(Catabrosa aquatica Beav. 8. Cardiff, and 9. Pengam Moors, Storrie.)


Poa annua L. Very common.

*P. bulbosa L. f. vivipara. 7. Barry. This is the Continental form, which, however, occurs also in England in native localities. I consider it native here.


*G. Borleri Bab. 8. Cardiff Docks.


F. rigida Kunth. Frequent; no record for 4.

F. rothbollioides Kunth. 1. Penard to Burry Holm, common.


*F. Myuros* L. 8. Aberdare, Peterston, Cardiff Docks.
*F. bromoides* L. Frequent.
*F. ovina* L. Rather frequent; no record for 5.

*F. sylvatica* Vill. 3. Ystalyfera.


*B. sterilis* L. Common.


_Nardus stricta_ L. 1, 2, 3, 4, 5, 8, 9. Common. 6. Ewenny.

_Hordeum nudoanum_ L. Rather frequent; no record for 4.

_H. murinum_ L. Rather frequent; no record for 2.


7. Porthkerry, Storrie.

FILICES.


_Adiantum Capillus-Veneris_ L. 6 and 7. Barry Island to Dunraven and Southerndown. 8. Aberdare. Mr. Comley, gardener to Mr. James Lewis, told me that he found this species in abundance on a hill in the Cynon Valley thirty-five years ago. It has now disappeared.

_Pieris aquilina_ L. Common.

_Cryptogramme crispa_ Br. 8. Daren Bwlfa. Ferndale, _Rhondda._

_Fl._ Padell-y-Bwlch, _B. A. Williams._

_Blechnum Spicant_ With. Common; no record for 6.


_A. Adiantum-nigrum_ L. Frequent.


_A. viride_ Huds. Watson’s record ("Lees sp.") was from a Breconshire locality. 4. Pontneddfechan, _Gutch._ 8. Morlais Castle.
A Flora of Glamorganshire

A. Trichomanes L. Common.
A. Ruta-muraria L. Common; no record for 5.
Athyrium Filix-femina Roth. Frequent.—Var. erectum Syme.
4. Aberpergwm.
Ceterach officinarum DC. Common; no record for 9.—Var. crenatum Milde. 4. Glyn Neath. 8. Aberdare.
Phylitis Scolopendrium Newm. Frequent; no record for 2.
(Polystichum Lonicertis Roth. 4. Pontneddfechan, B. G.)
P. lobatum Presl. 1. Penrice, Oxwich, Nicholaston Woods. 3.

Lastrea Thelypteris Bory. 3. Sketty Bog, Cwmbrwrla, &c., Gutch.
4. Llynfach.
P. polypodioides Fée. 2. Penllergaer, Dillwyn. 3. Ystalyfera.

Digitized by Microsoft®


Equisetaceæ.


E. limosum L. and var. fluviatile (L.). Thinly scattered throughout the county; no records for 6 and 9.


Lycopodiaceæ.


(L. alpimum L. 4. Near Swansea, Mogryidge; also Swansea Valley, Dillwyn. Probably Caermarthenshire.)

Selaginellaceæ.

(Selaginella selaginoides Link. 4 and 5. Glyn Corwg and Carn-fach, Storrie. I have not seen specimens.)

Isoëtes lacustris L. 4. Lllynfach.


Marsileaceæ.

Characeae.

(C. hispida L. 3. Crumlin Bog, B. G.)


(Nitella flexilis Agardh. 3. Crumlin Bog, B. G.)

Glamorganshire Aliens.

The long list of aliens recorded for the county contains a large number of mere dock casuals, and a smaller number of plants of a more permanent character which persist as individuals, and also plants which have gained a settled footing, appear often in new spots, and spread without difficulty, e. g. Saponaria officinalis and Lepidium Draba.

The line between the native and the alien is difficult to draw. It has seemed advisable to keep in the list of native plants all those which were more probably native; and to put among the aliens those which were more probably not native. The present Glamorgan list is, it is hoped, only preliminary to a larger and more complete account of the county flora; and doubtless some judgements will, in the light of criticism and further experience, be subsequently reversed. It is, of course, to be understood that the judgment in each case refers only to the species so far as its occurrence in Glamorgan is concerned; not to its British status. A weakness in the treatment perhaps exists in the too great deference paid to “authority,” even such a great one as that of H. C. Watson: plants like Coronopus didymus, and some of the Valerianellas should perhaps be ruthlessly treated as aliens; but my experience in the county shows them in rather more likely-looking spots than, e. g. Ranunculus arvensis, R. sardous, the poppies, Brassica alba, B. Napus, B. Rapa, Diploptaxis tenuifolia, Raphanus Raphanistrum, Thlaspi arvense, Lychnis Githago, Anthemis arvensis, &c. Some of these and other species are recorded in Top. Bot. as native on the strength of old records, one or two of which refer to cornfield habitats alone, though most of them are made on even weaker evidence. The cornfield plant is not easy to deal with;
but in cases where the plant is usually found on rubbish-heaps or plainly as a ballast introduction, any cornfield occurrence at once becomes of less value. It would be impossible to say that *Ranunculus arvensis*, *R. sardous*, *Brassica Napus*, &c., are not native anywhere in the county; but I am forced to the conclusion that it is very unlikely that they are native.

In my opinion, the occurrence of annuals in cornfields, on rubbish-heaps, dock ballast, &c., and nowhere else in the county, makes it more probable than not that they are not native within the area.

**Ranunculaceae.**


**Berberideae.**


**Papaveraceae.**

*Hypecoum procumbens* L. 5. Port Talbot Docks.


**Fumariaceae.**


** Cruciferae.**


*Armoracia rusticana* G. M. & S. Casual and outcast. Records from all districts except No. 2.


*Cochlearia* (Kernera) saxatilis L. 8. Aberdare.

*Conringia austriaca* Sweet. 8. Aberdare. — *C. orientalis* Dum.


*Hesperis matronalis* L. Outcast in districts 1, 3, 5, 6, 7, 8.


*Nestia paniculata* Desv. 4. Jersey Marine.


Resedaceae.


Caryophyllaceae.

Dianthus Caryophyllus L. 8. Walls of Cardiff Castle, B. G. Extinct.


Portulaceae.


Tamaricaceae.


Hypericaceae.


Malvaceae.


Lavatera punctata All. 8. E. Moors, Hb. Cardiff.


Sida spinosa L. 8. Cardiff, Storrie.

Tiliaceae.

Tilia vulgaris Heyne. Often planted.
LINEAE.


ZYGOHYLLACEAE.


GERANIACEAE.


Celastrineae.


Sapindaceae.

Acer Pseudoplatanlus L. Frequently planted; seeding and propagating itself very freely. Often occurring in the middle of old woods.

LEGUMINOSE.


Laburnum anagyroides Medic.  8. Self-sown at Llwydcoed.


Medicago denticulata Willd.  5. Port Talbot Docks.  8. Aberdare, Hirwaun, Taff’s Well, Cardiff. E. Moors and Penarth Docks,
Hb. Cardiff.—Var. apiculata Willd. 8. E. Moors, Hb. Cardiff.—
Var. lappacea Desv. 5. Port Talbot Docks.—M. Falcata L.
1. Near Port Eynon, E. Forster in B. G.; the specimen "floribus
purpureis" is in Hb. Brit. Mus., and may be M. sylvatica. 3.
Swansea Docks, Sketty Burrows, &c. 5. Aberafan, Port Talbot
Docks. 6. Porthecawl. 8. Penarth Ferry, Hb. Cardiff. E. Moors,
Hill, Gutch. 5. Port Talbot Docks. 6. Porthecawl, Merthyr Mawr.
7. Barry Island. 8. Aberdare. Railway-banks in Rhondda Valley,
Rhondda Fl. Cardiff Docks, &c.—M. tribuloides Desv., M. marina

Melilotus alba Desv. 3. Ballast, Swansea, Flower. 5. Port
Ballast, Cardiff, Storrie.—M. indica All. 5. Port Talbot Docks.
1891—2.


Aberdare.


Trifolium hybridum L. 1. Penrice. Langland and Caswell
Cardiff Docks.—Var. elegans Savi. 5. Port Talbot. 7. Barry.—
lappaceum L. 8. Aberdare.—T. ochroleucon Huds. 8. Cardiff,
Storrie.—T. pannonicum Jacq. 8. Penarth, Storrie.—T. resupinatum
L. 8. Hirwaun, Cardiff Docks.—T. stellatum L. 5. Port Talbot
Docks. 8. Penarth Ferry, Hb. Cardiff. Cardiff, Storrie.—T. sub-

Trigonella cerulea Ser. 5. Port Talbot. 8. Aberdare. E. Moors,
Cardiff, Hb. Cardiff.

Vicia Faba L. 5. Port Talbot. 8. Aberdare, Porth.—V. gracilis
Loisel. 6. Tondu and Maesteg, Storrie. 8. Ballast at Cardiff,
Storrie.—V. hybrida L Dr. Hooker has a Glamorgan specimen in
Rhondda Fl. Cardiff, Storrie.—V. pannonica Crantz. 8. Near
Aberdare.—V. sativa L. In every district, and probably common
as an introduction.—V. villosa Roth. 5. Port Talbot. 8. Cardiff
Docks.—Var. glabræscens Koch. 5. Port Talbot Docks. 7. Barry.

Rosaceæ.

Cotoneaster microphylla Wall. 6. Old limestone quarry, S.
Cornely, 1904, far from houses. J. Bot. 1905, pp. 244, 274, adds
a few more localities.

Fragaria chiloensis Duchesne. 8. Penarth Dock.
Potentilla palustris Waldst. & Kit. 5. Port Talbot Docks.
Pyrus rotundifolia Bechst. 7. Llanarfan.

Saxifrageæ.
Ribes Grossularia L. Frequent as an escape.

Crassulaceæ.

Lythraceæ.

Onagraceæ.

Cucurbitaceæ.

Umbelliferaæ.
Anmi majus L. 8. Aberdare.

A FLORA OF GLAMORGANSHIRE

81

CAPRIFOLIACEÆ.

Sambucus Ebulus L. 1. Llanmorlais, E. F. L. 3. Swansea,
7. Monkmarsh, St. Athan’s Road. 8. Aberdare. Cogan Pill, &c.,
Penarth Dock, Storrie.

Symphoricarpus racemosus Michx. 2. Loughor, Gowerton. 3.
Ystalyfera. 7. Llandough, Cowbridge. 8. Aberdare, Merthyr
Tydfil, Ystradowen.

RUBIACEÆ.

Galium tricorne Stokes. 3. Swansea Docks. 5. Port Talbot.
dare.

VALERIANACEÆ.

Kentranthus ruber DC. 1. Common. 3. Swansea. 6. Newton,
Southerndown. 7. Sully, Llanwit Major. Beaupré, Cardiff Nat.
Proc. 1882. Flat Holme, J. Bot. 1891, p. 345. 8. Aberdare,
Penarth. Cardiff, Storrie. Treorchy, Rhondda Fl.

Valerianella discoidea Loisel. 8. Aberdare.

COMPOSITÆ.

Achillea cretica L. 8. Penarth, Storrie.—A. nobilis L. 5. Port
Talbot Docks.

Cardiff.

Antennaria margaritacea Brown. 1. Gowerton. 2. Gowerton,
Pantyfynnon. Llangyfelach, Hb. Motley. 3. Ystalyfera, spreading
to inaccessible cliffs. Clydach, &c., Flower. 4. Hirwaun, Rhigos.
Neath Abbey, B. G. Pontneddfechan, Woods. 5. Kenfig Sands,
J. Bot., 1902, p. 249. 8. Very common. On bare rock, Graig
Fawr, Treorchy, at 1500 ft.

Not native, I believe.


Aster salignus Willd. 1. Cheriton. 5. Port Talbot. 8. Estab-
lished Cynonside above Aberdare, Cwmbach.—A. paniculatus Lam.

8. Aberdare.

Carthamus lanatus L. 5. Port Talbot Docks.

Centaurea aspera L. 8. Ballast, Cardiff, Storrie.—C. Calcitrapa
Talbot. 6. Pencoed, Bridgend, Storrie. 7. Barry, D. 8. Aber-
dare, Mountain Ash, Cardiff Docks. Not native.—C. diuuta Ait.
5. Port Talbot Docks.—C. melitensis L. 1. Paviland. 5. Port


*Crepis taraxacifolia* Thuill. 3. Crumlin Burrows, Swansea.


*Cryptostemma calendulaceum* Br. 8. Cardiff, Storrie.


*Grindelia squarrosa* Dunal. 8. Penarth Ferry, Storrie.

*Guizotia abyssinica* Cass. 8. Aberdare.


*Petasites fragrans* Presl. 1. Swansea, Nicholaston, Oxwich.


*Tanacetum vulgare* L. A frequent escape in Glamorgan, but, I believe, not native.

**CAMPANULACEÆ.**
Phyteuma orbiculare L.  7. Cowbridge, Storrie.

**PRIMULACEÆ.**
Lavernock, Storrie.
Cyclamen hederifolium Ait.  8. Coedriglan, Storrie.

**APOCYNACEÆ.**

**POLEMONIACEÆ.**

**BORAGINACEÆ.**
Amsinckia lycopsioides Lehm.  5. Port Talbot.  8. Aberdare.
Borago officinalis L. Escape. No record for 2.
Echium violaceum L. Ballast, Cardiff, Storrie.
Solanaceae.


Hyoscyamus albus L. 8. Shrimphouse, Storrie.


Scrophularineae.


Veronica Buxbaumii Tenore. Common.

Labiate.


Satureia hortensis L. 8. Aberdare.


Amaranthaceae.

Chenopodiaceae.
Sueda altissima Pall. 5. Port Talbot Docks.

Polygonaceae.
Polygonum Bellardi All. 5. Port Talbot.—P. cuspidatum Sieb. & Zucc. Frequent escape; no record from 7.

Aristolochiaceae.
Thymelæaceæ.

*Daphne Mezereum* L. 8. Fairwater and St. Fagan's, Storrie.

Eleagnaceæ.

*Hippophae Rhamnoides* L. 8. Penarth.

Santalaceæ.

*Thesium humifusum* DC. 8. Newly broken ground at Cwrt-y-fil, Storrie.

Euphorbiaceæ.

*Buxus sempervirens* L. Frequent, but never native.


Urticaceæ.


Cupuliferæ.


*Juglans regia* L. 7. St. Athan's.


Salicineæ.


Coniferæ.


HYDROCHARIDEÆ.


IRIDÆ.


AMARYLLIDACEÆ.


LILIACEÆ.


JUNCACEÆ.

*Juncus tenuis* Willd. 8. Aberdare, Taffs Well.

CYPERACEÆ.

*Cyperus longus* L. 8. Roath Ponds, introduced.

GRAMINEÆ.


*Anthoxanthum Pudii* Lecoq & Lamotte. 8. Aberdare.


Eragrostis minor Host. 5. Port Talbot Docks.
Gaudinia fragilis Beauv. 7. Cold Knap.
Glyceria festuciformis Richt. 5. Port Talbot Docks.
Heleochloa schenoides Host. 8. Cardiff, Storrie.
Lagurus ovatus L. 8. Penarth Ferry, and Grangetown, Storrie.
Lepturus inequulus Trin. 8. Cardiff Docks.


Phleum phleoides Simonkai. 8. Cardiff, Storrie.

Polypogon monspeliensis Desf. 8. Cardiff. — P. littoralis Sm.
8. Cardiff, &c., Storrie.


5. Port Talbot.
