

PROCEEDINGS
OF THE
Liverpool Botanical Society.



Third and Fourth Sessions.

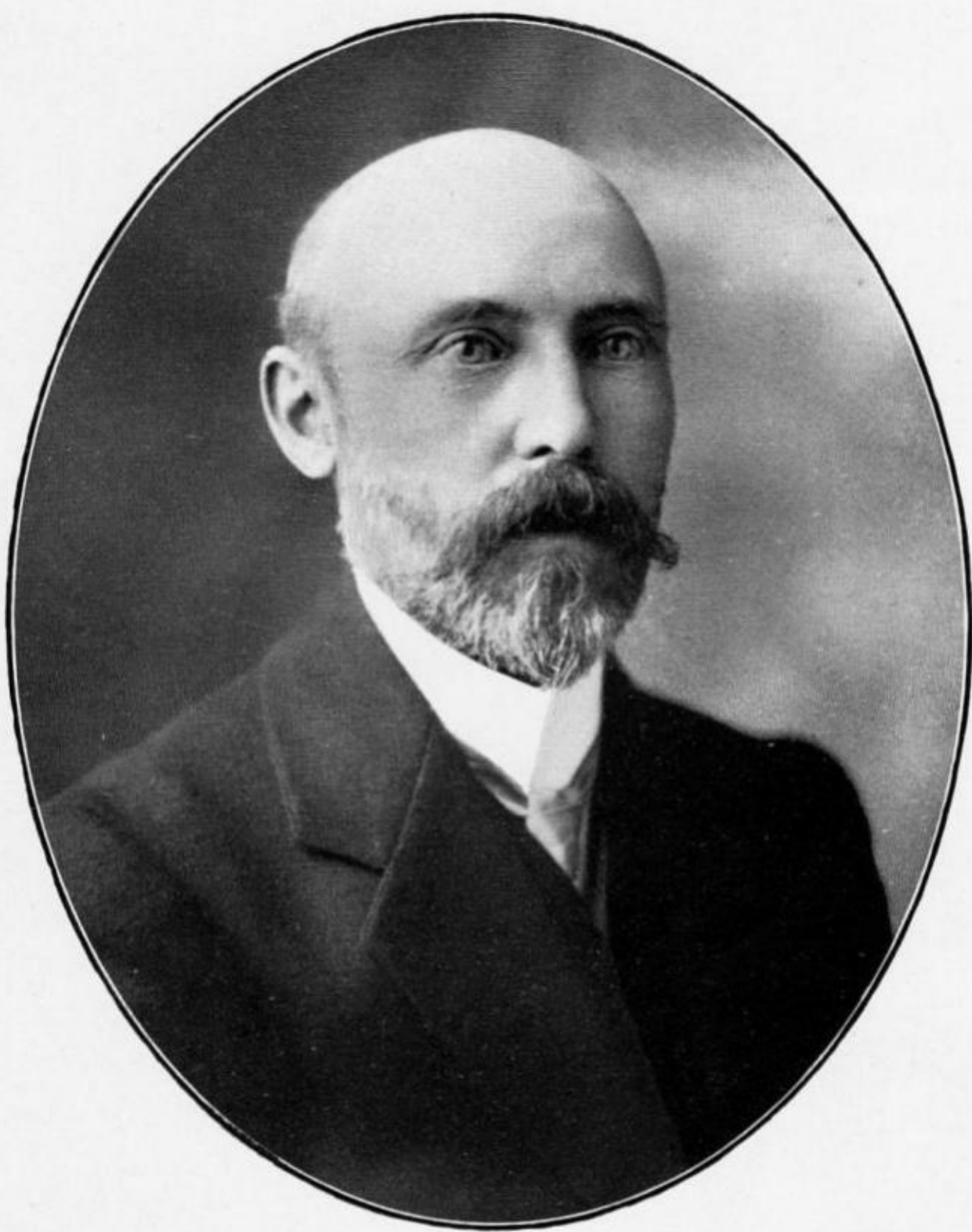
FOR THE YEARS 1908 AND 1909.

LIVERPOOL :

Printed by C. TINLING & Co., Ltd., 53, Victoria Street.

June, 1910.

Price 1s. 6d.



J. A. WHELDON, F.L.S.

President, 1909.

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LIVERPOOL BOTANICAL SOCIETY.

LIST OF OFFICERS.

Third Session, 1908.

President :

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Miss M. H. WOOD.

Dr. C. T. GREEN, F.L.S.

Dr. T. F. YOUNG.

Hon. Secretary :

A. A. DALLMAN, F.C.S.

Hon. Assistant Secretary :

Miss E. McMILLAN, LL.A.

Fourth Session, 1909.

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Rev. W. WRIGHT MASON, B.A.

Hon. Treasurer :

F. J. ROUTLEDGE.

Hon. Librarian :

Miss F. MULCAHY.

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Council :

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Miss D. DELANEY.

W. G. TRAVIS.

W. O. DELANEY.

Rev. T. J. WALSH, B.A.

Prof. R. J. HARVEY GIBSON, M.A., F.L.S.

Miss M. H. WOOD.

W. T. HAYDON, F.L.S.

Dr. T. F. YOUNG.

Hon. Secretary :

A. A. DALLMAN, F.C.S.

Hon. Assistant Secretary :

Miss E. McMILLAN, LL.A.

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PROCEEDINGS

OF THE

Liverpool Botanical Society

(Third Session, 1908).

REPORT FOR THE YEAR, 1908.

In reviewing the Society's work during the late session, your Council again have pleasure in reporting on the satisfactory progress made during this period. The work of the past year compares favourably with that of the two preceding sessions, but the present position has only been attained by the existence of that strong spirit of *camaraderie* which has ever been so eminently characteristic of this Association. It is necessary however to emphasise the need of more general co-operation on the part of many Members if proportionate progress is to be made in the future.

High ideals are of little use unless such are carried into actual practice. Every Member can, and should, assist in some degree, as for instance by the offer of papers or lectures, or by the contribution of communications, specimens, or exhibits, to the Society's meetings. Communications of interest are always welcomed and especially in connection with the private work, observations, or research of Members. The Society's Library and projected Herbarium call for general support and many Members can render assistance in yet another way by aiding the South Lancashire Flora Committee in their work.

It is pleasant to record that the Society has suffered no losses by death during the past session. The number of Members on the roll at the close of 1907 was 201; 18 Members have resigned during the past year and 12 Members have been removed from the roll. Six of these removals refer to persons who have changed their addresses and whose present whereabouts are unknown. There has been an accession of 26 new Members during the year, and the Society has a membership at the end of the session, of 197.

The following have been removed from the roll by order of the Council, for non-payment of arrears of subscription :—

Mrs. Ballantine, 25, Yew Tree Road, Walton.
J. Firth, 18, Ingrow Road, Kensington, Liverpool.
C. Jackson, 7, Harold Street, Egremont, Cheshire.
Miss Keenan, 1, Fylde Street, Liverpool.
Miss Reid, 19, Hope Street, Liverpool.
E. Ward, 71, Paddington, Liverpool.

Twelve indoor Meetings were held during the session, as follows:—

January 13th—	Annual Meeting.
February 10th—	Annual Soirée and Conversazione. Reception by the PRESIDENT and Mrs. HARVEY GIBSON. Lantern Lecture and Demonstration on "Colour Photography," by Mr. W. H. TOMKINSON. Microscopical Exhibits.
March 9th—	Lecture, "Mendelism," by F. J. THORPE, B.Sc.
April 13th—	Paper, "Some Floral Resemblances" (with lantern illustrations and specimens), by Miss E. WARHURST, LL.A.
May 11th—	Papers, "On Plant Remains in Peat in the Shirdley Hill Sand at Aintree," by W. G. TRAVIS. "The Collection and Preservation of Flowering Plants," by A. A. DALLMAN, F.C.S.
June 15th—	Lantern Lecture, "Vegetable Digestion in Carnivorous Plants," by Dr. J. REYNOLDS GREEN, F.R.S., F.L.S.
July 13th—	Paper, "Notes on the Flora of Portbury, Somerset," by Miss N. L. PEACOCK.
August 10th—	Exhibition and discussion of specimens.
September 14th—	Papers, "First Impressions of Swiss Flora" (illustrated by specimens) by W. O. DELANEY. "On the Occurrence in Britain of <i>Cintractia cingens</i> (De Toni)," by Dr. C. THEODORE GREEN, F.L.S.
October 12th—	Lantern Lecture, "Botanical Evolution in Theory and Fact," by the Rev. T. J. WALSH, B.A., F.R.A.S.
November 9th—	Lantern Lecture, "The Trees of Lancashire, Cheshire and North Wales" (illustrated by about 100 slides by the Lecturer), by A. A. DALLMAN, F.C.S.
December 14th—	Papers, "Two Lancashire Botanists," by Miss M. H. WOOD. "Some Suggestions on Nature Study in Schools," by Miss E. M. COATES, LL.A.

The attendance on these occasions has been very satisfactory. Seven Field Meetings were arranged during the past session. No long excursion was held this year but it is hoped that such may be arranged next Session. Such long excursions might well be held further afield than usual, so permitting the attendance of Country Members. The outdoor meetings have been very successful and well attended, the average attendance shewing a slight increase on that of 1907. Field Meetings were held as follows:—

	LOCALITY.	ATTENDANCE.
May 2nd—	Wepre and Ewloe	36
May 30th—	Rivington	17
June 27th—	Rossett, Marford and Gresford	42
July 1st—	Calderstones	35
July 18th—	Warton Crag	33
August 8th—	Woodvale and Barton	43
August 29th—	Llyn Helyg (Flintshire)	9
Average Attendance		30·7

Lectures or field talks were delivered on several of these occasions as follows:—

- "Mosses," by J. A. WHELDON, F.L.S.; Wepre.
- Address on the History of Gresford Church, by the Rev. E. A. Fishbourne, M.A.; Gresford.
- "Mossland Plants," by W. H. Stansfield; Barton.
- "Flora of Llyn Helyg," by A. A. DALLMAN, F.C.S.; Llyn Helyg.

Eight Council meetings have been held during the session.

Your Council desire to express their appreciation of the kindness of the University Senate and of Professor Harvey Gibson, for the use of the Hartley Botanical Laboratories and accompanying facilities. Thanks are also due to Members who have contributed papers, lectures, exhibits, or communications to the Society's meetings. It is gratifying to note the increasing interest and co-operation of Country Members. Contributions from Country Members are always particularly acceptable, and in view of the catholicity of our scope, such contributions add materially to the efficiency of the Society.

Three hundred and thirty-two specimens—excluding the large number dealt with by the Flora Committee—have been forwarded for examination and identification and a considerable number of queries have been answered. Others in addition were also dealt with by Miss M. H. Wood, who kindly attended to such during August and September in the absence of the Hon. Secretary.

SOUTH LANCASHIRE FLORA.

In presenting their Second Annual Report, the South Lancashire Flora Committee have pleasure in being able to record a year of substantial progress.

Early in the year, the Committee thought it desirable to issue a circular to their co-workers and correspondents, giving particulars as to the kind of information wanted, hints on collecting specimens, and the names and addresses of the Referees and Recorders. This circular, the usefulness of which has been acknowledged by several correspondents, was distributed in all likely quarters, and has been productive of considerable good.

Certain changes have been made this year in the system of recording and refereeing so far as the Phanerogams are concerned. Rev. W. Wright Mason, B.A., was appointed to act as sole recorder for the flowering plants, in place of Dr. E. Drabble, F.L.S., who was appointed referee in connection with the Phanerogams. This change left several members of the Committee who had previously assisted Dr. Drabble in the recording, free to undertake other work, and has enabled the working force at the disposal of the Committee to be more effectively utilized.

The Committee have continued to receive valuable contributions to the Flora in the shape of lists, specimens and information bearing on the work; and they cordially thank their co-workers in various parts of the Vice-County for such help. A number of correspondents have worked enthusiastically during the year, and it is largely to their unstinted efforts that progress has been made. The Committee desire especially to acknowledge the valuable assistance of Mr. J. W. Bamber, of Accrington; Mr. B. Belfield, Rochdale; Mr. T. Hargreaves, Clitheroe; Mr. J. C. Healey, Rochdale; Mr. G. H. Hopley, Brinscall; Mr. H. Robinson, Colne; Rev. M. Toohey, S.J., Whiston; Mr. P. Yates, Tyldesley; and Mr. A. Wilson, F.L.S., Ilkley.

Phanerogamia.—Some valuable lists from various localities have been contributed, and, in accordance with the rule of the Committee, nearly all records for uncommoner plants have been substantiated by voucher specimens, thus guaranteeing the accuracy of the work done. Several species of flowering plants new for the Vice-County have been discovered during the year. It is gratifying also to report that progress has been made with some of the critical genera. It may now be said that, with the exception of one or two critical groups, the Flora, so far as the Phanerogams are concerned, is in an advanced state. During the coming year the Committee hope, with the assistance of their co-workers, to devote special attention to the critical genera, and there is ample scope for specialized work in this direction.

Cryptogamia.—During the year a large number of mosses and hepatics have been sent in to be named and recorded. Naturally, these have mostly comprised species already recorded for V.C. 59, but they were of value as showing the distribution of the plants throughout the area under investigation. It is satisfactory to report that six species of mosses and hepatics new to South Lancashire have been found in the year under review. The bulk of the previously published work on these groups has been collated and examined. The most notable progress, so far as the Cryptogams are concerned, is in connection with the Fungi. Thanks to the efforts of Mr. Harold Wheldon and Mr. J. A. Wheldon, F.L.S., and to the kindness of Mr. C. Crossland, F.L.S., of Halifax, who has given most valuable help in determining specimens, the number of fungi known to occur in South Lancashire has been increased by several hundred species. Between 600 and 700 species now stand recorded, but there is little doubt that this number could be considerably increased by further work. Correspondents who will send in specimens of fungi from their districts will materially assist this branch of the work. As regards the Lichens, these call for more attention than they have yet received. Although South Lancashire is admittedly poor in lichens, it is hardly likely that the comparatively few species so far recorded represent its lichen flora.

Several workers have done a considerable amount of work in connection with the bibliography. Practically all the more important publications dealing with the flora of the Vice-County have been already gone through, but a large amount of literature still remains to be examined. In this connection, the thanks of the Committee are due to Mr. Charles Bailey, M.Sc., F.L.S., and Rev. S. Gasking, B.A., F.L.S., for the loan of books from their libraries.

So far, but little has been done as regards the examination of Lancashire herbaria, many of which will yield information of value to us. The extensive herbarium in the Botanical Department of the Liverpool University, which contains the collections of many former eminent local botanists, deserves special attention. There are also valuable herbaria in Manchester, Warrington, and other places containing collections of South Lancashire plants. The Committee hope to make arrangements to examine some of those herbaria at an early date.

LIVERPOOL BOTANICAL SOCIETY.

Dr.

BALANCE SHEET, 1908.

Cr.

	£	s.	d.		£	s.	d.
To Balance in hand from 1907	...	...	3 0 4	By Honoraria (University, &c.)	...	...	1 15 0
" 142 Subscriptions at 5/-	...	...	35 10 0	" Printing, Stationery, &c.	...	...	25 6 0
" 3 " 2/6	...	...	0 7 6	" Expenses of Secretary	...	...	4 6 9
" 1 " 15/-	...	...	0 15 0	" " Assistant Secretary	...	...	3 17 0
" 1 " 10/-	...	...	0 10 0	" " Treasurer	...	...	1 15 10
" Sale of "Proceedings"	...	...	0 4 6	" " Secretary, South Lancs.	...	...	1 4 9
" Profit on Soirée	...	...	1 4 8	" " Flora Committee	...	...	3 6 8
			<u>£41 12 0</u>	" Balance in Hand	...	...	<u>£41 12 0</u>

LIBRARY ACCOUNT.

	£	s.	d.		£	s.	d.
Balance in hand from 1907	...	...	0 14 0	By Balance in hand	...	...	3 9 0
26 Donations at Annual Meeting	...	...	1 6 0				<u>£3 9 0</u>
2 " 2/6	...	...	0 5 0				
24 " 1/-	...	...	1 4 0				
			<u>£3 9 0</u>				

FRED. J. ROUTLEDGE, *Hon. Treasurer.*

Audited and found correct—Vouchers produced.

January, 1909.

C. E. DELANEY,
WILLIAM W. WILSON, } *Auditors.*

GENERAL MEETINGS.

MONDAY, JANUARY 13th, 1908.

ANNUAL MEETING.

The Annual Meeting was held at the Hartley Botanical Laboratories, Liverpool University, on Monday, January 13th, 1908, at 7-30 p.m. Professor R. J. Harvey Gibson, M.A., F.L.S., President, in the Chair.

The following proposed addition to the Rules of the Society—of which due notice and full particulars had been sent to all Members, in accordance with Rule XIV—was submitted to the meeting, and unanimously carried :—

Professor R. J. Harvey Gibson. Addition to Rule II.—(4) Certain prominent botanists, representative as far as possible of the great countries of the world, shall be permitted to become Corresponding Members of the Society. The number of such Corresponding Members shall be limited to twenty-five. Nominations for Corresponding Membership shall be made by the Council.

The Hon. Secretary submitted the Report of the Council, together with the Report of the South Lancashire Flora Committee, for the year ended 31st December, 1907 ; a vigorous discussion followed the reading of the Report of the Flora Committee. The Council's Report was eventually adopted on the proposition of Dr. E. Drabble, seconded by Mr. C. B. Travis.

The Hon. Treasurer then communicated his Financial Statement and Balance Sheet for the past year. The motion of the President, seconded by the Rev. S. Gasking, "That the Honorary Treasurer's Financial Statement be adopted," was then carried.

The Hon. Librarian presented her Report for the Session 1907. A discussion followed regarding the provision of a definite source of income for the upkeep of the Library. It was suggested that each Member should contribute an annual sum of one shilling for this purpose ; such payment would be quite optional, but it was thought that most Members would be willing to help in this manner. Several Members having spoken in favour of the proposition, the meeting then gave practical support to the suggestion.

Miss A. Grosvenor and Mr. C. B. Travis having been appointed Scrutators, the ballot was then taken. The votes having been counted and reported to the Hon. Secretary, in the absence of the President and Vice-Presidents, he declared the result as follows :—

President : Professor R. J. Harvey Gibson, M.A., F.L.S.

Vice-Presidents : Rev. S. Gasking, B.A., F.L.S. ; J. A. Wheldon, F.L.S.

Hon. Treasurer : F. J. Routledge.

Hon. Secretary : A. A. Dallman, F.C.S.

Council : Miss E. E. Appleton, W. Chesher, M.A., Miss E. M. Coates, LL.A., R. H. Day, E. Drabble, D.Sc., F.L.S., Dr. C. T. Green, F.L.S., Rev. W. Wright Mason, B.A., F. Summers, W. G. Travis, Rev. T. J. Walshe, B.A., F.R.A.S., Miss M. H. Wood, Dr. T. F. Young.

The Hon. Librarian announced the receipt of a number of donations to the Society's Library.

Miss E. BRAY sent for distribution a quantity of flowering specimens of Butcher's Broom (*Ruscus aculeatus*) from Sussex.

Mr. J. A. WHELDON, F.L.S., called attention to the occurrence of *Bromus brachystachys* in the neighbourhood of Aintree, Lancashire. This alien does not appear to have been noticed previously in Lancashire.

MONDAY, FEBRUARY 10th, 1908.

ANNUAL SOIRÉE.

The Annual Soirée was held at the Hartley Botanical Laboratories, Liverpool University, on Monday, February 10th, 1908, at 7-30 p.m. By courtesy of Professor W. A. Herdman, the adjoining Zoological Museum and Laboratories were also open to Members on this occasion. After a reception by the President and Mrs. Harvey Gibson, the Members adjourned to the lecture theatre, where Mr. W. H. Tomkinson delivered an extremely interesting lantern lecture, and demonstration on "Colour Photography." After some account of the various methods which have been employed for obtaining a photographic image in natural colours, the lecture dealt at some length with the Lumière process. A beautiful series of botanical and microscopical photographs obtained by this method aroused general admiration, and at the close a very cordial vote of thanks was accorded Mr. Tomkinson.

A conversazione was held during the remainder of the evening, refreshments being served in the Botanical Museum. A collection of microscopical exhibits was shown in one of the laboratories, and attracted much attention. Every credit is due to the Members of the Soirée Committee—Mrs. Routledge, Mrs. Wheldon, Miss E. E. Appleton, Miss E. McMillan, Miss H. Roberts, Mr. F. J. Routledge, and Professor Harvey Gibson—for the marked success of this function. We are also indebted to Mr. Hackett, of the Liverpool Botanical Gardens, who again kindly contributed an interesting collection of plants and flowers, which formed an original and attractive feature of the table decorations.

MONDAY, MARCH 9th, 1908.

Professor R. J. Harvey Gibson, M.A., F.L.S., President, and later, Mr. J. A. Wheldon, F.L.S., Vice-President, in the Chair.

Professor J. Campbell Brown, D.Sc., F.C.S., Mr. A. Burnett, Mrs. Burnett, Mr. D. R. Jones, Mr. D. S. E. Jones, Mr. G. E. Martindale, Miss Thompson, Miss Vincent, Mr. W. H. White, and Miss Wright were elected Members.

The PRESIDENT remarked that the extensive herbarium of the late Rev. W. R. Linton, M.A., had recently been presented to the Liverpool University. The collection comprised some 25,000 sheets, many critical genera being well exemplified, and should prove of great value to students of British Botany.

Mr. J. A. WHELDON, F.L.S., called attention to the occurrence of *Swartzia inclinata*, Ehrh., in South Lancashire. This moss was found on Rainford Moss by Messrs. W. G. Travis and J. A. Wheldon on February 15th, and was then in fine fruit. At the time it was thought to be *Swartzia montana*, Lindb., a species *recorded from Rainford Moss as far back as 1851, but not seen since. In Mr. Wheldon's list of Southport District Mosses in the British Association Handbook (1903) the writer suggested that Skellon's record seemed unlikely and was possibly erroneous. This discovery at first seemed to confirm the old record, but on further examination, the moss proved to be a much rarer species, *Swartzia inclinata*, Ehrh., quite new to Lancashire, and, in fact, only so far recorded from four counties in Southern Britain. It is best distinguished by its shorter, oval, and inclined capsules, autoicous inflorescence, and spores nearly double the size of the commoner species. In the Rainford plant the spores measure 46μ in diameter.

The feature of the evening was a lecture by Mr. F. J. Thorpe, B.Sc., on "Mendelism." Following a lucid account of the work of Mendel and other investigators, the lecturer remarked that the main theory could be generalised to meet cases in both animal and vegetable kingdoms, in the statement "that the gametes produced by any zygote are numerically equal in kinds, and are pure in respect of certain given characters, whatever may be the composition of the zygote." This theory would seem to explain many cases of inheritance in plants and animals, and sheds considerable light on the phenomenon of reversion.

As regards the practical value of the subject, Mr. Thorpe considered that this attempt to discover the principles underlying the whole problem of heredity will be of use in solving the difficulties connected with practical breeding, such as increasing the vigour of stock, eliminating disease, and combining into one strain desirable characters which may exist in different strains.

In proposing a vote of thanks to the lecturer, Dr. Drabble remarked that Mendel's hypothesis would seem to contain a large element of truth, and it had led to the discovery of many interesting biological facts. On the whole, Mendel's work may be said to have stood the test of very extensive experiment.

Mr. WHELDON thought that Mendelism was still largely on probation, and few persons would be willing to abandon certain Darwinian tenets at present.

MONDAY, APRIL 13th, 1908.

Mr. J. A. Wheldon, F.L.S., Vice-President, in the Chair.

Miss M. Colquitt, Mr. W. H. Halfpenny, Miss Kewley, and Mr. E. T. Williams were elected Members.

The HON. LIBRARIAN announced the receipt of several donations to the Society's Library.

Miss E. M. COATES, LL.A., contributed a number of marine algae from the Isle of Man.

* Dickinson's *Flora of Liverpool* (1851) p. 150, as *Didymodon capillaceus*, Schrad.

Miss E. BRAY sent for distribution a quantity of the true Wild Daffodil (*Narcissus Pseudo-Narcissus*) from Sussex.

The HON. SECRETARY exhibited some plant remains from the submerged forest at Dove Point, on the Cheshire coast. This probably represents a part of the large forest which formerly extended over the Wirral, and is doubtless contemporaneous with a similar forest, remains of which occur on the Welsh coast between Rhyl and Abergele. The specimens shown included remains of oak and birch, cones and seeds of Scots' Pine, nuts of the hazel, and stems of a species of *Equisetum*.

Miss E. WARHURST, LL.A., read a paper entitled, "Some Floral Resemblances." This was accompanied by a series of original drawings and paintings, and also illustrated by lantern slides. At the close of a very interesting paper a cordial vote of thanks was passed to Miss Warhurst, on the proposition of Mr. R. H. Day, seconded by Miss M. A. Nugent.

MONDAY, MAY 11th, 1908.

Dr. T. F. Young in the Chair.

Miss N. M. Harvey and Miss K. Nugent were elected Members.

The HON. LIBRARIAN announced the receipt of a number of donations to the Society's Library.

Miss E. BRAY sent examples of primrose leaves infected with *Uccinia primulae*, D.C., from Sussex; also specimens of the Wood Spurge (*Euphorbia amygdaloides*) and *Viburnum Lantana* from the same county.

Miss E. WARHURST, LL.A., exhibited fruiting specimens of a species of *Eucalyptus* from the Canary Islands, and Miss K. White distributed some unusually luxuriant examples of *Arum maculatum*, a curiously local plant in the Liverpool area.

Mr. W. G. TRAVIS showed some fertile plants of the hepatic *Reboulia hemisphaerica*.

The following papers were read:—

1. * "On Plant Remains in Peat in the Shirdley Hill Sand at Aintree," by W. G. Travis.

2. "The Collection and Preservation of Flowering Plants," by A. A. Dallman, F.C.S.

MONDAY, JUNE 15th, 1908.

Prof. R. J. Harvey-Gibson, M.A., F.L.S., President, in the Chair.

Dr. J. Reynolds Green, F.R.S., F.L.S., Mr. W. T. Haydon, F.L.S., Miss E. G. G. Hill, Mr. R. S. Robinson, and Mrs. Stevenson, were elected Members.

Mr. J. A. WHELDON, F.L.S., called attention to a plant, of which specimens were shewn, from Buttercrambe Wood, Yorkshire, which had been submitted to the Society for identification. This proved to be *Omphalodes verna*, Moench, a Boraginaceous species, and native of S. Europe. The plant occurred in quantity and was first observed in the Yorkshire station some years ago. It was suggested that it had been carried by birds, as there was no cultivated ground in the vicinity to explain its origin.

* Published in "Transactions" i. (1909) pp. 47-52.

Dr. DRABBLE remarked that he had noticed the same plant completely established in Cornwall, in a wood near Truro.

The HON. SECRETARY exhibited some photographs of the orchid *Listera cordata*, recently found by Mr. R. H. Day and himself, in the woods skirting Llyn Helyg, Flintshire, and not previously known to occur in this county. The plant occurs here at an elevation of some 600 feet, which is in contrast to its higher range in West Lancashire (1,100-1,500 feet). In Denbighshire it has been noted at an altitude of 1,100 feet but its range in this county has not been determined.

Mr. HAROLD J. WHELDON reported that a fungus growing on willow near Elterwater, Westmoreland, and submitted to him, had proved to be *Hypocrea riccioidea*, Berk. Specimens had been submitted to Mr. G. Crossland, who confirmed the identification. The discovery is noteworthy, as the plant does not appear to have been found in Britain since 1790, when Bolton figures and records it (as *Sphaeria riccioidea*) in his "*History of Funguses growing about Halifax*" (Tab. 182) from "Ramsden Wood, Halifax, February, 1790, on dead branches close by the brook." Mr. Wheldon also recorded the occurrence of *Fomes connatus*, Fr., on the under side of a log at Aintree; the Myxomycete, *Badhamia varia*, Mass., was also observed on an old polypore close by. A large number of noteworthy exhibits were received.

Miss E. M. COATES, LL.A., and Miss E. G. G. HILL sent a collection of Somersetshire plants for distribution.

Miss E. BRAY contributed a number of plants from Sussex, including *Phyteuma spicatum*, Bee Orchis (*Ophrys apifera*), and *Raphanus maritimus*, the two last from the Beachy Head neighbourhood.

Miss N. L. PEACOCK sent a collection of plants from St. Vincent's Rocks, Bristol, including *Bromus madritensis*, *Lepidium Draba*, and *Geranium sanguineum*.

The Rev. W. WRIGHT MASON, B.A., shewed some Lincolnshire examples of *Ranunculus acris* (vars. *tomophyllus* and *vulgatus* of Jordan).

Mr. J. A. WHELDON, F.L.S., exhibited a photograph of the late Professor Barker; also specimens of *Lycopodium annotinum*, collected at Great Langdale, Westmoreland, by Mr. A. Wilson, F.L.S., and himself.

General regret was expressed at the sudden illness of the Rev. John Gerard, S.J., F.L.S., who was consequently unable to be present to lecture as announced. In Father Gerard's absence, Dr. J. Reynolds Green, F.R.S., delivered an interesting and lucid account of "Vegetable Digestion in Carnivorous Plants," illustrating his remarks by a series of lantern views. At the close a vote of thanks was accorded Dr. Green, on the proposition of the Rev. S. Gasking, B.A., F.L.S., seconded by Dr. J. E. W. McFall.

MONDAY, JULY 13th, 1908.

Mr. R. H. Day in the Chair.

Miss E. BRAY sent examples of *Lepidium Draba* and *Lepidium rudemale*, for distribution, from near Eastbourne; also specimens of Sea Kale (*Crambe maritima*), from the same neighbourhood.

Miss L. R. COOKE forwarded some North Wales plants.

Miss E. G. G. HILL sent a number of Somerset plants including the Caper Spurge (*Euphorbia Lathyris*), Medlar (*Pyrus germanica*), Wild Madder (*Rubia peregrina*), Teazle (*Dipsacus sylvestris*), Balm (*Melissa officinalis*), and *Artemesia maritima*.

Miss N. L. PEACOCK showed some teratological forms of Herb Paris (*Paris quadrifolia*).

The Rev. M. TOOHEY, S.J., contributed a small collection of casual plants found by him on waste ground near Whiston, Lancs. This comprised examples of Darnel (*Lolium temulentum*), *Thlaspi arvense*, *Camelina sativa*, *Amsinckia lycopoides*, and *Phalaris paradoxa*.

The HON. SECRETARY exhibited a photograph of the late Miss E. M. Wood.

Miss N. L. PEACOCK contributed a paper entitled * "Notes on the Flora of Portbury, Somerset," which was read by Miss D. Mayman in the author's absence. After an introduction on the geological and topographical features of the district, the author dealt with some of the ecological characters of the neighbourhood. From the rapid changes of soil a considerable variety of plant associations occur within a small area. In the course of her paper, Miss Peacock remarked on some observations which she had made on the pollination of the Cuckoo Pint (*Arum maculatum*). The author considered the plant as very probably capable of self-fertilisation, thus confirming the suggestion of Father Gerard. At the time these observations were made the writer was unacquainted with the views brought forward on the subject by †Father Gerard in 1905. The paper was illustrated by photographs and living specimens, contributed by Miss E. G. G. Hill and the writer.

MONDAY, AUGUST 10th, 1908.

Mr. W. Chesher, M.A., in the Chair.

Messrs. Harold J. Brocklehurst and J. Crellan were elected Members.

The HON. TREASURER, on behalf of the Hon. Librarian, reported the receipt of a number of donations to the Society's Library.

Miss E. BRAY sent a number of Sussex plants for distribution including specimens of *Linaria spuria*, *Phyteuma orbiculare*, and *Bupleurum tenuissimum*.

Miss K. WHITE exhibited a small collection of photographs, taken by Dr. C. T. Green, F.L.S., of plants obtained at the Society's recent field meeting at Warton Crag; also specimens of Cheshire plants, including examples of the locally rare Marsh Gentian (*Gentiana Pneumonanthe*), the latter obtained within five miles of Liverpool.

Miss M. H. WOOD showed a flowering specimen of *Gaultheria procumbens*, a North American shrub, and the source of the oil of winter-green.

Mr. W. HACKETT sent examples of fruit of a species of *Avena*, native of Palestine. The fruits were characterised by strongly-developed awns of marked hygrometric nature. Variation in atmospheric humidity

*This will appear in the "Transactions."

†*Arum maculatum* and its relations with insects. *Journal of Botany*, 1905, pp. 231-233.

causes a considerable twisting of the awn, which tends to gradually push the seed into the soil. A ring of upward pointing hairs at the base of the fruit is of assistance in anchoring the seed in the soil; these hairs, from their direction of growth, readily permit of the grain being pushed downwards into the soil, but, as in the barb of a fish hook, afford considerable resistance to withdrawal. Such contrivance is evidently well calculated to secure the effective germination of seed in many instances.

The HON. SECRETARY called attention to two volumes of mounted specimens of marine algae and mosses which he had recently found in a Liverpool book shop. The plants appear to have been mainly collected in the North of Ireland between the years 1820 and 1846. From internal evidence the plants were evidently collected by and the volumes originally the property of James Lawson Drummond, a well-known Irish botanist. Dr. Drummond was born at Larne, Co. Antrim, in 1783, and died at Belfast—where for some years he had a medical practice—May 17th, 1853. Dr. Drummond was the author of several botanical works, and helped to form the Belfast Botanic Gardens in 1820. He was also a founder of the Belfast Natural History Society (1821). Among the mosses were several specimens collected by Dr. Greville, and the algae include examples from Mrs. Griffiths, of Torquay, and John Ralfs. Some fine examples of *Padina Paronia*, Linn., a rare British alga, collected by Dr. Drummond at Port Mahon, Minorca, also call for note. The two volumes appear to have subsequently been in the possession of the late Frederick Price Marrat, of Liverpool.

MONDAY, SEPTEMBER 14th, 1908.

Mr. J. A. Wheldon, F.L.S., Vice-President, in the Chair.

Mr. Thomas Corkhill, the Rev. B. Huson, S.J., Mr. G. E. Taylor, and Professor R. H. Yapp, M.A., F.L.S., were elected Members.

Miss E. BRAY and Miss E. G. G. HILL sent a number of plants for distribution, from the South of England.

Miss D. DELANEY showed a series of specimens illustrative of leaf variation in the common Ivy, which she had obtained near Bray, Co. Wicklow.

Miss K. WHITE exhibited some pressed examples of Swiss plants.

Mr. W. G. TRAVIS brought specimens of *Poterium polygamum*, Waldstein and Kitaibel (*P. muricatum*, Spach.), var. β *platylophium*, Jord. This plant was observed by Mr. Wheldon and Mr. Travis on railway banks at Aintree, S. Lancs., in the autumn of 1907. It was growing in association with *Medicago sativa*, *Onobrychis viciaefolia*, and *Reseda lutea*. The plant appears to be becoming naturalised in this station, and this alien would seem to be an addition to the Lancashire flora, as it does not appear to have been previously observed in this county.

Mr. A. A. DALLMAN, F.C.S., contributed examples of plants observed by him about the summit of Ben Lomond, Stirlingshire.

Mr. H. J. WHELDON shewed specimens of *Agaricus* [*Amanita*] *muscaria* and *Agaricus* [*Amanita*] *phalloides* found by him in a wood at Bickerstaffe, near Ormskirk, S. Lancs.

The following papers were read :—

1. *"On the Occurrence in Britain of *Cintractia cingens* (De Toni)," by Dr. C. Theodore Green, F.L.S.

2. †"First Impressions of Swiss Flora," by W. O. Delaney.

A discussion then followed, in which Miss E. Warhurst, Dr. T. F. Young, Mr. J. A. Wheldon, Mr. W. G. Travis, and Mr. W. O. Delaney engaged.

Miss E. WARHURST, LL.A., said she had lately been botanising in Norway, and had been struck by the similarity existing between the Norwegian and Swiss floras. The vegetations of the two countries had many features in common, both as regards ecology and constitution.

MONDAY, OCTOBER 12th, 1908.

Mr. F. Summers in the Chair.

A number of exhibits and communications were received.

Miss E. BRAY contributed examples of *Melilotus indica*, Allioni, (*M. parviflora*, Desfontaines), from Bexley, Kent, and specimens of *Ranunculus hirsutus* from Eastbourne.

Miss K. WHITE exhibited some cultivated examples of a species of *Salvia*, in which many of the leaves had developed a colour and appearance remarkably like that of the petals of the flowers. It was suggested that such petaloid leaves might be regarded as an early transition form between the leaf and flower.

The HON. SECRETARY shewed an abnormal type of grass flower of complex origin, which had been obtained from some experiments on cross-breeding of cereals. The floret was quite devoid of androecium, the stamens having apparently become converted into carpels, as evident from the four pairs of stigmas. As a result the normal perfect monocarpellary flowers had given place to unisexual quadricarpellary florets.

Mr. J. A. WHELDON, F.L.S., announced that Mr. A. Wilson, F.L.S., had recently observed the lichen *Lecanora badia*, Ach., on grit rocks on the S.E. side of Pendle Hill, at an elevation of 1,700 feet. The specimens were in good fruit. This lichen appears to be hitherto unrecorded for South Lancashire. Mr. Wheldon also mentioned that a plant found growing near Bolton-le-Sands by Dr. J. W. Ellis, and submitted by him to the Society for identification, had proved to be *Alsine rupicola*, a species new to West Lancashire (V.C. 58).

Mr. W. G. TRAVIS reported the discovery by him of the hepatic *Lophozia arenaria* on the South Lancashire sandhills at Freshfield. It was growing in quantity under dwarf herbage, and fruiting well. The plant does not appear to have been previously recorded for Lancashire. It occurs on sandhills on the coast of Merioneth in association with many Bryophyta also found on the Lancashire sand dunes, and, consequently, its occurrence in the latter was not unanticipated.

Mr. F. SUMMERS remarked upon the sporadic occurrence of the Chicory (*Cichorium Intybus*), in Wavertree Playground, Liverpool, where a single flowering specimen had been recently noticed by Mr. F. J. Thorpe. The Rev. S. Gasking observed that he had frequently noticed this species springing up on the local railway embankments.

*Published in "Transactions" i. (1909) p. 53.

†This will appear in the "Transactions."

Mr. A. A. DALLMAN, F.C.S., called attention to several points of interest in connection with the pollination and fertilisation of *Parnassia palustris* (Grass of Parnassus). This plant is particularly abundant in the "slacks" of the Lancashire sandhills, where, in places, it forms a dominant feature of the vegetation. The flowers are highly adapted to insect pollination, and a small patch of flowers, kept under observation for two hours on a sunny afternoon in August, was visited by seventeen different species of insects. The flowers are specially frequented by several species of hovering flies (Syrphidæ), and the vigorously flying diurnal moth, *Plusia Gamma*, was noted as a frequent visitor. Ants would seem, in this locality, to play an important part in the cross-pollination of *Parnassia*. Two species, believed to be *Formica fusca*, Latr., and *Myrmica rubra*, L., occur in abundance on the sand dunes, and appear specially partial to situations where *Parnassia* thrives. The flowers are largely visited by these ants, which sip the nectar secreted at the base of each staminode. The flowers are generally stated to be markedly protandrous, but several instances of protogyny were observed near Formby.

Mr. W. G. TRAVIS moved that a hearty vote of thanks be accorded Miss E. Bray, of Hailsham, for her kindness in forwarding numerous interesting exhibits and specimens to the Society's meetings. The Rev. S. Gasking seconded, and the Hon. Secretary was requested to convey the resolution to Miss Bray.

The feature of the evening was a paper by the Rev. T. J. Walshe, B.A., F.R.A.S., entitled, "Botanical Evolution—In Theory and Fact." This was illustrated by lantern slides, and was followed by an animated discussion, in which Mr. W. J. Bayliss, the Rev. S. Gasking, Messrs. W. A. Lee, J. A. Wheldon, and A. A. Dallman engaged, and to which Father Walshe replied.

MONDAY, NOVEMBER 9th, 1908.

Mr. J. A. Wheldon, F.L.S., Vice-President, in the Chair.

Messrs. G. A. Dunlop and J. W. Hartley were elected Members.

The appointment of Miss E. Warhurst, LL.A., as Honorary Curator of the Society's projected Herbarium was confirmed.

Miss E. BRAY and Miss E. G. G. HILL sent a number of specimens for distribution from the South of England.

Miss N. L. PEACOCK contributed several fungi from the neighbourhood of Portbury, Somerset. These included examples of *Craterellus cornucopioides*, Pers., *Clavaria cinerea*, Bull., *Clavaria rugosa*, Bull., *Peziza badia*, Pers., and *Xylaria hypoxylon*, Grev.

Mr. J. A. WHELDON, F.L.S., showed a number of herbarium sheets of interesting British plants, including examples of *Erythræa sphaeroccephala*, Towns., discovered at Warton Crag, North Lancashire, on the occasion of the Society's field meeting in that district.

Mr. HAROLD J. WHELDON, who has been paying attention to Lancashire Fungi, gave some account of the work in this connection. The Fungus Flora of the county has hitherto received scant and disproportionate attention. Some 600 species have so far been recorded, and it

is certain that further investigation of these too-neglected plants will result in a material increase of this number. The sand dunes and moss-land have yielded some interesting novelties, and further investigation of the fungus flora of these localities is needed.

Among many recent additions to the county list the following are specially noteworthy :—

- Scleroderma bovista*, Fr. Near Colne. H. ROBINSON.
Panæolus retirugis, Fr. Pasture, Walton. J. A. WHELDON.
Inocybe maritima, Fr. Sandhills, Freshfield. J. A. WHELDON.
I. flocculosa, Berk. Formby. H. J. WHELDON.
Cortinarius (Telamonia) jucundus, Weinm. }
C. (Telamonia) rigidus, Fr. } Formby. H. J. WHELDON.
C. (Dermocybe) caninus, Fr. }
C. (Hygrocybe) jubarinus, Fr. }
Psilocybe ericæa, Pers. Warton Crag. J. A. WHELDON.
Volvaria speciosa, Fr. Walton. J. A. WHELDON.
Clitocybe ditopoda, Fr. Formby. H. J. WHELDON.
Hygrophorus (Limacium) pudorinus, Fr. Warton Crag. J. W. HARTLEY.
Lactarius (Russularia) pallidus, Pers. } Bickerstaffe. H. J. WHELDON.
L. (Russularia) cyathula, Fr. }
Russula azurea, Bres. Hodgkinson Wood, Brinscall. G. H. HOPLEY.
R. consobrina var. *soraria*, Larb. Hightown. H. J. WHELDON.
R. Zueletii, Fr. Ince Woods (near Liverpool). H. J. WHELDON.
R. citrina, Gillet. Simmonswood. H. J. WHELDON.
Coryne sarcoides, Tul. Skillaw Clough, near Bispham (V.C. 59).
A. A. DALLMAN.
Sphaerospora trechispora, Sacc. Formby. W. G. TRAVIS.

A lecture was delivered by Mr. A. A. Dallman, F.C.S., on "The Trees of Lancashire, Cheshire, and North Wales." This was illustrated by some 120 slides from photographs by the lecturer. In the course of a very suggestive lecture, attention was called to many problems and points of interest connected with the distribution, ecology, diseases, structure, identification, pollination, etc., of the many species touched upon. A discussion followed, in which Messrs. W. A. Lee, F. J. Routledge, H. J. Wheldon, and the Chairman took part, and to which Mr. Dallman replied.

MONDAY, DECEMBER 14th, 1908.

The Rev. S. Gasking, B.A., F.L.S., Vice-President, in the Chair.

Miss D. Delaney and Mr. W. W. Wilson were appointed auditors.

The HON. SECRETARY announced that Miss A. Johnson, of Lancaster, had generously offered the valuable collection of works on Diatomaceae, formerly the property of her grandfather, the late Dr. Christopher Johnson, to the Society. Further particulars would be announced later.

The Rev. B. HUSON, S.J., sent a number of examples of alien plants, several of North American origin, which he had observed during the present year growing along a hedge bank between Blackpool and Poulton-

le-Fylde, Lancashire. The more noteworthy species were *Hemizonia pungens*, Torr. and Grey, *Solanum rostratum*, *Amaranthus retroflexus*, *Centaurea melitensis*, *Lepidium virginicum*, *L. perfoliatum*, and *Campanula Rapunculoides*. The first species is not believed to have been noted previously in the county.

The Rev. M. TOOHEY, S.J., shewed a curious proliferous state of the common plantain (*Plantago major*), which had made its appearance in the Market Gardens, Prescott, Lancashire. Father Toohey considered this form identical with that figured in Gerard's *Herball* (ed. 1633), p. 420, and called *Plantago major* var. *rosea spicata*. The same occurs in Sir James Smith's *Flora Britannica* (1800) I, p. 183, and the plant fits Smith's note, "*spica abortiva e foliolis composita, vel* ⁽¹⁾ *rosaceae expansis, vel in pyramidem imbricatis.*" With the first part of this definition the plant agreed in August; the rachis was then very short and the leaves in a rosette. The upper leaves were very short, and the lower very long. The appearance was corymbose rather than ⁽¹⁾ "*rosaceae.*" In September the rachis began to elongate, and in October was much lengthened, thus causing the leaves to present a pyramidal appearance. In the former month the stems also began to send out branches among the leaves.

The Rev. S. GASKING remarked that he had observed a similar state of this plant at Garston, near Liverpool.

Mr. C. B. TRAVIS exhibited a small collection of typical Carboniferous fossils, and offered a few remarks thereon.

Mr. W. G. TRAVIS showed specimens of the rare hepatic *Petalophyllum Ralfsii*, which he had recently found on the South Lancashire coast. The re-discovery of this rare plant is noteworthy, as it had not been seen in this old station for many years, though repeatedly searched for, and by many it had been regarded as extinct.

Mr. HAROLD J. WHELDON announced that an Ascomycete which Mr. W. G. Travis had observed growing on *Salix repens* at Freshfield on December 6th, had proved to be *Helotium uliginosum*, an addition to the county list of fungi.

The HON. SECRETARY exhibited several autograph letters of eminent botanists of the nineteenth century, including Dr. Greville, of Edinburgh, John Ralfs, of Penzance, and T. G. Rylands, of Warrington.

Mr. J. A. WHELDON, F.L.S., communicated the following note on two new varieties of Bryophyta:—

"In May of the present year (1908) Mr. Wilson and I were botanising in Westmorland, and amongst other interesting plants we found was a singular form of *Nardia* (*Mesophylla*) *compressa*. We thought it distinct from any form of this species which we had seen before, and, therefore, submitted examples to Mr. Symers Macvicar, who confirmed this opinion, and suggested var. *gigantea* as a suitable varietal name for it. It may be described as follows:—

"*Nardia* (*Mesophylla*) *compressa*, var. *gigantea*, Macvicar (in lit. ad Wheld. et Wils.). Very robust, stouter and more elongate than the type, in large tufts, blackish purple, as if scorched, at the apices, dingy olive green when fresh, brownish when dry in the interior. Stems from 8 to 20 cm. long, occasionally furcate or branched, but mostly nearly

simple. Leaves about twice as large as in the type, close and overlapping, and almost uniform throughout, giving the stems a neat appearance; their cell structure differing but little, although the cells are slightly smaller and less translucent, and with thinner walls than usual. Trigones less well defined, though still evident. Amphigastria few, amongst the upper leaves, usually ovate-triangular acute, rarely toothed. No bifid ones seen.

"At present the variety may be regarded as distinguished by its size and characteristic habit, as it is not certain that the characters derived from the amphigastria and structure of the leaves are constant. If such is found to be the case, it will have some claims to be considered a distinct species. Very plentiful in a stream on Bow Fell, in Langdale, Westmorland.

"I am informed that Warnstorf has recently honoured by a distinctive name—*forma obesa*, Wtt.—the large, turgid and dense-leaved state of *Hypnum lycopodioides*, Schwg., which occurs in one or two localities on the sandhills near Freshfield. An equally well marked and distinct-looking state occurs near Formby. This, I suggest, should be called *forma attenuata*. It is distinguished by its laxly arranged secund leaves with long, fine, twisted points. The less crowded leaves and their secund arrangement give the plant an appearance closely like that of the more robust forms of *Hypnum Sendtneri*, which is enhanced by the stronger stems being occasionally rather regularly pinnate."

The following papers were read:—

(1) "Two Lancashire Botanists," by Miss M. H. Wood.

(2) "Some Suggestions on Nature Study in Schools," by Miss E. M. Coates, LL.A.

A discussion followed, in which Messrs. F. J. Routledge, F. Summers, J. A. Wheldon, A. A. Dallman, and the Rev. S. Gasking took part, and to which Miss Coates replied.

A RÉSUMÉ OF THE FIELD MEETINGS OF 1908.

BY THE HONORARY SECRETARY.

Another year has passed—all too quickly perhaps it seems to many of us—and so again it becomes necessary to place on record some account of the field meetings during this period. It is gratifying to report that the field meetings of the past session were extremely successful, so much so indeed, that the standard may be by no means easy to sustain in future years.

It has been suggested that too few meetings have been held in South Lancashire, having regard to the fact that the Society is engaged in the investigation and compilation of the flora of this vice-county. We may admit the truth of this statement, but it may be as well to recognise that the programme of field meetings was intentionally arranged so as not to give undue or disproportionate preference to South Lancashire localities. A little reflection on several important considerations will

*These will appear in the "Transactions."

shew that this policy is not merely desirable, but is necessary in the best interests of the Society. It is well that the importance of giving prominence to work especially affecting Lancashire or Cheshire, or of particular significance to the many Members resident in these counties, should be borne in mind.

At the same time it is equally necessary to avoid being too conservatively local, having regard to the wide scope of membership and the catholicity of the Society's aims and objects. Breadth of outlook is a valuable factor to every true naturalist, though unfortunately not always present in some aspirants to scientific fame, and is quite as essential—perhaps more so—in the development and policy of a cosmopolitan society like our own, as in many departments of every-day life. On the whole, the flora—speaking here of flowering plants, fern allies, and Bryophyta—of South Lancashire, *i.e.*, the botanical division of the county bounded by and extending from the Ribble to the Mersey, has already been pretty thoroughly investigated, excepting in a few special groups, and in several more or less remote or little-visited localities. While the area is not lacking in picturesque spots, a painfully large and increasing proportion of the vice-county is supremely uninteresting to the botanist and Nature lover. The disfiguring evidences of man's industry are everywhere more or less apparent, and so it is only natural that the general outdoor meetings should be held to a great extent where the air is yet pure and away from monotonous cinder paths and excessively cultivated fields. From topographical, geological, and other causes, the South Lancashire flora is not strikingly diversified—indeed, extensive areas are characterised by similar monotonous and meagre vegetation. Hence it follows that many features, aspects, and associations of the British flora are quite unrepresented in the vice-county.

It must not be supposed from the foregoing remarks that we are in any way opposed to the offering of every facility towards the accomplishment of a very desirable project, or of hindering in any way our enthusiastic South Lancashire Flora Committee. At many general field meetings it is, however, quite impracticable to attempt anything like an exhaustive investigation of the vegetation of the district for various reasons; nor is this to be expected, as there are many Members present on these occasions, workers perhaps in some special branch of botany, but who may not be particularly interested in systematic work or in the detailed study of South Lancashire vegetation.

As a practical solution of the difficulty we would suggest the desirability of the Flora Committee arranging special meetings, apart from the Society's general field meetings, purely for investigation of the South Lancashire flora. These meetings might be restricted to Members of that Committee and others who may be especially interested in the subject or anxious to assist. Excursions could be made to appropriate localities, and, if properly organised, a large amount of valuable data would rapidly accumulate, and go far towards filling various gaps and hastening and facilitating the compilation and publication of the "Flora of South Lancashire." At such meetings definite subjects might well be allotted to various Members; for instance, someone might be specially

responsible for the taking of data shewing altitudinal and horizontal distribution. To other Members could be allotted the collection of various orders, genera, or critical or little worked plants—*e.g.*, Algae, fungi, lichens, mosses, Carices, Gramineae, Euphrasiae, Rosae, Rubi, Hieracia, Salices, &c. Others again could act as general recorders, while some might be commissioned to collect information of physico-botanical, local, and ecological interest. Such party could, of course, include a number of general workers and observers in addition.

The hilly country which extends along the Flintshire side of the Dee estuary is diversified by numerous small streams, the banks of which are generally well wooded. These dells, or *nants*, as the Welsh term them, are often spots of great beauty, and it is surprising that few or none of these botanical oases have received much attention as regards their natural productions, cryptogamic vegetation in particular. One of the prettiest of these dingles is at Wepre, near Connah's Quay, and by the courtesy of Mr. T. Rowden Freme, of Wepre Hall, the Society was able to hold the first field meeting of the season at this attractive spot. Accordingly, on May 2nd, an ideal day, a party of thirty-six journeyed to Connah's Quay, where they were met by Mr. E. Lloyd Marriott, who kindly acted as guide. Connah's Quay is a dismal, straggling place of collieries, brick works, and chemical manufactories, affording a remarkable contrast to the picturesque woodland beyond. The vegetation of Wepre Woods, notwithstanding the situation, seems scarcely, if at all, affected by the smoke and fumes of Connah's Quay, doubtless owing to the prevailing direction of the wind. From the same fact the ubiquitous carbonaceous film which one sees so frequently enveloping all plant life in the vicinity of most industrial centres, particularly in South Lancashire, was absent.

This meeting was devoted mainly to the investigation of the mosses of the district, of which fifty-two different species were observed, but several noteworthy factors were presented by the phanerogamic vegetation, although flowers were rather scarce. The curious inflorescences of the butterbur covered the banks of the brook just below Wepre Hall, while overhead many unusually fine wild cherry trees (*Prunus Avium*) charmed the eye with a delightful wealth of snowy blossom. Daffodils, to all appearance quite native, were here in abundance, and as the dainty flowers nodded before an occasional breeze, the oft-quoted lines of our Lake poet almost unconsciously came to mind. The two wood rushes, *Luzula sylvatica* and *L. pilosa*, and the golden saxifrage (*Chrysosplenium oppositifolium*), all typical plants of these Flintshire dingles, were largely in evidence. A search for the rarer alternate-leaved golden saxifrage (*C. alternifolium*) was unsuccessful, although it doubtless occurs here, as it is found in Nant y Flint, a very similar locality not far away. It is a significant fact that this plant generally grows intermixed with the commoner species, and one wonders whether *Chrysosplenium alternifolium* is something akin to the so-called "mutations" of De Vries.

In one part of this dingle is the interesting ruin of Ewloe Castle, finely mantled with ivy. Little is known with certainty as to its founder or

history, but it seems to have been an important fortress in Norman times. The tower, portions of the walls, and the deep fosse yet remain, but it is difficult to picture the original aspect of this venerable ruin. Bingley, an old Welsh traveller, mentions the spindle tree (*Euonymus europaeus*) as occurring here more than a century ago (about 1800), but none appears to have seen it here since his time. Attention was directed in the botanical notes on the circular of this meeting to this fact, and so a special lookout was kept for this shrub. Mr. W. Chesher was fortunate in discovering two examples still growing in what is without doubt the identical spot indicated by Bingley, and we believe a specimen was also found by Mr. F. Summers. This affords an interesting confirmation of the old record, and is an acceptable addition to the flora of the Liverpool district. To the naturalist this dell is full of activity in early summer, signs of awakening and developing life being everywhere apparent, and yet there is a peaceful air about this secluded nant; but rough and sudden was the fray the spot once saw. For here the advance guard of an English army under Henry II was surprised and defeated by David and Conan, sons of the heroic prince, Owen Gwynedd, in the year 1157. By stratagem they drew the English into the defile, and then, attacking them suddenly in front and rear, vanquished them with great slaughter.

The locality seems, somehow, peculiarly reminiscent of the past, and the memories that haunt its aspect, like thoughts in the sweet, sad face of his mistress, can only be read by the Nature lover who lingers here in quiet. Occasionally, in such surroundings as these, the lover of the olden time has the veil lifted, and one catches a transient, far-off glimpse of the inner beauty of mediaeval life, woven of love and sorrow.

Aulacomnium androgynum was noticed in several places, and is apparently not an uncommon species in Flintshire. This moss very rarely fruits in Britain, but the plant is under no disadvantage on this account, as reproduction takes place asexually by means of gemmae. The gemmae of *Aulacomnium* are minute, spindle-shaped bodies which are borne in densely crowded globular heads situated at the apices of slender leafless branches or pseudopodia. The numerous pseudopodia and minute clusters of gemmae give a characteristic appearance to this moss which can hardly be confused with any other British species. *Tetraphis pellucida* is another common gemmiferous moss, also found on this occasion, and though bearing a slight resemblance to *Aulacomnium*, it is at once distinguished by the conspicuous apical cups in which the gemmae are situated. Perhaps the prettiest of the fifty-four mosses observed at this meeting was *Pterygophyllum lucens*—*Hookeria lucens* of some of the old bryologists—of which some fine examples were found on a clay bank near the bridge in the wood just below Ewloe Castle. The large glossy leaves of this beautiful plant have a pinnate arrangement, and are noteworthy for the unusually large cells which can be readily discerned with a pocket lens. Eleven species of Hepaticae and thirteen lichens were also obtained.

After tea at Connah's Quay, Mr. J. A. Wheldon delivered a short address on "Mosses," with special reference to the examples obtained on this occasion. Few xerophilous species were noted. No Orthotricha were seen, and Grimmiaceae and Sphagnaceae were apparently unrepresented.

The second field meeting was held on May 30th, at Rivington, in South Lancashire. Under the able leadership of Mr. G. H. Hopley, the local botanist, White Bear Station was soon left behind, and passing through the small town of Adlington, we reached the little village of Rivington. As this district was unfamiliar to most Members, and has been comparatively little worked botanically, this meeting was purposely arranged with a view to a systematic examination of the vegetation of the neighbourhood in connection with the Society's scheme for investigating the flora of South Lancashire. The rather dreary road to Rivington was through supremely uninteresting country, but our experiences further on afforded additional proof of what appears to be a pretty constant rule in South Lancashire, that the more tarnished the frame the prettier and more botanically interesting is the picture within.

It was the original intention to ascend Rivington Pike, but the day being unusually hot, and time being limited, this was considered inadvisable. The resolution was a wise one under the circumstances, as exploration of the picturesque Dean Wood and working up the stream for some distance revealed a far richer flora than could have been obtained on the moors at the greater elevation. A number of garden plants had strayed into the wood and become more or less naturalised, and, no doubt, the examples of Solomon's Seal (*Polygonatum officinale*) and the Lyre Flower (*Dielytra spectabilis*) which we saw here had spread from the garden lower down. The moist banks by the waterfall yielded a number of plants, Cryptogams especially, of which the moss *Hypnum revolvens* is deserving of note. Three bushes of the Mountain Currant (*Ribes alpinum*) were seen on the roadside above Rivington, about half a mile towards Belmont. This is a rare shrub in South Lancashire, and we doubt very much whether it can be considered native in this vice-county. From the other British species it is readily separated by the "diœcious" flowers and erect inflorescence.

At the present day it is difficult to conceive the aspect of the greater part of Lancashire in former times, and probably in no other British county have industrial development and increasing population wrought such vast changes. Here and there, however, one may still find nooks and corners where the influence of man is less marked. In rambling away from the beaten track above Dean Wood, we came across some interesting ground of this nature, but even this pretty and apparently natural spot has doubtless undergone a certain amount of modification in the course of time. Fortunately a little light is thrown on the subject by Omphrius, a Benedictine monk of Whalley, who describes the district about Bolton and Rivington more than seven centuries ago. Omphrius' account was written in 1262, in the reign of Henry the Third. This Latin manuscript, with its quaint orthography and graphic word pictures would be well worthy of note in any historical survey of the Lancashire flora; as few or none of our Lancashire botanists are acquainted with it, I may aptly call attention to it here.

Speaking of this Rivington district, Omphrius remarks in his Latin, "In the romantic defiles, and deep basins of this part of the country (Deane near Boltune), west of Boltune in the moras, was the rapid

rivers Irwell and Douglas; the Bradshaw and Crawl runnels, which were heard dashing their waters, at that time, in many of the vallies, pools and waterfalls, mixed with the far-off song of the wild hunters from Leigh (a toft of houses), or, the howl of shee-dogs following their master along a sunny bank or brow, where he sought his new-fallen lambs. A wreath of smoke thinly ascending from a tufted hollow, marked the shepherd's ivy-housed abode, and conducted travellers to a rude hut, formed of mountain slabs, or, otherwise, of slate or rude stones.

"Now and then was seen a rill rippling over the heads of water-lilies and round the tall stems of iris. The dissolving snows of the winter had, in due season, formed numerous runnels of this sort, which flowed down the mountain paths, blue with the aconite, or fringed with the daisy, peculiar to regions inclined to be alpine. The thick cooing of the stock dove came from the depths of the woods, mixing its plaintive music with the rustling of the large fern leaves and brakes, and the bleat of distant flocks. . . . As I found when at Deane-chapel, so I left them, and retired to Whalley Abbey to offer up my orisons for their welfare, and for the souls of those who had departed in a state of grace, by the will of God."

Working up the stream we came across an interesting flora, including such plants as *Sphagnum squarrosum*, *Cardamine amara*, *Ranunculus Lingua* (Greater Spearwort), *Viola palustris*, and the modest little *Montia fontana*. In places the banks were composed of a loose shale, suggesting the possibility of the occurrence of the curious moss *Discelium nudum*, but although a sharp lookout was kept our hopes were not realised. *Luzula sylvatica*, which some of us had encountered at Wepre, was here in large masses, and our prettiest horse-tail (*Equisetum sylvaticum*) was also not uncommon. The Bistort was quite a common plant here, and in many respects the vegetation of the locality was surprisingly like the flora of the Billinge district, which we visited in 1907. Fragrant, creamy cymes of rowan blossom overhead added to the charm of the scene, and here and there a glimpse was caught of the lively dipper, a typical bird of the lonely mountain stream. Once, above the rippling of the streamlet, we heard the subdued and melodious cadence of this bird, and the dipper, or water ousel, as it is sometimes known, is no mean musician. Somewhere in the mossy bank of the stream, in such a spot as this the dipper makes its home—a warm cosy sphere enclosing the pretty milk-white eggs. Unfortunately, time would not permit of following this interesting stream to its source, but this locality is certainly deserving of a further visit and more extended investigation. The uncommon Masterwort (*Peucedanum Ostruthium*) was observed as a relic of cultivation in the neighbourhood of Heath Charnock. After a walk of some seven miles tea was obtained at Adlington somewhat late in the day, this concluding an extremely interesting excursion. Notwithstanding the botanically barren ground covered in the walk between Adlington and Rivington, Mr. Chesher gathered a moss on walls by the roadside, which proved to be the variety γ *badium* of *Bryum caespitium*. This particular variety would appear to be hitherto unrecorded for South Lancashire.

Variety is good in all things, and so on June 27th we travelled to Rossett in company with Members of the Chester Society of Natural Science, under the leadership of Mr. A. E. Goodman, of Chester. From Rossett the walk led through pretty country past Marford to Gresford in Denbighshire. The weather was hot, but almost ideal, and the only drawback to this meeting, as with several others, was the wealth of interest it presented. Consequently I cannot pretend to give anything like a detailed account of the work and observations on this occasion. *Geranium pyrenaicum* was growing by the roadside between Rossett and Marford, and a number of fine walnut trees about Marford called for general notice. In places along the road the little composite *Matricaria discoidea* was observed. Until a few years ago this alien was unknown in this part of Britain, and so its partiality for roadsides and the vicinity of docks is not without significance. This little traveller is readily distinguished from its British relatives by the conical head of florets, absence of ligules, and the pleasant apple-like odour, which is very marked upon rubbing or bruising any part of the plant.

Here and there along the banks of the Dee were some unusually large alders, reminding us that not the least pleasant of our associations with trees of different kinds are the associations of sound. The hum of bees about the linden branches, the patter of the aspen leaf, the rush of ash foliage before a sudden storm, the plaint of a pine wood, which is a kind of harp of all the winds, each of these do their part in giving an irresistible speech and language to the trees of the wood. And so with the alder, for its choice of the margins of streams, one associates the sound of waters, the swirl and swish of some hasty North country beck, or the calmer ripple of a lowland brook. There, gnarled, dingy, weather-beaten, but always holding its own in the marshy soil, it has for company those flowers that most frequent such a locality—king cups, ragged robin, and forget-me-nots.

Many of these trees were infected with two types of gall which are commonly met with on the leaves of the alder. Both appear as prominent swellings or tubercles, and the two species may often be found on the same tree. In the one (*Eriophyes axillaris*) the galls occur in pairs, and are confined to the midrib of the leaf or the axils of the primary veins. The other species (*E. laevis*) is readily identified by the more numerous galls, which are not usually in pairs, being distributed all over the leaf. Strictly speaking, both these are really pseudogalls—i.e., they are abnormal thickenings of the leaf, with an opening communicating into each from the under surface of the leaf. True galls, on the contrary, are always closed.

Between Rossett and Gresford is a wooded eminence of curious formation, locally known as "The Roft." This is the site of an old British camp, and the pleasant view from the summit is said to extend over seven counties. Many interesting plants were noted here, a number being calciphilous. These included the Dogwood (*Cornus*), *Geranium sanguineum*, Maple, *Carduus nutans* and *C. crispus*, *Vinca minor*, *Campanula latifolia*, *C. Trachelium*, and *Helianthemum vulgare* (Rock Rose), *Astragalus glycyphyllos* (Milk Vetch) was observed in its old station, and in the adjoining woodland we found such plants as *Carex pendula*,

C. sylvatica, *Equisetum maximum*, the Woodruff, and *Lamium Galeobdolon*. Many of the hazel bushes hereabouts were almost leafless, being badly infested with the larvae of *Tortrix ribeana*, Hüb., a moth very partial to its foliage.

The most noteworthy plant of the district is the White Mullein (*Verbascum Lychnitis*), a rare and local species which we found in quantity and which has grown here for the past eighty years at least. *Bryonia dioica* was plentiful in some of the hedges, and seemed to largely take the place of the usually common *Tamus communis*, although the latter was also seen. After tea at the Trevor Arms we hurried back to Gresford, and made an inspection of the church, an extremely interesting structure. The Rector, the Rev. E. A. Fishbourne, kindly showed us over the building, and being a keen archæologist, the account which he gave us of the history of the church was much appreciated. The churchyard is noted for its fine yews, while the sweet peal of bells forms "one of the seven wonders of Wales."

An evening meeting was held at Calderstones Park on July 1st, when we were again fortunate in having Mr. L. G. Godseff, the Curator, as our guide. This meeting was mainly devoted to the study of trees and shrubs. An account of a similar meeting held here some time ago is included in the "Proceedings" for 1907, so I need say little more. A small yellow-flowered "balsam," probably *Impatiens parviflora*, was naturalised in quantity in a waste corner of the grounds. Under some beeches near by was a crop of the fungus *Boletus subtomentosus*.

The fifth field meeting was a whole day excursion which was held at Warton Crag, near Carnforth, North Lancashire, on Saturday, July 18th. This was the first whole day excursion of the session, and it proved a most successful meeting in every way. The day was wet and unpromising before starting, but with our usual good fortune there was a sudden change, and on arrival at Carnforth the weather was all that could be desired. It seems somewhat in the nature of a record that during three seasons' field work climatic conditions have been almost uniformly satisfactory, and on no occasion has the weather been sufficiently unfavourable to interfere unduly with the arrangements. On arrival at Carnforth shortly after half-past nine the party was reinforced by several well-known botanists. An excellent luncheon, thoughtfully provided by our leader, Mr. J. W. Hartley, was waiting, and our thanks were also further due to Mr. Hartley for making all necessary arrangements with local landowners.

Walking to the village of Warton, which nestles at the foot of the crag of scar limestone of imposing extent, the party divided into two sections. The one under the leadership of Mr. H. Walker ascended the crag, and devoted special attention to the prolific vegetation of the limestone scar, and then descended and returned to Carnforth along the coast. The other party followed a different route, under the guidance of Mr. J. W. Hartley, of Carnforth, first visiting Mr. Platt's alpine and fern gardens at the kind invitation of the owner. In both cases the routes taken permitted of the examination of several distinct plant associations of great interest and richness. The plants of the scar lime-

stone, with its pavements, caverns, crag, and natural wood, are far too numerous to mention. In the natural thicket covering much of the crag, occurred in quantity, and in a truly wild condition, both species of buckthorn, dogwood, spindle tree, yew, and juniper. It is worthy of note that the brimstone butterfly (*Gonepteryx rhamni*) is not uncommon here, but in South Lancashire, Cheshire, and North Wales, where the two species of *Rhamnus* are very rare or absent, this usually common insect is almost unknown.

Mr. Hartley called attention to the ravages of *Gymnosporangium*, a parasite which was considerably in evidence on many of the branches of the juniper shrubs, to which it gives a dropsical appearance. *Ræstelia*, the other phase in the life cycle of this heterœcious fungus, was also discovered on hawthorn bushes close by. The summit of the crag was reached after some difficulty owing to many Members characteristically and commendably preferring to ascend through almost impenetrable undergrowth and thicket rather than by the usual track. While lunching here a certain ardent naturalist happened to leap across one of the numerous clefts by which the rock is intersected. A startled hiss and a rapidly retreating undulatory streak showed that he had almost jumped upon a reptile of some kind who had doubtless been engaged in a peaceful siesta. Momentary surprise was soon overcome by curiosity, and the trail was hurriedly followed up, but only in time to see a snaky tail disappear into a crevice beneath a large limestone boulder. Just as we were assuring ourselves that the prey had escaped us, we observed a head emerge from the opposite end of the boulder, and the snake immediately glided out and took refuge in a hole under an adjoining rock. On cautiously prodding the opening with a stick we found the reptile had dashed into a *cul-de-sac*, and was lying coiled up just inside. One gentleman was about to insert his hand to grasp the prey when it was suggested that it would be advisable to avoid handling the snake until we had obtained a good view of it, and assured ourselves as to its identity. The warning was exceedingly opportune, for on pulling forth the creature with a walking-stick handle we were startled to behold a very fine example of the viper almost two feet in length. We had imagined the animal to be a harmless grass snake, and naturally we congratulated ourselves on having given it the benefit of the doubt.

Of the wealth of interesting plants observed on this occasion, two call for special mention. The Sand Garlic (*Allium Scorodoprasum*) was found in abundance at one point almost at sea-level by Miss M. B. Barr and Miss K. White, who are to be congratulated on this interesting addition to the county flora. In this case we refer to Lancashire proper from the botanical point of view, as for all flora purposes the anomalous isolated portion of Furness, although politically a portion of Lancashire, is best regarded as a part of Westmoreland. This plant formerly occurred on the bank of the Mersey above Liverpool, but no one appears to have seen it here for many years. Dr. C. T. Green tells me that he found *Allium Scorodoprasum* in Furness, on the estuary just above Greenodd in June, 1907, and it was also seen in this same station by Mr. W. Chesher, M.A., in July, 1908. Prior to its discovery by Miss Barr and Miss White the Sand Garlic was quite unrecorded for the botanical vice-county of West Lancashire (V.C. 60).

A plant found near the base of the scar by Messrs. Wheldon and Wilson, and at first supposed to be a form of the common centaury, proved to be *Erythrœa capitata*, Rend. and Brit., and is an addition to the county flora. Other interesting plants noted on this occasion were *Atropa Belladonna*, *Carduus tenniflorus*, and *C. crispus*, *Viola hirta* and *V. Reichenbachiana*, *Hypericum hirsutum* and *H. montanum*, *Epipactis atrorubens*, *Pyrus rupicola*, *Populus tremula*, *Polytrichum nanum*, *Weisa crispata*, *Funaria calcaria*, *Endocarpon miniatum*, and many more, too numerous to mention. The Mullein (*Verbascum Thapsus*) and the Cat Mint (*Nepeta Cataria*) were prominent constituents of the vegetation of the low bank skirting the shore, and the Horned Poppy was frequent in places. After tea at Carnforth, kindly provided by Mr. J. W. Hartley, a vote of thanks was passed to the leaders, and on the invitation of Mr. Walker the party paid a visit to this gentleman's garden, where a collection of some two thousand plants, many of particular botanical interest, were contained in a comparatively small area.

Woodvale and Halsall, in South Lancashire, were visited on August 8th, this meeting being held in conjunction with the Southport Society of Natural Science, and under the leadership of Messrs. H. Ball and W. H. Stansfield. Alighting at Woodvale, several Members quickly discovered a patch of *Malva nicaensis*, an Italian alien, which was growing close to the station. Attention was chiefly devoted to the hygrophilous vegetation of the ditches, by which the former mossland is intersected. At some points the ditches were awkwardly overgrown, while at other places a recent "cleaning" did not improve them from a botanical point of view. Many of the usual species characteristic of the locality were found, as, for instance, the frogbit (*Hydrocharis*), *Oenanthe Phellandrium* and *O. fistulosa*, *Carex Pseudo-Cyperus*, &c. The Canadian Pond Weed (*Elodea canadensis*) was flowering plentifully, but only staminate blossoms were observed. Three of our four species of duckweed were in abundance. *Lemna gibba* occurred in patches of a purplish colour by which one could readily distinguish it at a distance from the surrounding *Lemna minor* and *L. trisulca*. The aromatic bog myrtle (*Myrica Gale*), a rapidly diminishing shrub in South Lancashire, was fruiting abundantly in one or two places. The golden dock (*Rumex maritimus*) was found very sparingly, and the locally rare hornwort (*Ceratophyllum demersum*) was growing abundantly at one point. *Senecio sylvaticus*, characteristic of the South Lancashire mossland, was frequent, and fields on this recently-reclaimed land had a typical flora, including Purple Loosestrife (*Lythrum Salicaria*), *Sonchus arvensis*, *Mentha arvensis*, and *Galeopsis Tetrahit* and *G. versicolor*, the last-named evincing a marked partiality to potato-fields. Five species of bramble were obtained:—*Rubus calvatus*, *R. leucostachys*, *R. pulcherrimus*, *R. plicatus*, and *R. Selmeri*. *Chenopodium rubrum* and *Melilotus indica* were found on some waste ground near Halsall, and the former plant also occurred abundantly by the lane side east of Mossbridge Station.

After tea at Barton, Mr. Stansfield delivered a short address on the flora of the district. As a result of draining and cultivation very little aboriginal moss now remains in Lancashire, and concomitantly with

the topographical changes involved thereby, the effect on the fauna and flora is becoming only too evident. Many plants and animals formerly plentiful on the Lancashire mosses have now become extinct or greatly diminished in number. *Osmunda regalis*, the well-known royal fern affords a striking instance. Formerly this handsome fern covered vast areas of moss, and was especially plentiful about St. Helens. Mr. Stansfield remarked that he could remember large quantities being brought from the mosses into Manchester markets. Now, however, partly owing to drainage, and largely as a result of vandalism, this striking plant is almost lost to the county.

In the course of the return walk to Mossbridge Station, Messrs. W. R. Sibbald and G. E. Taylor discovered the yellow mimulus (*Mimulus luteus*) or monkey flower, naturalised by the side of a stream. This favourite Chilean garden plant is rapidly spreading over Britain, and has become perfectly naturalised in many localities, particularly along the banks of rivers and streams. This new station for *Mimulus* represents a second local record, and it will doubtless soon be found elsewhere in the Liverpool district.

The last field meeting of the session, on Saturday, August 29th, was a whole day excursion, when, by courtesy of Lord Mostyn, Llyn Helyg was visited *via* Mostyn. This is the only lake of any size in Flintshire proper, and is picturesquely situated among pine woods, some 600 feet above sea level on the summit of the plateau lying between the Mold valley and the Dee. The locality is of supreme interest to the botanist, and is unique, never having hitherto been visited by any scientific society, while its existence only appears to have been previously known to very few naturalists. This is the more surprising as, with the dubious exception of the sandhills, it would be impossible to find a more interesting locality botanically within a similar radius of Liverpool. Only nine Members were present at this meeting, probably the most interesting of the season. Mostyn was reached at about ten o'clock, and in the hedge directly facing the station we noticed a large mass of Travellers' Joy (*Clematis Vitalba*). There are a number of localities where this shrub is to be found in Flintshire, but it is probably not really native in the county. Passing through Mostyn Park, the route to the lake is by unfrequented bye roads, where even the ubiquitous motor car is seen but rarely.

Many beautiful and uncommon fungi were observed in the woods skirting the lake, including the handsome fly agaric (*Agaricus* [*Amanita*] *muscarius*), the latter species being discovered by Miss A. B. Gleave. The marginal vegetation of this picturesque lake afforded a rich variety of botanical interest, including features and species unrepresented in Lancashire and Cheshire. Although a whole day was devoted to this excursion the time proved all too short and totally insufficient for anything but a very incomplete examination of the plant life of this unique spot. Specimens of submerged aquatic plants, obtained by dredging from a boat, showed that the abundant vegetation covering the bed of the lake consisted essentially, if not entirely, of Quillwort (*Isoetes lacustris*) and a curious submerged form of the Shoreweed

(*Littorella juncea*). Among the many interesting species skirting the lake were the pillwort (*Pilularia vulgaris*), which was fruiting plentifully, sundew (*Drosera rotundifolia*), Chaffweed (*Centunculus minimus*), Allseed (*Radiola linoides*), and the normal or terrestrial form of the shoreweed on which some of the curious flowers yet remained.

After tea at Caerwys, the Hon. Secretary delivered a short address on the botanical features of the lake, with special reference to the ecological aspects of the subject, illustrating his remarks by a number of photographs and specimens. To the student of plant associations the locality is of special interest as a number of distinct groups of vegetation occur within a comparatively small area, and various subsidiary intermediate colonies are also represented. Some time was then devoted to the discussion and identification of specimens, this concluding an extremely profitable meeting.

Quite apart from the purely scientific results of these field meetings there is another aspect of such work, an altruistic one, which is perhaps overlooked by some. Who will deny that such meetings do not bring an occasional gleam of sunshine into the lives of many? Anything which attempts to arouse a love of Nature, and to make happier such of our fellow-creatures as possible, is surely not undeserving of support. In this way the earnest and sympathetic naturalist exerts an enormous power for good, although the fact is perhaps insufficiently recognised. And so, contented in his simple creed, and undisturbed by the clamour of sects and churches, the naturalist pursues his way until the daybreak appears and reveals the accuracy of his conceptions.

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