

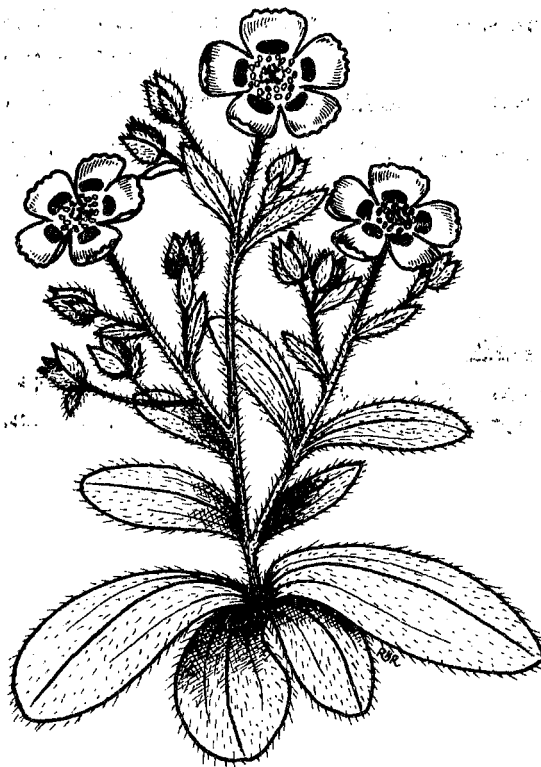
BOTANICAL SOCIETY OF THE BRITISH ISLES

# WELSH BULLETIN

Editors : R.H. Roberts and W.S. Lacey

No. 30. January 1979

Price: 15p



Spotted Rockrose

Tuberaria guttata

A rare plant found in the British Isles only  
in a few localities in Gwynedd and the west  
of Ireland.

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## Editorial

Our grateful thanks are due to all those who have sent in the interesting contributions which appear in this issue.

ANNUAL GENERAL MEETING, 1978. Report by Hon. Secretary.

The fourth Quadrennial meeting and sixteenth A.G.M. of the B.S.B.I. Wales was held at St. David's University College, Lampeter, Dyfed, on July 22nd 1978.

The Chairman, Mr S.G. Harrison, introduced Mr E.S. Edees, who gave a talk on 'Brambles, an introduction'. Mr Edees was well known by name and reputation to most of those present and his masterly introduction to this difficult group of plants must have inspired many to look at them more closely in future. The excellent slides accompanying his talk clearly showed the characters to look for.

Following this talk there was a lively interlude during which Mr A. Newton, the second of our duo of Rubus experts, was installed as President of a newly formed society of European batologists. This ceremony was conducted by Mr Herman Vanneron, from Holland, who presented Mr Newton and Mr Edees with aprons on which were printed the legends 'No one is Perfect', much to the amusement of all present.

During the Quadrennial meeting Mr Goronwy Wynne, for four years our Vice-Chairman, was nominated for the post of Chairman and was elected unopposed. Mr Wynne was also elected as Welsh Representative on Council.

Mr Wynne then took the Chair for the A.G.M. and expressed his appreciation for the work of the outgoing Chairman, Mr S.G. Harrison. This was heartily endorsed by the members present. He then went on to speak about the need to get young people involved in the work of the B.S.B.I. in Wales, and also urged Mr A. Newton and Mr E.S. Edees to provide help for those people just taking up the study of Rubi.

The Secretary then gave his report of the previous year's activities. He first extended deepest sympathy to Mrs I.M. Vaughan on the sad death of her husband, and then sent best wishes to Professor W.S. Lacey for a full recovery from his recent illness. He drew attention to the fact that the Society has lost the services of Mrs Parr and Mrs D.E.M. Paish, who have both resigned from the Committee for Wales. He also announced that Mrs I.M. Vaughan has resigned as vice-county recorder for Carmarthen after 17 years' service. All three ladies were warmly thanked for all the work they had put in on behalf of the Society. Members were also informed that Mr S.G. Harrison, who was for the last four years our Chairman and Welsh Representative on Council, has decided not to seek immediate re-election to the Committee for Wales. He, too, was warmly thanked for the invaluable service he had given to the society over many years.

Following a decision made at the last A.G.M. Mr M. Porter, for many years the Hon. Secretary, had been co-opted on to the Committee for Wales. Mrs D. Pugh had been appointed vice-county recorder for Montgomery and Mr R.D. Pryce had been nominated to succeed Mrs Vaughan as recorder for Carmarthen (since ratified by the Records Committee).

Members were reminded that two field meetings were held after last year's A.G.M: at Harlech dunes, led by Mr D. Brown and at Newport Rubbish tip, led by Mr T.G. Evans. Two field meetings had also been held this year: at Gower Cliffs, led by Dr Q.O.N. Kay and at Rhosgoch Bog, led by Miss A.C. Powell and Mr R. Woods. Gratitude was expressed to all the leaders for the effort and care that had

obviously gone into making these meetings successful. Members were also reminded that a four-day field meeting devoted to the study of Rubi was taking place under the guidance of Mr A. Newton and Mr E.S. Edees. These specialists were both thanked for their help and time so generously given.

Mrs Mary Briggs, Hon. General Secretary of the Parent Society, was welcomed to our A.G.M. and she conveyed the best wishes of the Parent Society to the Welsh Members.

Among other items, the Secretary reported that:

1. The Committee for Wales together with the Nature Conservancy Council and several other organisations successfully opposed a plan to extend a refuse tip on Llanllwch bog just west of Carmarthen. This bog is one of only three sites for Andromeda polifolia (Bog Rosemary) in Carmarthen and one of the most southerly in Britain. The bog is now secure for conservation purposes.
2. Attempts were still being made to produce a Welsh Language version of the Conservation Poster.
3. It was proposed to initiate a Welsh survey on flower-colour polymorphism under the guidance of Dr J. Duckett and Dr Q.O.N. Kay. A card and notes were being produced and it was hoped that these could be circulated soon.
4. A new Constitution for B.S.B.I. Wales has been drawn up (A copy is enclosed with this Bulletin).
5. An appeal was made for members to contribute articles or notes, large or small, for future issues of the Welsh Bulletin.

After the Secretary's Report, new Officers and Committee Members were elected to the Committee for Wales (see below and overleaf).

After tea, Dr M.E. Gillham gave an illustrated talk on 'Plants of Glamorgan'. A precis of Dr Gillham's talk is included elsewhere in this Bulletin.

In the evening members were given the opportunity of examining specimens of some of the Rubus species that had been mentioned in Mr Edees's talk. Specimens of the various species of Oenothera that have been recorded for Wales were also exhibited. Mr S.G. Harrison showed a selection of colour slides of North American wild flowers.

Dr M. Gillham also showed slides of Gower plants, and copies of her recent book 'The Natural History of Gower' were on view.

Following the election of Officers and Members, the composition of the Committee for Wales for 1978-79 is as follows:

Chairman	:	Mr G. Wynne
Vice-Chairman	:	Mr M. Porter
Secretary	:	Mr R.G. Ellis
Minutes Secretary	:	Dr J.G. Duckett **

## Committee Members

Dr M.E. Gillham*	Mr S.B. Evans
Mr T.A.W. Davis*	Dr Q.O.N. Kay
Mrs J.A. Green*	Mrs M.E.R. Perry
	Prof. W.S. Lacey**

\* Retiring member

\*\* Dr Duckett and Prof. Lacey have, for personal reasons, since resigned from the Committee.

The field meeting on Sunday was ably led by Mr A.O. Chater, while Mr A. Newton and Mr E.S. Edees were on hand to explain any brambles that were met with. During a very wet morning a disused railway line south of Lampeter was visited and in the afternoon, which, fortunately was much drier and brighter, a visit was made to Tresaith beach and cliffs. A short account of this and the four day Rubus meeting will appear in Watsonia.

ANNUAL GENERAL MEETING, 1979

The 17th Annual General Meeting will be held at the National Museum of Wales, CARDIFF, on July 7th, 1979.

PROGRAMME

<u>July 7th</u>	1.00pm	Meeting of Committee for Wales
	2.30pm	Botanical Recording in Wales - the last 500 years - R.G. Ellis
	3.30pm	A.G.M.
	4.00pm	Tea
	4.30pm	Botanical Recording in Wales in the 1980's. Dr F.H. Perring
	6.30pm	Cold Buffet
	7.30pm	Exhibition and Discussion in Dept. of Botany, National Museum of Wales

Members are invited to bring a selection of their colour slides or any other interesting botanical exhibits.

July 8th                      Field meeting to various sites in the Vale of Glamorgan.  
Leader: to be arranged

Members are asked to arrange their own accommodation in Cardiff. A list of hotels within walking distance of the Museum is available from the Hon. Secretary.

Nominations for membership of the Committee should be made, in writing, with the signature of the nominee, before May 28th. For details of the AGM please apply to Hon. Secretary, Gwynn Ellis, Esq., Department of Botany, National Museum of Wales, CARDIFF, CF1 3NP, before June 16th enclosing S.A.E.

FIELD MEETINGS, 1979

SATURDAY, 2nd June, MWNT CLIFFS and GWBERT DUNES, DYFED (Cardigan v.c. 46).  
During the meeting the vast Scilla verna population at Mwnt and the interesting

dune flora at Gwbert will be visited.

Leader: A.O. Chater.

For details please apply to Mr R.G. Ellis, Dept. of Botany, National Museum of Wales, CARDIFF, CF1 3NP, before May 12th, enclosing S.A.E.

SUNDAY, 8th July, (In conjunction with the B.S.B.I. Wales Annual General Meeting in Cardiff on Saturday 7th July). VALE OF GLAMORGAN (v.c. 41). During this meeting visits will be made to some of the many interesting sites in this area.  
Leader: To be announced.

For details please apply to Mr R.G. Ellis, Dept. of Botany, National Museum of Wales, CARDIFF, CF1 3NP, before June 16th, enclosing S.A.E.

SATURDAY, 28th July, SENNI VALLEY, POWYS (Brecon v.c. 42). During the meeting a fairly typical mountain stream will be followed up to its source and various wetland habitats will be looked at.  
Leader: M. Porter.

For details please apply to Mr R.G. Ellis, Dept. of Botany, National Museum of Wales, CARDIFF, CF1 3NP, before July 7th, enclosing S.A.E.

SATURDAY, 18th August, PENN'S MOSS, CLWYD (Denbigh v.c. 50). The object of this meeting is to record the plants in a variety of different habitats in this relatively underworked area.  
Leader: J.M. Brummitt.

For details please apply to Mr R.G. Ellis, Dept. of Botany, National Museum of Wales, CARDIFF, CF1 3NP, before July 21st, enclosing S.A.E.

PLANTS OF GLAMORGAN: precis of a paper delivered to the Welsh section of the B.S.B.I. A.G.M. at Lampeter on 22nd July, 1978, by Mary E. Gillham

(The substance of the paper depended principally on colour slides.)

The gem of Glamorgan is Gower, with its wealth of southern rarities on cliff and dune, but, even without this region, the county is botanically the most varied part of Wales. Geology and coastal topography are the main factors determining its diversity. The rocks are younger than in most of Wales, with the Carboniferous and Jurassic periods furnishing different types of limestone. These and non-calcareous rocks appear on the sea cliffs and there are wide sweeps of sand dune, dyked alluvial flats and saltmarshes.

This paper does not attempt to catalogue the rarities, but pursues a 'whistle stop tour' of "Mainland Glamorgan" (i.e. excluding the Gower Peninsula) for a brief look at some contrasting habitats.

The triple county does not conform with the traditional idea of Wales as a land of misty mountains and rain-soaked peats, but it has its share of these. Durmast oakwood, dominant before the need of charcoal for iron smelting, persists as remnants on steep valley sides, but the moorland which replaces most of it has many species of interest, with petty whin (Genista anglica) and ivy-leaved bellflower (Wahlenbergia hederacea) throughout, cranberry (Vaccinium oxycoccos) extending right through to the south and crowberry (Empetrum nigrum) confined to the north.

Colourful features of the streams are the musk (Mimulus moschatus) which lost its scent and a red-flecked version of the monkey flower (a M. guttatus hybrid).

Run-down pastures, the despair of farmers and delight of botanists, produce globe flowers (Trollius europaeus) in the north, growing with marsh valerian (Valeriana dioica) and orchids on drier humps of kingcup-filled quagmires (Caltha palustris). Specialities like chicory (Cichorium intybus) and opium poppy (Papaver somniferum), persist after introduction on road verges and green alkanet (Pentaglottis sempervirens) strays far from the gardens where it must have originated. A rarity on a Rhondda coaltip is stagshorn clubmoss (Lycopodium clavatum): much commoner on tips and railway embankments throughout the county is the North American pearly everlasting (Anaphalis margaritacea), possibly first introduced on graves.

The Vale of Glamorgan is the so-called "Garden of Wales", a little bit of the English Lowlands, but has never been farmed to full capacity and is full of wooded dells and unkempt hedgerows. Pick-a-back plant (Tolmiea menziesii) is established at the edge of an elm-wood brimming with wild daffodils (Narcissus pseudo-narcissus) and there are scrub-grown fields bright with cowslips (Primula veris) and dyer's greenweed (Genista tinctoria).

Dredging by anglers may have destroyed the only pillwort (Pilularia globulifera) in the latter seventies, but orange balsam (Impatiens capensis) persists alongside the River Ely in tall swards of monkshood (Aconitum anglicum) peppered with meadow saxifrage (Saxifraga granulata). Three contrasting forms of greater hornwort (Ceratophyllum demersum) occur with bogbean (Menyanthes trifoliata) in small ponds and a thriving colony of wall germander (Teucrium chamaedrys) persists on an old quarry face.

Carboniferous limestone near Dinas Powis yields herb Paris (Paris quadrifolia), star of Bethlehem (Ornithogalum umbellatum) and giant hogweed (Heracleum mantegazzianum) topping 12 feet and more. The sterile Welsh polypody (Polypodium australe v. cambricum) was re-found here in 1978 after 70 years of believed extinction. Outposts of mountain everlasting (Antennaria dioica) survive on north-eastern and south-western limestone outcrops with horseshoe vetch (Hippocrepis comosa), rock rose (Helianthemum nummularium) and others.

Wooded valleys in the dolomitic limestone of the south-east contain solomon's seal (Polygonatum multiflorum) and bistort (Polygonum bistorta); fen peat fed by tufa springs bears broad-leaved cotton grass (Eriophorum latifolium) with fragrant orchid (Gymnadenia conopsea) and red rattle (Pedicularis palustris).

Cliffs and screes of the northern Carboniferous limestone are noted for their rare whitebeams, the endemic Sorus leyana, known only here, and the slightly more widespread S. porrigentiiformis and S. rupicola. Where caves penetrate this limestone karst country, the gorges shelter bird's nest orchid (Neottia nidus-avis) and the greater butterfly orchid (Platanthera chlorantha). Mossy saxifrage (Saxifraga hypnoides) is found only in these higher rainfall areas, with Cardamine impatiens, Carex montana and Melica nutans, but rue-leaved saxifrage (S. tridactylites) and stemless thistle (Cirsium acaule) occur on both northern and southern limestones.

Here, too, is much of non-angiospermous interest, including a liverwort of wet rock ledges (Preissia quadrata), and the wood hedgehog and morel fungi of the woodlands (Hydnum repandum and Morchella esculenta). Tremiscus helvelloides was a new record for Wales in 1973, but cropped up simultaneously in a number of sites associated with old mine timbers and tramway sleepers imported 'green' from the Baltic.

Moving back southwards into the Coalfield, we find a snippet of North Wales in the north-facing corrie at Craig y Llyn under Glamorgan's highest and wettest point. Pennant sandstone crags here support stone bramble (Rubus saxatilis), rose-root (Rhodiola rosea), cowberry (Vaccinium vitis-idaea), meadow rue (Thalictrum minus), parsley fern (Cryptogramma crispa), filmy ferns (Hymenophyllum spp.) and fir clubmoss (Huperzia selago). The smaller of the oligotrophic lakes contains water lobelia (Lobelia dortmanna), which can behave as a land plant if water level drops, with flower stems of 4 inches instead of 4 feet, narrow-leaved bur-reed (Sparganium angustifolium) and quillwort (Isoetes echinospora).

Some of these reach their southern geographical limit here. Southern species like yellow whitlow grass (Draba aizoides) reach their northern limit on the south-facing cliffs of Gower, and eastern oxes, like flowering rush (Butomus umbellatus), reach their western limit in Glamorgan, so this favoured county is a meeting point of several regional floras.

Down through West Glamorgan, with its royal fern (Osmunda regalis) quite common in hedgerows, we come to another habitat of regional importance in Crymlyn Bog, with its bladderworts (Utricularia spp.), mare's-tail (Hippuris vulgaris) and greater spearwort (Ranunculus lingua), extending out along the Tennant Canal. One of the lakes in the new West Glamorgan Country Park at Margam is bordered by two aroids: sweet flag (Acorus calamus) and the fully naturalised American skunk cabbage (Lysichiton americanus).

Only when we learn of the exultation in Gwent at the acquisition of a new county record - the humble marram grass (Ammophila arenaria) - do we fully realise how fortunate we are, botanically as well as scenically, in our wide range of seascapes. Sea stock (Matthiola sinuata) is a species which re-appeared on Crymlyn Burrows in the west in 1967 after 56 years of supposed extinction, and has since multiplied and spread to other sand dune systems.

Kenfig Burrows is nationally famous for rarities such as the fen orchid (Liparis loeselii) and round-leaved wintergreen (Pyrola rotundifolia ssp. maritima). The mudwort (Limosella aquatica) has not been seen in Kenfig Pool recently, but others of note there are lesser water plantain (Baldellia ranunculoides) and Potamogeton perfoliatus.

Sea buckthorn (Hippophae rhamnoides) has as firm a hold on the Merthyr Mawr dunes as has Japanese knotweed (Reynoutria japonica) almost everywhere else. The buckthorn is spread around by fieldfares and redwings spitting up viable seed in crop pellets, and by woody runners which grow to lengths of many metres. Any part of the stem can put out adventitious roots, if kept moist, and the variable coralloid root nodules contain nitrogen-fixing micro-organisms. Birthwort (Aristolochia clematitis) has persisted here since its discovery in 1937. In the



hot summer of 1976 it was able to flower and fruit producing viable seed in the golf ball sized capsules, some of which germinated the following spring.

Dunraven cliffs, which are heavily grazed by sheep, yield three unpalatable species in profusion - stinking hellebore (Helleborus foetidus), spurge laurel (Daphne laureola) and stinking iris (Iris foetidissima).

Lias clifftops along the fourteen miles of the "Heritage Coast" are notable for their purple gromwell (Lithospermum purpur-caeruleum), clustered bellflower (Campanula glomerata), pepper saxifrage (Silaum silaus) and two unusual thistles, the woolly and the tuberous (Cirsium eriophorum var. britannicum and C. tuberosum). Dry faces support a long established colony of gilliflower stock (Matthiola incana), incredible thickets of lush sea cabbage (Brassica oleracea) and occasional sea spleenwort (Asplenium marinum) in crevices. Wayfaring tree (Viburnum lantana) goes only as far west as the Mumbles.

Maidenhair fern (Adiantum capillus-veneris) is scattered in cliff seepages throughout the 14 miles and on eastward almost to Barry, while two of the tufaceous streams have colonies of opposite-leaved pondweed (Groenlandia densa). The limestone island of Flatholm supports an increasing population of wild leek (Allium ampeloprasum), while crow garlic in two forms grows on both Trias and Lias, Allium vineale var. compactum often double-headed and much commoner than A.v.v. vineale.

The brackish lagoon at Aberthaw is filled with beaked tasselweed (Ruppia maritima) with a little brackish water crowfoot (Ranunculus baudottii var. marina) and marginal sea clover (Trifolium squamosum) and curved hard grass (Lepturus incurvus); but the sea pea (Lathyrus japonicus), sea kale (Crambe maritima) and possibly also the yellow horned poppy (Glaucium flavum) have gone. Sea cudweed (Artemisia maritima) is conspicuous in the saltmarsh here, slender hare's ear (Bupleurum tenuissimum) occurs further east.

Dykes of the coastal levels east of Cardiff are a western refuge for frogbit (Hydrocharis morsus-ranae), flowering rush, one of the last colonies of which got buried under a rubbish, and arrowhead (Sagittaria sagittifolia), which sprouts different kinds of shoots and leaves from the winter buds or turions, depending on water depth. Associates of this in Cardiff's canal nature reserve are yellow lily (Nuphar lutea), with delicately crinkled underwater leaves and stout, air-filled rhizomes, and the rampageous Himalayan balsam (Impatiens glandulifera) with its explosive capsules, extra-floral nectaries and propensity for putting out adventitious prop-roots in strategic positions.

The decline of Liparis loeselii (L.) Rich. var. ovata on Towyn Burrows, Dyfed.  
I.M. Vaughan

The first finding of Liparis loeselii in v.c. 44 was by A.E. Wade in the sand-dune complex of Towyn Burrows, Pembrey, in 1930. This was well before afforestation began and before the construction of the Air Field which has now become Eastwoods Poultry Farm.

I know nothing of the status of the Fen Orchid between 1930 and September

1956 when M. Proctor and I saw about 40 plants in a dune slack to the seaward of the present target area for R.A.F. bombers. From then onwards it has been recorded frequently by a number of particularly interested botanists and its presence, in due season, came to be taken almost for granted.

Liparis loeselii has a relatively long period of detectability from June to September or longer, since its little brown capsules are easier to spot than the obscurely yellowish flowering spikes. Here it occurs only in perennially damp and more or less calcareous dune-slacks, characteristically in association with Epipactis palustris, Equisetum variegatum, Salix repens, and less frequently, Gentianella uliginosa: it seems intolerant of much competition and where intrusive species such as Salix repens, Potentilla anserina or the moss, Acrocladium cuspidatum assume dominance, it does not persist.

In September 1956 Charles Jeffery did a survey for the Nature Conservancy of the whole dune area, north of what was already afforested or had been ploughed in readiness for planting. He found the Liparis widely distributed over this northern area, rather more widespread, but substantially in the same groups of slacks which have come to be regarded as the "Classic Sites". Planting has not been carried much further north because this area of the dunes was taken over by the R.A.F. for target practice, a change of usage that has perhaps saved the Liparis until recently.

On July 26th 1964, on the occasion of a B.S.B.I. Field Meeting, the Fen Orchid was seen, in good numbers, in the slacks lying on either side of the track between the two Observation Towers, together with frequent Gentianella uliginosa and also G. Amarella. A few days earlier a smaller party had noted the robust condition of the Liparis when measurement of the tallest stem gave a height of 17 cms. with a flowering spike of 13 flowers and a leaf length of 6.8 cms.

On July 22nd 1967 about 15 plants were seen in the slacks adjoining the track between the towers, the plants on that occasion being all in fruit.

On a second visit on August 22nd about a dozen heads were found in a slack well south of the seaward tower. In 1970 no Liparis was seen on either a June or an August visit. In 1971 a party of four of us found six stems only in a slack close to the landward tower and found no more in a whole day's search. Since 1971 no Liparis has been reported on Towyn Burrows despite repeated searches, culminating in a concentrated effort on September 2nd 1978 by four single-purposed botanists.

One can only speculate as to the causes of the decline and suggest a few points.

1. Pollution from low flying aircraft, bombing and helicopter landing seems to be ruled out as a cause by the fact that other orchidaceous species have not been affected, nor have other species of specialised habitat such as Gentianella uliginosa, Pyrola rotundifolia, or Centaureum littorale. Indeed on the last day of sighting the Liparis we noted the Gentianella and Spiranthes spiralis as being particularly vigorous.

2. Possible leaching out or over-absorption by other plants of the calcareous element in the slacks.

In earlier years of observation the hepatic Preissa quadrata, a definite calcicole, was abundant in the slacks behind the foredunes. In 1955 I noted it as forming rings on the bare, wet sand. The slacks held also a much greater population of Sagina nodosa than they do now. I have not seen the Preissa for years and these slacks are now much invaded by Hippophae rhamnoides.

3. Change of usage? Presumably the whole area was consistently grazed before the establishment of the present regime. I was told in 1955 that it was formerly heavily sheep-grazed and that rabbits were present. In 1955 there were neither sheep nor rabbits, only a few hares which, as my informant observed "did very little harm and were pleasant beasts". Now the rabbits are back, but are being destroyed by Myxomatosis. There is no doubt that the growth of coarser grasses and other vegetation has greatly increased to the endangerment of less competitive plants, but the fact remains that there still do exist slacks apparently suitable to the requirements of Liparis and these are still furnished with its characteristic associates.

4. Invasion by Hippophae rhamnoides. This must be regarded as a menace to possible restoration rather than the actual cause of loss. Since this beautiful but disastrous shrub was introduced as a sand binder it has, with its tremendous powers of reproduction, both vegetative and sexual, reduced some areas to impenetrable thorny scrub; it is now a severe threat to all remaining open dunes and slacks. The need for control is therefore urgent.

5. Lowering of the watertable. Formerly one regarded it as axiomatic that large areas of Towyn Burrows would be under an inch or so of water in winter conditions (I call to mind the plight of a Ministry Official trying to carry out an inspection in January in office clothes - and shoes!), but I have no systematic records. We do not know the water nor the drainage requirements of the Liparis but I can record that the late J.F. Thomas of Laugharne kept one plant for three years in a jam pot where it duly flowered and produced seed; jam pot conditions would seem to predicate a state of somewhat stagnant impregnation.

Formerly there were populations of Baldellia ranunculoides, Ranunculus baudotii, R. trichophyllus, Glechoma quinqueflora and Carex serotina, which now seem to have dried out, though the Baldellia quickly reappeared in a small pool scraped out alongside the Commission's new road to the northward through the Forest.

Possibly when the new slacks rapidly forming at Towyn Point have sufficiently matured we may hope for a return of the Liparis, for Towyn has what Africa had - "Semper aliquid de novo".

I am indebted to many who have joined in search or who have supplemented my notes: especially to T.A.W. Davis, D. Davies, S.N. Tallowin and Mrs Tallowin, J. Donovan and Mrs. Donovan.

Fieldwork in Denbighshire v.c. 50 in 1978  
J.M. Brummitt

In spite of the rain and grey skies of a wet summer, the 1978 field season produced an interesting and varied crop of records from the vice-county. The main aim of the eight field meetings held this year was to widen our knowledge of the county's flora in areas where recording in the past has been rather thin. Most of the meetings were explorations of new or little-known areas, but some were to continue surveys started in recent years or to follow up earlier reports.

This year the field meetings concentrated on the Maelor, the region extending eastwards from Wrexham, between Cheshire and Shropshire, across the lowland plain to within 3 km of Whitchurch.

The first meeting on the Maelor was at Hanmer. Hanmer Mere has a large flock of Canada geese and other waterfowl, and its banks were grazed to the appearance - and interest - of a well kept lawn, but hereand there, among bushes and in places where the geese did not venture, there were some more interesting plants. On the west side of the mere, two umbellifers grew together, the slender Oenanthe fistulosa and the more robust Cicuta virosa. At the ends of the lake in small areas of alder were Carex vesicaria, Lysimachia vulgaris and Ribes nigrum, growing among sedges and a tangle of Solanum dulcamara. There were no geese at the nearby Llyn Bedydd and the lakeside vegetation was much more extensive. This small lake is encircled completely by alders, and the bittersweet festooned the trees to a height of 10 feet or more, suggesting an almost tropical lushness. In the open water Nymphaea alba was abundant, but with alders crowding the edges, the fringing vegetation was restricted to an area of carr at one side. There Carex acutiformis grows densely with C. paniculata and C. pseudocyperus. Among these sedges there were Scutellaria galericulata, Cicuta virosa, Typha latifolia and Calamagrostis canescens. The last is a first record for the county.

Another meeting was held at Iscoyd, near Whitchurch. Fortunately the rain stopped as we approached Bubney Moor, which despite its name turned out to be a very wet and dense alder wood along the sides of the Red Brook. Among the alders were Frangula alnus and Prunus padus, while beneath them grew a rich mixture of such swamp-loving plants as Iris pseudacorus, Sparganium erectum, Filipendula ulmaria, Galium palustre, Ribes nigrum and R. sylvestre, with Carex paniculata and Crepis paludosa. The latter grows frequently near waterfalls and steep stream-sides in upland parts of the county, but here it extends considerably the range shown in the 'Atlas', though now we know it from Hafod Wood NR near Wrexham too. In this wet wood there were several clumps of large, yellow-green, sedge-like shoots, unfortunately without flowering spikes. These have been provisionally identified as Scirpus sylvaticus: if confirmed in flower, this will be the second county record.

The third Maelor meeting was at Penn's Moss, a huge lowland moor on the Shropshire border. It has been considerably affected by peat-cutting, by fires and by afforestation, but it produced a useful species list. One of the first plants noted was Geranium pusillum, growing in the track leading to the moss. We followed the disused railway, noting such typical ballast plants as

Chaenorhinum minus, Linaria repens and Epilobium adenocaulon. This north end of the moss is relatively high and dry, and among the invading birches and willows we noted such typical species as Erica tetralix, Eriophorum vaginatum and E. angustifolium, Molina caerulea, Vaccinium oxycoccos and Dryopteris carthusiana. At the edge of the moss the ditches were fringed by Frangula alnus and Carex pseudocyperus. We returned from Whixall along the towpath of the Shropshire Union canal and saw species which are abundant in the county only on this lowland plain - Glyceria maxima, Rumex hydrolapathum, Lycopus europaeus, Carex paniculata and Trifolium hybridum. Later in the summer an hour's visit to the southern end of Penn's Moss produced further new records including Agrostis gigantea, Tilia cordata and Andromeda polifolia. These days in the Maelor brought out the differences between this area and the other parts of the county; they produced many new records for particular 10 km squares as well as more outstanding ones; and they emphasised how much more fieldwork still has to be done.

In the last few years Mr Maurice Bunn has made some noteworthy finds at Minera, near Wrexham, and in June he led a small party of BSBI members to this area of old limestone quarries and lime workings. It was a most pleasant day - the one meeting under blue skies and a hot sun. We saw a large area of semi-natural grassland and woodland on limestone, with a rich and interesting flora. Among many other species including Monotropa hypopitys, Convallaria majalis and Carex muricata, the orchids were outstanding; we saw Coeloglossum viride in profusion, Gymnadenia conopsea, Orchis mascula, Epipactis helleborine, Listera ovata, Dactylorhiza fuchsii, D. praetermissa and some putative hybrids with D. purpurella ancestry.

As well as these all-day meetings, there were evening meetings with smaller objectives. On the first of these, we hoped to confirm an old report that Viola canina grew on the remains of the sand dunes in Kinnel Bay. We failed to find it, but we did note the remaining dune plants. Now that the sea wall extends without a break from Rhyl to Abergele and development goes on apace, it is more than likely that many will be lost from the county in the next few years.

At the end of last summer we visited a wetland site near Denbigh and saw several willows and sedges, not easily identifiable at that time of year, so one evening in May we revisited the area to identify these species. There were eight species of willow, Salix cinerea, S. caprea, S. viminalis, S. fragilis, S. pentandra, S. repens, S. alba and S. triandra. The last of these is probably a first county record. Although some of these trees had clearly been planted along field edges many years ago, there was nothing to suggest that they were not natives of the area. Among the seven sedges in flower were Carex hirta, C. vesicaria, C. riparia and C. acutiformis. Besides these we noted Valeriana dioica, an uncommon plant in the county, and an unfamiliar looking grass, which proved to be x Festulolium braunii, a hybrid between Festuca pratensis and Lolium multiflorum; this seems to be a new record for Wales.

The last of the evening meetings was to look at wetlands on the Plas Newydd estate at Trefnant, near Denbigh. There are several ponds and streamsides on this extensively farmed estate. It was interesting to see there was a wide range of common wetland plants and also such restricted ones as Silene silaus, Sison amomum, Senecio erucifolius, and Carex pseudocyperus. Once again an unfamiliar grass was abundant in one of the marshes. This was identified as Poa palustris,

another first record for the county.

The last of the year's field meetings was really a reconnaissance in readiness for next year's meetings in yet another under-worked part of the county, the large area to the south of Llangollen. This was another day of heavy non-stop rain, but some useful recording was done. On a shingle bank on the Afon Tanat, four conspicuously different mints were growing together. They have been determined by Dr R. Harley as M. x verticillata, M. x piperita, M. x villosa and M. arvensis.

In retrospect it was a useful year; some 1,250 records were added to the county index, and five species to the county list. Next year we hope the survey of the county's flora will go on and that other BSBI members will join in. It is clear that we shall have to look at the wet end of Penn's Moss, and at the high ridge of the Berwyns, as well as the low ground in the Tanat and Ceiriog valleys. It should be another good year - and perhaps it will not rain so much.

PROFESSOR P.W. RICHARDS, C.B.E. - AN APPRECIATION  
William S. Lacey

Paul Richards celebrated his 70th birthday in December 1978 and it is therefore appropriate to include in this issue of the Bulletin a few lines in appreciation of his contributions to botany and conservation in Wales.

Although born in Walton-on-the-Hill, Surrey, his early boyhood was spent in Cardiff, where his father was Deputy Chairman of the Welsh National Insurance Commission (the forerunner of the present National Health Service).

Paul attended Cardiff High School, but his first 'mentor' in botany was Eleanor Vachell of Cardiff, a very good field botanist whose herbarium is now in the National Museum. She it was who introduced him to Dr G.C. Druce, resulting in his joining the Botanical Exchange Club (now the Botanical Society of the British Isles) in 1919. Another botanist who strongly influenced his development in these early formative years, and particularly his life-long interest in the study of bryophytes, was Arthur Wade who in 1920 had moved from Leicester to take up an appointment in the Herbarium of the National Museum of Wales. As early as 1920 also Paul made a special pilgrimage to consult the great Welsh bryologist, Daniel Jones of Harlech. How surprised that worthy must have been to be confronted by a young lad so knowledgeable about mosses and liverworts! At any rate, wasting no time, Daniel Jones enrolled him on the spot as a member of the Moss Exchange Club, later to become the British Bryological Society, of which body Paul was to become President in 1949-51 and again in 1978, and is now its longest-standing member.

As a result of a family move to London, when his father was transferred to a post in the Ministry of Health, he became a pupil at University College School and then from 1925 to 1927 was a student in the Department of Botany, University College London, before going on to the University of Cambridge. It is said that at University College London, at the age of seventeen, he was soon instructing his Professors - Oliver of palaeobotanical fame, and Salisbury, later Director of the Royal Botanic Garden, Kew in all the intricacies of mosses!

Many years later, while at Bangor, he wrote a delightful Book of Mosses, published as a King Penguin in 1950.

Paul Richards has always been a great traveller and in 1929, while still an undergraduate at Cambridge, he started his work in tropical ecology with a visit to British Guiana, as it was then. Here he first met T.A.W. Davis, now resident in Pembrokeshire but then a young Forest Officer and the two have remained close friends ever since.

In Cambridge he obtained his M.A. in 1934 and Ph.D in 1936, was a Fellow of Trinity 1933-37, University Demonstrator in Botany 1938-45 and University Lecturer 1945-49.

In 1949 he was appointed to the Chair of Botany in the University College of North Wales, Bangor, holding this post until his retirement in 1976 and becoming Vice-Principal of the College in 1965-67.

While at Cambridge and subsequently while at Bangor, Professor Richards continued to travel and study widely in the tropics and soon became known internationally as an authority on tropical ecology. In 1952 his book The Tropical Rain Forest was published and remains the classic standard work in this field; later he wrote a more popular work, The Life of the Jungle, published by McGraw-Hill in 1970. In 1954 the University of Cambridge conferred the higher doctorate of Sc.D. upon him.

Professor Richards has had a long association also with the British Ecological Society, serving as Editor of its Journal from 1956 to 1963 and as President from 1961 to 1963; he is now an Honorary Member of the Society.

In Bangor his other botanical work took many forms. Publications by himself and with research students dealt with mosses, liverworts, ferns and flowering plants in Wales - for example, Campylopus introflexus, Southbya nigrella, Hymenophyllum tunbrigense, Silene acaulis, Saxifraga oppositifolia, Juncus acutus. He also contributed the section on the Juncaceae in the Clapham, Tutin & Warburg Flora of the British Isles 1952. His teaching included field excursions to the dunes of Newborough Warren and Morfa Harlech, the sessile oakwoods of Meirionnydd, the base-rich crags of Cwm Idwal and Cwm Glas, when many an undergraduate was infected with his passion for plants. Supervision of research students for higher degrees produced a whole succession of ecologists, including the present Chief Scientist of the Nature Conservancy Council, Dr D.A. Ratcliffe.

His voluntary committee work was much concerned with nature conservation in Wales. He contributed time and energy to the work of the National Parks (now Countryside) Commission; he was Chairman of the Nature Conservancy's Committee for Wales at a time when many important areas in the Principality needed special attention; he was a founder member of the North Wales Naturalists' Trust, a Council member since its inception and its Chairman 1969-72.

For his public services to conservation he was awarded the C.B.E. in the Birthday Honours List of 1973; and in 1976 upon his retirement from the Chair of

Botany at Bangor, the University of Wales conferred upon him the title of Professor Emeritus.

Intrepid explorer of unknown jungles, distinguished writer of academic and popular books, authoritative teacher, wise counsellor, dedicated conservationist - all of these qualities combine in the apparently un-ageing person of Paul Richards and have contributed greatly to the advancement of botanical science and conservation in Wales.

We wish him well in his retirement in Cambridge and look forward to many more scholarly works from his pen.