

BOTANICAL SOCIETY OF THE BRITISH ISLES
WELSH REGION BULLETIN

Editor: J.P.Savidge, Ph.D., F.R.Met.S.

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Aberystwyth, January, 1964

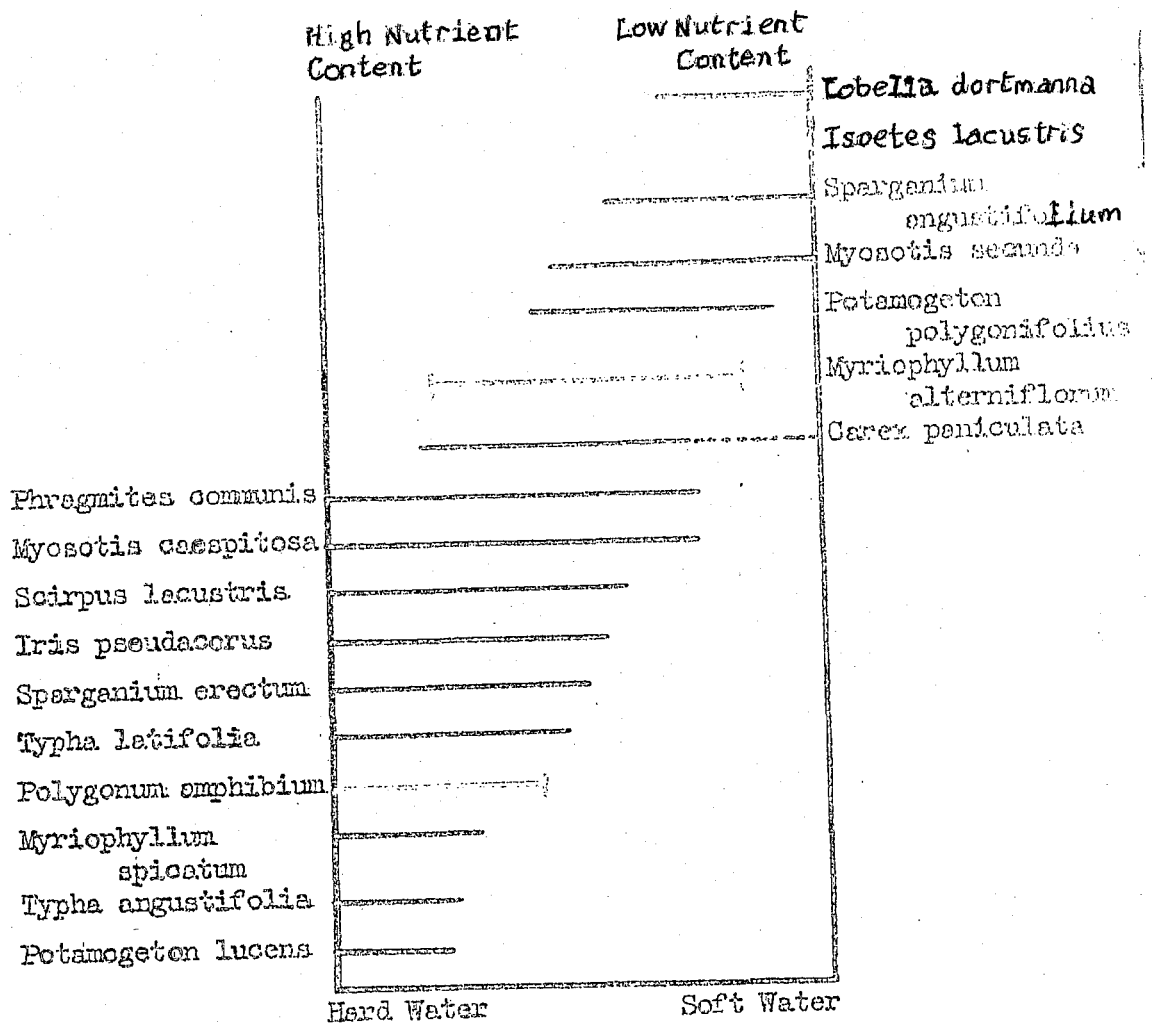


Fig. 1. Diagram showing the tolerance to water conditions of the more important aquatics. Principal indicator species shown in red.

"OPERATION WELLINGTON"

Some results of a Lake Flora Survey of Wales

by B.Sedden, Ph.D.

This survey was started in 1962 and with the results of two seasons' work available it is possible now to take stock of what has been accomplished and what remains to be done. The aim as stated at the outset was to record fully the flora of about 200 - 250 of the lakes in Wales, that is approximately one quarter of the total number marked on the one-inch Ordnance maps, including pools, ponds, lakes and reservoirs. Some of these are fairly inaccessible and the problem of carrying equipment, even if only a grapnel, line, collecting bags (polythene) and a rucksack or press to carry the specimens, adds to the difficulties. Nevertheless, 74 sites have been visited and lists of all the aquatic and marsh plants have been compiled.

The total number of individual records made is several thousand but this obviously includes as well as the true submerged and emergent aquatics, a large category of plants which are able to grow in the damp ground surrounding lakes and ponds but which are by no means confined to that situation. Thus although these must be included in any complete description as associated species they are not the primary subject of interest. If these are excluded, there remains a total of about 100 species of submerged and emergent aquatic plants. In addition to the records from field lists a further 800 records of these species have been extracted from literature and 200 from specimens in the National Herbarium. The sorting of this quantity of information into some kind of order is a formidable task and it is not nearly completed as yet.

The collection of records for their own sake has not been among the objectives of the survey: they are regarded only as a basic material by further study of which the reasons for the observed distribution and association of species may be better understood.

It is reasonable to assume, if plants are adapted at all to the conditions in which they live, that some plants are favoured by conditions at one extreme and some by conditions at the other extreme while a third group may flourish in conditions of an intermediate kind. These groupings are not separated by sudden

changes but pass gradually one into the next for not two species are identical in their requirements. While some are exacting in their demands on the environment and fail to survive in the absence of particular conditions, others are tolerant of a much wider range of conditions. It follows that some water plants may be regarded as indicators of certain types of lakes and if several such species are present at a given site then the indicators are reinforced. One of the main aims in conducting this survey has been to find which floristic assemblages may be regarded as characteristic of the types of lakes mainly encountered in Wales; for example, the rocky mountain lakes with barren shores and clear of peaty water, the bog-lakes, the lakes with "sedge-fens", the lakes with reedswamp, etc.

Some generalisations can be made but further refinement of this approach must await the completion of more detailed analysis of the plant lists which is at present in progress.

One of the most useful indicators of a lake rich in dissolved nutrients is Polygonum amphibium (amphibious bistort), and in a number of lakes where this occurs Myriophyllum spicatum (spiked water-milfoil) is also present. This species demands even higher nutrient content, particularly of lime, and may be regarded as an indicator of a true hard-water lake. Other species which have similar requirements and which may occur either together with or instead of Myriophyllum spicatum, are Potamogeton lucens (shining pondweed) and Ranunculus circinatus. Characteristic emergent shallow-water plants of the hard-water lakes are Carex riparia (great pond sedge), Carex acutiformis (lesser pond sedge), and Typha angustifolia (lesser reedmace). Less exacting and therefore more widespread in occurrence are Typha latifolia (great reedmace or cats-tail), and Sparganium erectum (bur-reed). These lakes of high nutrient content usually have varied and numerous species in their reedswamps, including Epilobium hirsutum (great hairy willow-herb), Lycopus europaeus (gipsy-wort), and Lythrum salicaria (purple loosestrife). Freshwater pools among sand-dunes are a special type of this category, often possessing many of the plants mentioned above but also characteristically Carex otrubae (false fox-sedge), and Ranunculus trichophyllus.

The size of the lake is yet another factor which influences the flora, and small areas of productive water, i.e., ponds often contain Potamogeton crispus (curled pondweed).

The plants common to most lakes of moderate nutrient content, that is those occupying the middle of the range of conditions, is Myriophyllum alterniflorum (alternate-flowered water-milfoil). Of the emergent species Carex vesicaria (bladder sedge) and Carex paniculata (panicled sedge) are frequently found. But rather than possessing distinct indicator species of their own, lakes of intermediate nutrient content generally have a somewhat impoverished version of the flora of hard-water lakes, the number of species diminishing progressively through the transition to soft-water lakes.

The only distinctive character of the soft-water lake is the presence of submerged rosette plants other than Littorella uniflora (shore-weed) (which is non-selective). The full complement of plants of this type includes Isoetes lacustris (quillwort), Lobelia dortmanna (water lobelia), and less frequently Isoetes echinospora, and Subularia aquatica (awlwort). Among 15 such lakes Isoetes lacustris was present in 10 of them, Lobelia in 8, Isoetes echinospora in 5 and Subularia in 3. By a process of elimination the flora of these lakes is numerically the smallest and although Carex rostrata is a ubiquitous sedge it takes on a dominant role in soft-water lakes where none of the other aquatic sedges survive. In similar manner Equisetum fluviatile (water horsetail) also comes into predominance.

It is interesting to see which species are the most widespread (non-selective) and for this purpose those species present at 20 or more lakes out of 50 lakes examined are listed below in order.

<u>Ranunculus flammula</u>	41	<u>Juncus bulbosus</u>	25
<u>Galium palustre</u>	35	<u>Caltha palustris</u>	24
<u>Carex rostrata</u>	34	<u>Potentilla palustris</u>	24
<u>Juncus articulatus</u>	34	<u>Epilobium palustre</u>	22
<u>Hydrocotyle vulgaris</u>	33	<u>Nymphaea alba</u>	22
<u>Menyanthes trifoliata</u>	31	<u>Lychnis flos-cuculi</u>	22
<u>Equisetum fluviatile</u>	31	<u>Glyceria fluitans</u>	21
<u>Eleocharis palustris</u>	30	<u>Nuphar lutea</u>	21
<u>Carex nigra</u>	25	<u>Lotus uliginosus</u>	21
<u>Littorella uniflora</u>	25	<u>Ranunculus repens</u>	20

Of course, these results are only provisional and for greater

accuracy a larger number of lakes should be analysed and for every lake included a plant list which is complete is necessary. These two pre-requisites point to the way for the work still needed on this survey: quality, i.e. completeness of the plant lists, should not be sacrificed for quantity, i.e. number of lakes visited.

Preliminary notes on the distribution of roses in Carmarthenshire

by Mrs. H.H.H. Vaughan

People are apt to shy off the subject of roses mainly perhaps because there is scant literature - and that little is mostly out of print -, and because opinions are not firm as to the validity or limits of some of Wolley Dod's varieties and forms. The main species, however, are not too difficult to determine. In Carmarthenshire there is an abundance of roses with many varieties and forms. The following notes briefly summarise the distribution of the species.

R. arvensis Huds. Frequent in most areas and usually in its typical form. It seems to have no discrimination in favour of either acid or calcareous soils, but it does appear to avoid exposure.

R. pimpinellifolia L. This occurs on some of the sand-dunes in the south of Carmarthen, but is absent, rather unaccountably, from most. A single plant grows in a crevice of Carboniferous Limestone rock at Carreg Cennen, some 18 miles inland.

R. stylosa Desv. A southern oceanic type which I have not found north of the Glamorgan coast. There is a record for Carmarthen in Welsh Flowering Plants but this is not substantiated by herbarium material.

R. canina L. The Lutetianae group, characterised by more or less uniserrate and glabrous leaflets, is much less frequent than the series of increasingly biserrate and hispid leaved types. The more differentiated types like syntrichostyla, eriosstyla and dumetorum occur with fair frequency, at least in the north-east of the county.

R. dumalis Bechst. Frequent in a range of forms throughout the county. In the Ithon valley in Radnor it is co-dominant with R. sherardii and almost displaces R. canina. A robust, hardy, and often magnificent species.

R. obtusifolia Desv. A northern species which I have not seen in South Wales but it may well occur further north.

R. villosa L. Wadley Dod makes var. pomifera to be wholly northern in native distribution but admits var. mollis as far south as Glamorgan. Welsh Flowering Plants records R. villosa for most Welsh counties, but I have not yet found it in Carmarthen. It is not easily distinguished from R. sherardii.

R. sherardii Davies Abundant, growing almost under any conditions: in hedge or scrub; in shelter or exposure; in acid or calcareous soil; and up to 302m (1,000'). Its varieties include pseudomollis, suberecta, resinosoides and Omissa (all det. Dr. R. Melville). Hybrids with R. canina occur and there is a very notable population of them at Llywel.

R. tomentosa Sm. Thinly distributed throughout the county. It seems indifferent as to soil, but I have seen it only in scrub. It may possibly resent the drastic pruning suffered by hedges.

R. rubiginosa L. Rare and, so far, recordings have been made from acid or neutral soil in the north and centre of the county contrary to what one would expect.

R. micrantha Borrer ex Sm. Thinly distributed but more frequent than R. rubiginosa. Of four recorded stations two are from the north-east on acid soil, and two from the limestone area of the south.

It is possible that scree and scrub addicts would be more frequent if less exposed to sheep grazing hazards: mutilated small plants, which are probably R. micrantha, occur in the heavily grazed limestone scree of Carreg Cennen, but on the whole the distribution of rose species in Carmarthenshire seems to be governed more by climatic than by any other single factor.

NEWBOROUGH WARREN

This meeting was arranged during National Nature Week in order to give members an opportunity of visiting the Nature Trail laid out in Newborough Warren by members of the B.S.B.I. (Welsh Region) in co-operation with the Nature Conservancy.

Although the 25th May turned out to be fine, attendance was very disappointing. The lack of support, however, did not damp the enthusiasm of the party, which crossed the Warren to the shore and from there walked to Ynys Llanddwyn. Here some time was spent examining the geology of the island, as well as the vegetation of the cliffs and beaches. The pleasures of this little excursion were unexpectedly enhanced by a most enjoyable tea provided by Mr and Mrs Trowbridge, in one of the old Pilots' Houses.

With such a varied flora at our disposal it is difficult to do more than mention a mere handful of the species we saw. Near Llyn Rhos Ddu, Equisetum x litorale was seen in abundance, though its presence here has only been recently discovered. Lemna trisulca, Utricularia neglecta, Hippuris vulgaris were seen; while on the walk across the dunes Saxifraga granulata, Vicia lathyroides, Pyrola rotundifolia subsp. maritima, Eleocharis uniglumis, E. quinqueflora and Carex serotina were noted. The attractive Viola tricolor subsp. curtisii and the hybrid Primula veris x vulgaris, growing here in very large, floriferous clumps, made a nice show of colour.

On the cliffs of Llanddwyn Inula orithmoides was seen in some abundance, with Spergularia rupicola and Asplenium marinum - the latter showing signs of severe frost damage after the extreme wintery conditions of a few months earlier. On the return journey Hyoscyamus niger and the very local little fern Ophioglossum vulgatum subsp. ambiguum were seen, besides other interesting species too numerous to mention.

Despite the fact that we had walked over six miles, we were all agreed that the excursion had been a most delightful and memorable one.

R.H.ROBERTS

THE 1963 FIELD MEETINGS

PEMBROKESHIRE

This meeting was on the Society's Field Meetings' programme and was for the week 15th to 22nd June. Altogether 15 members and three non-members attended the excursions, of whom half were from England. The average daily turn-out was about ten. A room had been engaged in Haverfordwest, the headquarters of the meeting, where members met and examined specimens in the evening.

Localities and habitats visited were: Dowrog Common; the valley of the Western Cleddau River near Letterston and Corscegyll; Carnmenyn on Mynydd Preselly where moorland, bog and bog pool vegetation were seen; acid rock cliffs at St. David's Head, Trevine and Newport; limestone cliffs at Stachpole Head; sand-dunes at Tenby Burrows, Broad Haven (Bosherston) and at 36m (120') altitude above limestone cliffs at Stackpole Warren, Whitesands Bay, St. David's and Newport Sands. A short account of the meeting will appear in the Proceedings.

T.A.W. DAVIS

LLANGORSE LAKE

On 6th July six members explored the swamps and fens bordering this lake which is second only to Bala Lake in size of the natural lakes in Wales. The party worked along the northern shore first, seeing Butomus umbellatus (flowering rush), Rumex maritimus (golden dock), and several pondweeds: Potamogeton crispus, P. perfoliatus, P. lucens and P. berchtoldii. After lunch the southern extremity of the lake was examined and dense stands of tall sedges proved most puzzling. Later determination of specimens showed that Carex acuta, C. aquatilis and C. elata were all present.

B. SEDDON

LOGGERHEADS AND LLANFERRES

The main purpose of this meeting held on 27th July was to examine the flora of two limestone areas in Denbighshire. The morning was spent looking at the vegetation of an old limestone quarry, beech wood, and limestone outcrop just east of Loggerheads. Some attention was paid to the apomictic groups Alchemilla, Hieracium and Rubus and to the recognition of a number of species of Compositae which usually prove difficult to identify. Of the more interesting species seen in

the morning Leontodon hispidus (rough hawkbit), Helianthemum chamaecistus (rockrose) and Geranium sylvaticum (blood-red cranesbill) were common; while Fentisnella amarella (felwort), Hypericum calycinum (rose of Sharon) and Inula conyza (ploughman's spikenard) were frequent. Geranium endressii and Corydalis lutea were found near the Inn.

In the afternoon the area around the Pot Hole Valley near Llanferres was explored. In the lanes Campanula latifolia, C. trachelium (bellflowers), Knautia arvensis (field scabious) Centaurea scabiosa and Geranium pratense (field cranesbill) were in full flower. In the grikes of the limestone pavement Thelypteris robertiana (limestone polypody), Cystopteris fragilis, Asplenium adiantum-nigrum, A. trichomanis, A. ruta-muraria, and several other ferns were abundant. Carduus nutans (musk thistle) made a fine display in a few places. On the way back to Llanferres a search for Paris quadrifolia was made in a small wood. Much to the leaders surprise a number of plants were found, although these had almost died down. The attendance at the meeting was seven. J. P. SAVIDGE

BORTH BOG

18 members and friends attended the meeting on 7th September. The party met on the Llancynfelyn - Yrslas road and proceeded in poor weather through the old peat-cuttings over-run by Phragmites to the centre of the raised bog.

The more interesting species seen were, in the peat-cuttings Eleocharis multicaulis, Osmunda regalis and flowering Utricularia minor; and in the uncut and quaking bog centre Rhynchospora alba in great abundance; Drosera anglica, D. rotundifolia and D. intermedia, flowering Andromeda polifolia and Oxycoccus quadripetalus. The hybrid Drosera x obovata, which has been recorded here, was searched for unsuccessfully. Also visited were some drier elevated hummocks which formerly bore pine and birch trees now destroyed by fire. This area was very different from the surrounding bog land in having a scrub of birch, rowan, holly, honeysuckle, bramble, and ferns which appear to be mostly the hybrid Dryopteris dilatata x spinulosa

Sphagna, though outside the scope of the B.S.B.I., are such

a conspicuous feature of Borth Bog that they could hardly be ignored. Twelve species were demonstrated: magellanicum, palustre, papillosum, the rare relict imbricatum for which this is one of the few surviving stations in Wales, tenellum, cuspidatum, pulchrum, recurvum, fuscum, fimbriatum, subsecundum and rubellum.

P.M. BENOIT

KENFIG BURROWS & ABERTHAW

Despite a cloudy start with light drizzle eight members left Cardiff for Kenfig Dunes where conditions improved to provide sunshine in the afternoon. Led by Mr. A.E. Wade we first looked at the north shore of Kenfig Pool where a sward of Littorella uniflora (shoreweed) was exposed. In the water Myriophyllum spicatum and Potamogeton gramineus were seen and a plant thought to be Luronium natans was reported for the first time at this site. In the dune slacks Pyrola rotundifolia subsp. maritima (wintergreen) was still in flower and on the dunes Erigeron acris (blue fleabane) and Anaphalis margaritacea (pearly everlasting) were also flowering. Lithospermum officinale was recognised though only in its vegetative state. In the saltmarsh at Aberthaw attention was concentrated on the glassworts of which four species were present. In the adjoining shingle Glaucium flavum (horned poppy) was seen.

B. SEDDON

WELSH REGION PROGRAMME OF FIELD MEETINGS FOR 1964

Full details will be sent later, or can be obtained from the Field Secretary, Mr. T.A.W. Davis, South Mullock, Haverfordwest, Pembs.

Sat., May 2nd. Tintern: woodlands in the Wye Valley.

Sat. & Sun., May 30th & 31st. Brecon: Llangorse Lake and the south Brecon escarpment at Craig-y-cilau. Leader B. Seddon.

Sat., June 20th. Bangor: fens and orchids. Leader R.H. Roberts.

Sat. & Sun., July 11th & 12th. The Gower.

Sat. & Sun., July 25th & 26th. Golden Grove, Carmarthen: Towyn Burrows, Carreg Cennen, Carmel woodlands. Leader Mrs. Vaughan.

Sat., October 3rd. Annual Meeting and Annual General Meeting at Bangor.

Sun., October 4th. Field meeting from Bangor.

Report of the Annual Meeting and Annual General Meeting held
in Cardiff on 28th September, 1963

Twelve members and eleven visitors, mainly teachers of biology in Cardiff and Glamorgan schools, attended the morning session at 11 a.m. The session opened with a welcoming address by Mrs. H.R.H. Vaughan, deputising for the Chairman, Dr. W.S. Lacey, who was in the United States. Mrs. Vaughan gave a summary of the past year's activities and remarked on the encouraging increase in membership there had been in Wales, adding that a continuation of this trend was very much hoped for.

There followed three talks, two of which were illustrated by slides. Dr. B. Seddon (National Museum of Wales) spoke about "Plants of the Welsh Lakes" in which he described and illustrated the variety of water plants and the types of lakes found in Wales. Professor R.C. McLean (Emeritus Professor of Botany in the University of Wales) then gave his "Reflections on Botany" in which he traced the development of the Society and the changing emphasis in the subject in recent years. With the publication of the "Atlas of the British Flora" now behind us he thought that B.S.B.I. members could turn their attention increasingly from plant distribution to biological studies of individual species. Dr. J.P. Savidge (University College of Wales, Aberystwyth) concluded the morning session with a talk on "Experimental studies on the evolution of plant species". He illustrated differences between closely related species having different chromosome numbers and other cases in which species pairs separated mainly by their distinct distributions could be regarded as extreme forms of a series showing continuous variation.

The afternoon commenced with the Annual General Meeting (reported below) and at 3 p.m. this was followed by a discussion on the theme "Aims and Methods in Field Botany". Dr. Savidge described and demonstrated the use of a punched-card index for the storage, sorting and retrieval of information and its application in constructing keys for critical species involving combinations of characters. Mr. A.E. Wade explained the use of a similar system for cataloguing information on the Welsh flora and Dr. Seddon suggested its usefulness for recording distribution on the basis of the National Grid squares. Discussion

continued during the tea interval and members' exhibits were on view in the Herbarium until the close of the meeting at 5 p.m.

Minutes of the Annual General Meeting

1. The Vice-Chairman, Mrs. H.R.H. Vaughan, M.B.E., took the chair and the meeting commenced at 2.30 p.m., ten members of the Society (resident in Wales) being present.
2. The report of the provisional committee which had been appointed to initiate the activities of the Welsh Region from its inception, was read by Dr. J.P. Savidge.
3. The Chairman's report, in the absence of Dr. W.S. Lacey in the United States, was read by the Vice-Chairman. Mrs. Vaughan's remarks were brief as she had already reviewed the main activities and aspirations of the Welsh Region in her opening address to the morning session for the benefit of our visitors.
4. Election of Officers and Committee Members. There being no further nominations to those published with the notice of the meeting, a proposal that the nominees be elected en bloc was made by Dr. M. Percival and seconded by Mr. A.E. Wade and carried unanimously. The Committee elected for the 1963-4 Session was:

Chairman: Dr. J.P. Savidge

Vice-Chairman: Mrs. H.R.H. Vaughan

Secretary: Dr. B. Seddon

Field Secretary: T.A.W. Davis

Members: *P.M. Benoit R.F. May
*W. Condry *Dr. W.S. Lacey
R.H. Roberts C. Sinker
*L. Larsen Dr. A.J.E. Smith

The names of the four senior committee members (i.e. those due to retire after one year) were drawn by the Chairman and are indicated by asterisks above.

5. Dr. Savidge then took the Chair.
6. Election of Representative on Council. By unanimous decision Mrs Vaughan was asked to continue in this office.
7. Any Other Buisness. The Chairman invited the views of those members present who had not been associated with the provisional committee.

during the past year on possible future lines of activity. Dr. M. Percival suggested that observations on floral biology and insect pollinators would be a very useful extension of activities. She also expressed the view that the practice of many schools in requiring pupils to make a collection of pressed specimens of wild flowers was not a stimulus to their interest in botany. In addition the practice was detrimental to the local flora in its emphasis on the rare or unusual specimen. Other speakers agreed that specimens of rare species from all their well-known localities were already represented often in duplicate and triplicate, in the major herbaria and in contrast representation and knowledge of the more common species was relatively lacking. Dr. Seddon suggested that instead of merely recording the presence of a species at a given place more attention should be given to its biology, e.g. time of flowering, or to recording the altitude of its occurrence or the habitat of the plant at each locality. Dr. Savidge referred to the subject of his talk which showed that variation within a species and between related species could easily be made a subject of study by simple but accurate observation. At the conclusion of this discussion the meeting closed at 3 p.m.

B. SEDDON

Botanical recorders for Welsh Counties

The subject of the purpose and function of recorders for the Welsh counties has been reviewed by the Committee. A number of recommendations have been made and certain slight alterations in the present system have been approved. Full details will be given in the next "Bulletin".

A new floristic publication for Wales

The Committee has decided to embark on the preparation of a book about the distribution of plants in Wales. This will be a companion volume to the present Welsh Flowering Plants. The new book will provide back-ground information about distribution, relating distribution to climate, soils, etc. The book will also contain detailed accounts about the main plant habitats in Wales. Final details have still to be decided, but it is hoped to give a full account in "Bulletin 2". The Committee hope that all members will help in the collecting of material and preparation of the book.

BOTANICAL SOCIETY OF THE BRITISH ISLES

WELSH REGION BULLETIN

The main purpose of the "Bulletin" is to inform Welsh members of the B.S.B.I. of the Welsh Region activities and the results of recent work on various aspects of the Welsh flora. Each issue will contain two or three articles, reports of meetings, notes on surveys, and items of interest to Welsh botanists. The "Bulletin" will be published at least twice a year.

The Welsh Region is engaged on a number of floristic surveys in Wales and in collecting data to publish a book on the Welsh flora. All members are invited to help by collecting material and assisting with the compilation of the book.

Further details about Welsh Region activities can be obtained from the Regional Secretary:

Dr. Brian Seddon,
Department of Botany,
National Museum of Wales,
CARDIFF.