Photocopy of specimen of *Carum verticillatum* in NMW ex herb. J.E. Griffith
EDITORIAL

Bulletin No. 50 was very well received. It prompted several favourable comments expressing approval of the contributions from each Welsh recorder outlining the present level of botanical knowledge in each vice-county. It also served very well to contrast the ways by which each individual deals with the many problems encountered, often dictated by the size and degree of remoteness of each area. There is certainly a need to encourage a greater number of competent botanists to turn their attentions to Wales - especially the more inaccessible parts. My own experience shows it to be impossible to comprehensively record a large county to tetrad level in a reasonable time without a substantial measure of help of a small number of reliable surveyors. I am sure that there is a source of local talent just waiting to be tapped, in the guise of the "sleeping" Welsh B.S.B.I. members, a few of whom are present in most parts of Wales.

There seems to be no shortage of material for inclusion in the Welsh Bulletin at present. Several topical papers are presented in this issue together with the 1988 plant records - continuing the series intended to bring the back-log up to date. Having said that the continuing supply of articles depends on you, the readership, please do not hesitate to send me copy on any aspect of the Welsh flora which may be of interest to fellow botanists.

The programme of 1991 Welsh field meetings is included below, together with the agenda and arrangements for the A.G.M. and Exhibition Meeting to be held at Trelleck near Monmouth in early July. The standard of accommodation is very high and I can strongly recommend it, so please make every effort to attend, not forgetting to bring exhibits and slides. Trevor Evans will lead local field excursions in conjunction with the A.G.M. which will give a brief insight into the Gwent flora.

I, and the other Wales committee members, look forward to seeing you there and at other venues through the season.

Richard Pryce, 17th April 1991

All back issues of the BSB! Welsh Bulletin are still available on request (originals or photocopies). Please send cheque made payable to BSB! Committee for Wales at £1 per issue, which includes p & p, to G. Hutchinson, Department of Botany, National Museum of Wales, Cathays Park, Cardiff, CF1 3NP, specifying the issue number or year which would have to include the season or month. Large runs - price negotiable.
ANNUAL GENERAL MEETING, 1990

The Seventh Quadrennial Meeting, Twenty-eighth Annual General Meeting and Eighth Exhibition Meeting of BSBI Wales was held at Bangor Normal College and Treborth Botanic Garden, Bangor, Gwynedd, on Saturday 21 July, 1990.

On the Friday evening, members resident at the College enjoyed an illustrated talk by Nigel Brown. On Saturday, members split up to do tetrads recording in lowland sites for the Flora of Caernarfonshire recording project, before returning to Treborth for the AGM.

After tea, the Chairman opened the Annual General Meeting. Apologies for absence were received from S.B. Evans, Q.O.N. Kay, R.G. Woods and G. Wynne. The Chairman, on behalf of those present, expressed the hope that Mr Geoffrey Battershall would make a speedy and complete recovery from his recent accident. The minutes of the last AGM, published in the Welsh Bulletin No. 49, Spring 1990, were then taken as read.

The Chairman, in her opening remarks, welcomed all members present and thanked all those who had helped the Society in Wales during the past year, mentioning in particular: members of the Committee for Wales, especially its Secretary and Treasurer, the editor of the Welsh Bulletin, the leaders of all the Welsh field meetings and the Welsh vice-county recorders. She then thanked Nigel Brown for the excellent way in which he had organized the meeting, and finally she thanked the officers of Bangor Normal College and Treborth Botanic Garden. She commented that this was almost her final act as Chairman, after 4 years and she had enjoyed serving with a very 'ruly' committee.

Hon. Secretary's Report

The Hon. Secretary then gave his report on the last years activities. He started by mentioning the celebration of the 100th birthday of one of our members, Mrs Irene M. Vaughan. Mrs Vaughan was no ordinary member, she was one of the founder members of the Committee for Wales, a past Chairman and General Secretary of that Committee, Welsh representative on Council, Editor of the Welsh Bulletin, Vice-county recorder for Carmarthenshire, Referee for Rosa, and Vice-president of the BSBI. Until her move to Suffolk in the late 1970s she was one of the most active members of the Society in Wales. To commemorate this rare achievement, a celebratory issue of the Welsh Bulletin, no 48, was devoted to an appreciation of Mrs Vaughan and her work in Wales.

He commented that with the election of David Humphreys to the Committee for Wales at last years AGM, the committee remained at full strength for the year.

Two issues of the Welsh Bulletin had been issued since the last AGM; no 48, Mrs Vaughan's 100th birthday issue, and no. 49. George Hutchinson had again been responsible for producing the Bulletin while Ian Morgan remained as editor for no 48, but had since resigned; he was warmly thanked for procuring and editing the papers for 9 issues of the Bulletin, nos 40 - 48 from October 1984 to Winter 1989. George Hutchinson was also thanked for planning and executing the production of the Bulletin almost single handed, as was Richard Pryce, who had stepped into the breech at the last minute and volunteered to act as editor, and had now been confirmed in the post.

Eight field meetings were organised for Wales during the year and all were well attended, with one, at Kenfig dunes, being very much
oversubscribed with a dozen or more disappointed members unable to get a booking.

The proposed landscaping of lead and other heavy metal mine sites throughout Wales had again occupied the Committee during the last 12 months. As mentioned at the last AGM, a letter had been sent to the Welsh Development Agency pointing out the dangers involved and asking for proper surveys to be carried out before work was started. A reply had eventually been received which indicated that the WDA were at least aware of the problem, and would not take any hasty action. The Chairman of the BSBI's Conservation Committee, Dr Frank Perring, also wrote to the WDA on our behalf.

Other topics of a conservation nature that were discussed by the Committee included the threat to Fenn's Moss, a raised mire on the borders of Clwyd and Shropshire, with such rarities as Andromeda. The site has recently come under new ownership and peat extraction had been increased by a factor of 4. Attempts were being made to buy at least part of the site and the fight had now been taken up by an anti-peat campaign. Jean Green and Paul Day were co-ordinating the BSBI's opposition to the peat extraction.

The threat to Pembrey Saltings in Carmarthenshire had now been lifted, and subject to successful consultations between Llanelli Borough Council and conservation bodies, the site could be declared a Local Nature Reserve. Richard Pryce had been our very active campaigner against the development.

The Secretary then recorded the thanks of the Society to the various organisations that had helped over the past year: to the officers of Bangor Normal College and Treborth Botanic Garden; to the NCC for allowing the Committee for Wales to meet in its offices at Plas Gogerddan, Aberystwyth and Llandrindod Wells; and to the National Museum of Wales for Secretarial assistance, for the production of the Welsh Bulletin, and for its help in many other ways.

Members were then reminded of the following day's field meeting looking at upland sites in the Betws-y-Coed area led by Nigel Brown. On August the 19th, the last field meeting of the year organised by the Committee for Wales would take place, led once more by Nigel Brown.

Finally members were reminded that there was a talk after the AGM on 'The Flora of Caernarfonshire Recording Project', by Nigel Brown, and that would be followed by a tour of the Gardens. After dinner back at Bangor Normal College campus, the exhibition would be open and slides shown.

Hon. Treasurer's Report

The Treasurer, Mr R.D. Pryce, then gave his report on the financial situation, which was satisfactory. He reported a general improvement with subs to the Welsh Bulletin bringing in about £100.

Putting on his editor's hat he reported that the next issue of the Welsh Bulletin would be the 50th and it was hoped to include reports on Botanical recording throughout Wales.

Elections

Chairman

Mr Trevor Evans was nominated by the Committee for the four year post of Chairman and Welsh Representative on Council, and in the absence of any further nominations was carried by acclamation.
Mr Evans then took the Chair and paid tribute to all the hard work Jean Green had put in on behalf of the Society in Wales during her term of office, a sentiment that was warmly applauded by all present.

Vice-Chairman
Mr Paul Day was nominated by the Committee for the post of vice-chairman and in the absence of any further nominations was approved unanimously.

Officers
The Hon. Secretary, R.G. Ellis and Hon. Treasurer, R.D. Pryce, were both nominated for re-election to their respective posts and, in the absence of any other nominations from the floor, were duly elected.

Committee Members
S.B. Evans, G. Hutchinson, Q.O.N. Kay and G. Wynne were due to retire under rule 5 of the constitution and were eligible for immediate re-election. All four members had indicated their willingness to stand again, and, in the absence of any any other nominations from the floor, were duly re-elected to serve on the Committee for Wales for a period of two years. Mrs J.A. Green was nominated by the Committee for Wales to fill the vacancy caused by T.G. Evans' election as Chairman and in the absence of any other nominations from the floor, was duly elected, to serve on the Committee for Wales for a period of one year.

Under Any Other Business a motion to co-opt Mrs Elsa Wood, Secretary of the BSBI's Conservation Committee, to the Committee for Wales, was proposed by Nigel Brown seconded by David Humphreys and passed unanimously.

Mrs M. Wainwright, commenting on the proposition that Welsh Plant Records would in future give four-figure map references, thought that this could sometimes be undesirable. R.G. Ellis (editor), stressed that the four-figure map reference would only be included if the recorder agreed.

In the absence of any other business, the chairman declared the Annual General Meeting closed and invited Nigel Brown to deliver his talk on the 'Flora of Caernarfonshire Recording Project'. Following this, a very enjoyable time was spent looking around the glasshouses and gardens. Members reassembled after dinner at Bangor Normal College for the exhibition, slides and videos.

Exhibits

Nigel Brown: Interesting native plants at Treborth
Ann Conolly: West Lleyn Flora
: *Aconitum x cammarum* in West Lleyn

Gwynn Ellis: Index to British Vascular Plants
: Recent additions to the Library of the National Museum of Wales

Trevor Evans: Aspects of the Monmouthshire flora 1985-89

Jean Green: *Stachys alpina* in Denbighshire
: *Carex x gaudiniana* in Denbighshire
George Hutchinson: Distribution of *Dryopteris filix-mas* agg. in Wales

: Distribution of *Polypodium* in Wales

: Distribution of *Asplenium trichomanes* in Wales.

Slides

Ann Conolly: Plants of the Lleyn Peninsula

: Welsh AGM Ferryside, 1989

Geoffrey Battershall: Arctic/alpine plants of Snowdonia

**COMMITTEE FOR WALES, 1990-1991**

Following the election of officers and members at the Quadrennial and Annual General Meeting, the composition of the Committee for Wales is as follows:

**Officers**

Chairman  Mr T.G. Evans

Vice-chairman  Mr P. Day

Secretary  Mr R.G. Ellis

Treasurer  Mr R.D. Pryce

**Committee members**

Mr N. Brown*  Mr S.B. Evans

Mrs J.A. Green*  Dr G. Hutchinson

Dr D.R. Humphreys*  Dr Q.O.N. Kay

Mr R.G. Woods*  Dr G. Wynne

Co-opted Mrs E. Wood

*Members due to retire in 1991

**Statement of Accounts from 1 Jan. 1990 to 31 Dec. 1990**

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Carried forward from 1989 (General & Special Accounts)  162.26

Excess receipts over payments 1990  144.29

**Total £306.55**

**Current Account Balance**  117.40

**Deposit Account Balance**  189.15

**Total £306.55**
29th WELSH ANNUAL GENERAL MEETING
AND
9th EXHIBITION MEETING, 1991

Friday 5th July to Monday 8th July 1991

CAER LLAN CONFERENCE CENTRE, LYDART, nr MONMOUTH, GWENT

Programme

Friday:
6.30pm Dinner
7.30pm Visit to some local orchid sites

Saturday: 10.00am Meet at Caer Llan for Field Meeting. The morning and early afternoon will be spent looking at several rich habitats in the area
3.45pm Tea and meeting of Committee for Wales
4.30pm Annual General Meeting
5.00pm The Flora of Gwent, an illustrated talk by Trevor Evans
6.30pm Dinner
7.30pm Exhibition Meeting and slide show

Sunday: 10.00am Meet at Caer Llan for field meeting several sites further afield
6.30pm Dinner

Monday: Disband after breakfast with opportunity to record in tetrads on the way home.

Accommodation (twin rooms with single supplement) will be available at Caer Llan at approx £20 per day, but the meeting is also open to non-residents.

Please apply for accommodation booking forms and maps of meeting places, or send bookings for the field meetings to Mr R.G. Ellis, Department of Botany, National Museum of Wales, Cathays Park, Cardiff, South Glamorgan, CF1 3NP.
The Lleyn peninsula occupies a central position in the distribution of *Carum verticillatum* in western Britain. This Atlantic species was recorded in Lleyn from a single locality in the last century (Griffith, c.1895), and has subsequently been found in a number of places in the east of the peninsula (Ellis, 1983). Following a survey of semi-natural habitats in the west of the district over the period 1920-2, Rees (1928) listed *C. verticillatum* as an infrequent component of damp heath (rhos) and rush pasture, and he recorded it from a group of ten sites to the north of Pwllheli. Further localised records have accumulated from the 1950's onwards, mostly compiled by Mr Arthur Vaughan Jones, but the eastern half of the peninsula has never been thoroughly worked floristically, unlike west Lleyn where the flora has been systematically recorded by Miss Ann Conolly.

Recently, we have had the opportunity to make floristic records from mires, heaths and grasslands during a preliminary survey of habitats over the whole of the peninsula, carried out during 1987-8 by the Nature Conservancy Council (Howe et al., 1990). A number of new localities for *C. verticillatum* were discovered, and these are combined here with earlier records to provide a brief synopsis of the available information about its distribution in Lleyn.

All records have been included in the 1 km square distribution map of *C. verticillatum* shown in Fig. 1. (Detail in the locality given for the early record by Griffith (c.1895) is misleading as it is not near Abersoch as implied (A.P. Conolly, in litt., 1988)).

Survey results have confirmed that *C. verticillatum* is local and scarce in Lleyn. Most of the records are clustered in a central area of the peninsula, where it occurs in damp pastures associated with headwater streams of the Afon Erch, Afon Ddwyryd and Afon Rhyd-hir; elsewhere it is known from a handful of scattered eastern localities in the catchments of other south-flowing rivers. All localities are low-lying, ascending from a little above sea level to 150m. *C. verticillatum* has been recorded most frequently in Lleyn in wet *Juncus acutiflorus* and *J. effusus* pastures, but it also occurs in *Molinia* vegetation and occasionally in drier acidic and neutral grasslands. In other parts of Wales, *C. verticillatum* is notably catholic in its associations, occurring in a wide range of acidic-neutral grassland, marsh and flush communities, as in Carmarthenshire (v.c. 44), for instance, where it is locally very frequent (Pryce, 1987).

The underlying causes responsible for the restricted distribution of *C. verticillatum* in Lleyn are not all readily apparent. *Juncus*, *Molinia* and other wet grasslands are still relatively abundant in the east of the peninsula (Fig. 2), but many apparently suitable sites are unoccupied. Altitudinal and climatic factors, agricultural activities, and also perhaps limited means of dispersal, may all be involved. However, changes in land drainage and pasture management have undoubtedly influenced its local frequency; over half of the sites where it was recorded by Rees (1928) are now improved grassland.
In the more easterly parts of Caernarvonshire (v.c. 49), *C. verticillatum* is known only from several damp pastures in the Afon Glaslyn valley, and also very locally to the north of the Snowdonia massif.

![Map showing the distribution of *Carum verticillatum* in the Lleyn peninsula. Dots represent post-1950 records; circles represent pre-1950 records.](image1)

**Fig. 1.** The distribution (in 1 km squares) of *Carum verticillatum* in the Lleyn peninsula. Dots represent post-1950 records; circles represent pre-1950 records.

![Map showing the distribution and abundance of wet grassland in the Lleyn peninsula, recorded during 1987-8.](image2)

**Fig. 2.** The distribution and abundance (in 2 km square tetrads) of wet grassland, including *Juncus* and *Molinia* pasture, in the Lleyn peninsula, recorded during 1987-8.
Acknowledgements

We are very grateful to Ann Conolly and Gwynn Ellis for providing details of early records.

References


T.H. Blackstock, E.A. Howe & C.A. Rimes, Nature Conservancy Council, Penrhos Road, Bangor, Gwynedd, LL57 2LQ.
The Clubmosses in NE Carmarthenshire

This paper was prompted by concern over evidence of decline in the clubmosses of the district awakened in the course of recording for the Carmarthenshire Flora Project. It seemed more important to alert readers to the situation than to wait until the question had been thoroughly researched. Because of the immediate overriding needs of the Flora Project, it has not been possible to investigate any records which may be available from the nearby area across the county boundary covered by the NE corner of the map (fig. 1). The fact that large tracts of this area are not forested is not at first sight very hopeful. However this could cut both ways: if large areas are disturbed, at least they are protected from grazing. Mr Chater's recent discovery of an impressive Selaginella population still further to the E near Soar-y-Mynydd shows how odd corners in a forested area may remain untouched.

The desirability of checking certain former records which had previously escaped notice has led to further investigations in March-April of this year (1991), and records (xxii) to (xxviii) below are recent. They do not materially alter the picture. The ease with which these plants escape the eye must be admitted, and one is sometimes tempted to rely on a belief that, for one plant seen, 10 are probably present. In certain localities this might be so; nevertheless there seems no doubt that the decline, especially in the last ten years, has been real, and Lycopodium clavatum in particular seems to be at risk. It is hoped that these notes will draw more attention to these inconspicuous and not very familiar wistful relics of the Carboniferous age which, in this area at least, may be seriously vulnerable.

When my wife and I bought Eithin, late in 1964, we were soon exploring the Mynydd Mallaen moor in all directions; indeed we spent more time there in those first few years than we have done in the remaining 20 odd. I cannot remember now whether we even knew what clubmosses were. But we had soon identified and become familiar with the odd fragments of Lycopodium to be found lying about on the turf and had made completely unsuccessful attempts to root some of them in the garden. I remember very approximately the locality of one such fragment, noted on the list below as no. (iii). It is perhaps significant that in those days, so far as I remember, these fragments were to be found on the open moor, sometimes far from the stations to which they are now confined.

At an early stage we had discovered the large colony of intermixed Diphasiastrum and Lycopodium on the steep E slope above the Afon Gwenlais where the river first makes a sharp substantial bend to the N; (site no. (iv) on the list). This was the first time we had encountered Diphasiastrum, and the first time we actually saw the plants growing. The locality could still be considered the prime site for the plant in the
district. After we had come to know Mrs Vaughan she told us about it, and I think it must have been the place she had principally in mind in her reference to "Mynydd Mallaen" quoted in May's list.

There followed a long period during which, regrettably, we did little further monitoring. Perhaps the most important indirectly relevant event here was the initiation of the Commons Registration scheme, which was certainly under way before 1972, the year in which we settled at Eithin for good. As a result of this scheme the Mallaen was officially registered as a common managed by a Grazier's Association of the surrounding farms. It was long before I fully appreciated that the very similar country (as it then was) to the N and E was privately owned and was therefore open to the improvement and afforestation which has since largely supervened. We recently came to hear of one population, no. (xvii), which had already disappeared in this way about 1960, and others may well have followed in the Nant-yr-Ast – Penrhiwlar sector, where there have been considerable changes.

1982 saw the inception of the Carmarthenshire Flora Survey, and we had a new reason to return to the Mallaen, and to cover it more systematically. In 1985 we encountered Huperzia for the first time, first near the headwaters of the Merchon, nos. (v) and (vi), and later above Bulch-y-Rhiw, (ix); on the W side of the Gwenlais, (xii); and along the upper Nant-y-Clun and on Craig Diferion, (xiv) and (xv). The Lycopodium populations (vii) and (viii) opposite the Huperzia on the upper Merchon, and (x) and (xi) on the hillside above the Gwenlais also came to light during this period. In 1990 we learned of the extinct composite population near Blaen-Twrch, (xvii), which greatly extended the potential range, and by the courtesy of Mr Pickup, the Warden of the Gwenffrwd reserve, who devoted a long morning to showing it to me, I was able to see the widespread composite population (xviii) beside the upper Nant Gelynen.

However this picture of an unsuspected wealth of resources is sadly illusory and simply reflects a more thorough search. In fact in recent years there has undoubtedly been a decline, and some populations have vanished almost as soon as found. Already in 1987 the Lycopodium populations (vii) and (viii) on the upper Merchon were much reduced, and although another dead Lycopodium fragment, (xiii), seen about this time further to the W, led me to hope that there might be another colony in the area, nothing has appeared so far. In 1989, when we took Richard Pryce to see the plants at the head of the Merchon, all the Lycopodium had completely disappeared and all that could be seen of the Huperzia were a few depauperate plants on one wet rocky outcrop more or less in the centre of the previous array. At about the same time the Gwenlais Lycopodium populations (x) and (xi) seemed to have disappeared. In fact this year (1991) one plant of population (x) was re-discovered, and careful search might reveal a remnant of (xi), but of their drastic reduction there can be no doubt.
I am certain that the cause is grazing pressure. Evidence for this lies not only in the detached strands and fragments of Lycopodium but in the fact that practically the only active plants of this species now to be found lie hidden within some shrubby growth. As for Huperzia, it is the situations which are telling: in colonies (ix) and (xxi) the plants are confined to crevices between boulders; (xii) is deep within a large heather; and the plants in (xiv) are hidden in deep shade under stream banks. I was surprised to hear from Mr Pickup that his predecessor had recommended grazing as a course of management for the Gwenffrwd population, and I think he was rather surprised to find the colony by no means as robust as he had visualised. A grazing regime would be a counsel of perfection, to ensure light and control competitors, if the total population were perhaps 50-fold the size, but what is there at present simply needs to survive, and clearly, though the plants might not welcome shade, they tolerate it. It is worth noting that the problem seems especially urgent in the case of the lycopods. In general, what might be thought the "standard" complement of moorland species seems to cope.

The three species differ in their response. No reason can be seen for the fact that Diphasiastrum seems now to be more restricted in its distribution than the others, but at four of its localities it flourishes, and at the Gwenffrwd site it is the only one of the three species of which this could be said. It is the only species which in May's time was said to be "plentiful". It appears to be rhizomatous, and thus able to produce fresh aerial shoots indefinitely. Lycopodium, on the other hand, is definitely stoloniferous. I have not dared to disinter a plant to find out how it originates, but certainly the greater part consists of long trailing runners, woven in the turf and with only occasional adventitious roots, which are easily pulled out. The miniature fruticose habit of Huperzia would go in a single mouthful. Neither of these species seems able to regenerate, either from the base like a rosette plant, or from fresh shoots like heather.

The common status of the Mallaen is ambivalent: though free of the threat of ploughing and re-seeding it is never without sheep, and in certain seasons is heavily stocked. A contributory factor here is the increasing bracken cover, which squeezes the grazing into smaller and smaller areas. (Even this though is two-edged: Lycopodium will hide under light bracken cover!) And in this regard there is a further cause for concern. Though one attempt in the neighbourhood of Craig Rhosan a good many years ago seems not to have been very successful, the temptation to tackle the bracken by spraying must always be at the back of people's minds, and I wonder whether anyone at present knows how specific to Pteridium such sprays might be. It should, I feel, be a matter of BSBI concern to sound out the manufacturers on this point. Quite apart from the lycopods, there are colonies of Phegopteris, possibly Gymnocarpium dryopteris, and certainly one, and reputedly two sites for
Hymenophyllum wilsonii on the Mallaen to consider. In any case spray can drift far off course. Would the SSSI designation protect the site effectively in such an instance?

It seems that the possibility of applying for ESA status has been considered in the case of the Mallaen. This would involve an all-round reduction in stock which would probably require a unanimous decision from the graziers. So far nothing seems to have transpired. The only other possible answer would seem to be selective enclosure; and from first principles this is taboo on a common. Whether a reasoned application to the landlords (who are, I believe, the Crown Commissioners) and the graziers would be heard sympathetically is an open question. The Mallaen has the weight of SSSI status, but clearly such an unusual appeal would have to be well reasoned, and here I, for one, feel helplessly ill-informed on all matters of ecology and regeneration. Many questions arise. What kind of area would be meaningful? Could there be any basis for advancing even a provisional estimate of range of spore dispersal? How long do plants take to develop? What are the substrate requirements? Both Hyde, Wade & Harrison (1978) and Clapham, Tutin & Warburg (1962) speak of micorrhizal symbiosis in the prothallus. Does the adult plant also depend on a fungal associate? If so, is this specific, or might it be one which could be borrowed from other symbionts such as heather? It seems we desperately need to know more.

It has been suggested that aspect is of some significance. I have rather come to doubt this. The aspects of the first 21 sites or observations listed in the summary below are as follows: (i) - unknown; (ii) - mainly S; (iii) - origin unknown; (iv) - W; (v) - NE; (vi) - open; (vii) - SW; (viii) - S; (ix) - N; (x) - S; (xi) - SW; (xii) - E; (xiii) - origin unknown; (xiv) - mostly so shaded as to be immaterial, but, in the case of 2 plants, E; (xv) - N; (xvi) - N; (xvii) - open; (xviii) - NW; (xix) - origin unknown; (xx) - SW; (xxi) - NE. This does not seem to be very conclusive.

There remains the question of propagation with a view to the ultimate possibility of effecting re-introductions. All the species disperse spores and have a life-cycle with a prothallus stage similar to that of ferns. However Huperzia, in addition to this, is said to propagate itself mainly or "only" (Clapham, Tutin & Warburg, l.c.) vegetatively, by means of small propagules called "gemmae" in the literature. It would be of enormous advantage to have the results of controlled experiment on optimum conditions for germination and growth, whether of spores or propagules. It might even be possible to by-pass any germination difficulties through tissue culture. Also, as already indicated, it would seem of particular importance to determine whether the sporophyte plant depends on a fungal symbiont, and, if so, what the identity and range of specificity of this might be.
However all this would require high-powered techniques and it is to be feared that the question will not lie very high on the list of priorities. Short of such an investigation little can be done except to rescue and attempt to revive fragments and seek to rear Huperzia propagules. As regards the first, Huperzia fragments can sometimes be persuaded into growth if they already have some roots; in the case of Lycopodium it is not clear whether the occasional adventitious roots will become sufficiently functional to support growth or whether they can only act as (very inefficient!) anchors. I'm currently awaiting the outcome of my attempt to grow on a dislodged, but apparently viable, fragment of Lycopodium found on the moor following uprooting by sheep. *Diphasiastrum* I have no experience of. As regards detached Huperzia propagules, the season of detachment may be relevant. In August 1989 we found some detached Huperzia fragments on Cader Idris, and I stripped these of propagules immediately. Only three propagules have survived out of about a dozen, and only one has made any growth, to about 8 mm. One of the surviving parent fragments developed fresh propagules this year. I left these until December, by which time they would fall off at a touch. Again I await the result of setting this second batch to root.

The Huperzia propagules or gemmae look like additional rather bright green leaves in the axils of the normal leaves towards the apex of the shoot, and in the mass give a bushy, rather brilliant appearance to the plant. Each is in fact composite. I have not come across an illustration in the literature and so include a sketch of one gemma (fig.2). It consists of three slightly fleshy proto-leaves fused into an undifferentiated base which bears two small stipule-like processes.

Might I end on a query which is only topographically related? The Mallaen inclines very slightly to a summit at the N which bears two tumuli; beyond this, on the brink of the N slope, lies a line of outcrops or crags. The summit tumuli are called Crugiau Merched, and the line of outcrops the translation, Creigiau Ladies: it would seem that at some point, since there are two features, the supposed original name and its translation were irrationally distributed between them. I have heard (though unfortunately I cannot remember how or when) that the basis of the name is Craig Gwladys, and that Gwladys was the wife of (?) Caractacus. The monumental tumuli lend a little plausibility to the suggestion. If this is so, it is the English which is a garbled version of the original and the Welsh is merely a superfluous translation of the misunderstanding. Can anyone confirm this or add anything to it?
Summary of records from NE Carmarthenshire

The way in which the distribution of the plants is itemised on the list may appear somewhat haphazard. In some cases it might be thought that separate entries belong to what is, or was formerly, a larger whole. The actual entries register the stages by which the plants were discovered.

The following symbols are used on the map:

- Circle \( \bigcirc \) = Lycopodium
- Square \( \square \) = Diphasiastrum
- Obverse triangle \( \triangle \) = Huperzia

An open unbroken symbol \( \bigcirc \) indicates extinct material.

An open broken symbol \( \bigcirc \) indicates lack of information: either a presumed extinction which has not been confirmed because there is no exact locality, or a recent fragment of unknown source.

A shaded broken symbol \( \bigcirc \) indicates material found in or after 1985 which could be thought vulnerable and which has not been monitored.

A shaded unbroken symbol \( \bigcirc \) indicates material which has either been found or monitored recently or which could be supposed to be reasonably safe.

A small symbol indicates either a single plant or a very small colony. A large symbol indicates an appreciable colony. For details see the individual entries.

(i) 74?P. 'Penrhiwiar', all three spp., unlocalised, before 1967 (May's list). Pen-y-rhiw-iar farm is shown as just inside the NW corner of 74T. The whole upper hillside is now under Economic Forestry and any plants in this large area are presumably extinct. In the absence of more detailed information the symbols are sited conventionally on the map; see also (xxvii) and (xxviii) from the adjacent Cribyn du hillside.

(ii) 74L. Cwm Rhaiadr, all three spp., before 1967 (May's list). In the absence of more detailed information no symbols are inserted on the map; see instead (xxii), (xxiii) and (xxiv) from the same general locality.

The remaining locality for all three spp. in NE Carmarthenshire in May's list, 'Mynydd Mallaen', is not further particularised; so far Diphasiastrum and
Lycopodium are concerned it probably indicates (iv) below. (xviii) below is again fairly accessible and will undoubtedly have been much more abundant at the time.

(iii) 74M. In the late 1960's various detached fragments of Lycopodium were found on the Mallaen. This one was on the E sector of the moor, so far as I can remember, at approximately the position shown.

(iv) 74G. Extensive colony of intermixed Lycopodium and Diphasiastrum on the steep E hillside above the Gwenlais, running in a broad belt for some hundreds of yards from the sharp corner at 729426 northwards to a scree. Known since late 1960's.

Re-visited regularly, the last time in late 1990 when it seemed stable and was fruiting.

The main associates are Calluna, Vaccinium myrtillus and Empetrum. Blechnum is common, and so are various mosses which I wish I knew better; one, a tantalising lycopod-mimic, I take to be Dicranum scoparium. There is a scattering of Potentilla and Jasione and very sporadic Deschampsia flexuosa, but in general not a great deal to attract sheep. A possible danger is that the hillside might be fired, but as it is difficult of access and would probably be unproductive anyway this seems unlikely.

Mrs Vaughan knew this site, and it is probably one of those intended in the reference "Mynydd Mallaen" in May's list.

(v) 74A. Isolated Huperzia on bare red earth in a little hillside recess of the kind made (?) or at any rate used by sheep as snugs, beside track sloping NW-wards from the footpath which skirts Rhiw Cilgwyn down to the upper Afon Merchon, c. 717417, April 1985. Subsequently vanished, at least by 1989.

(vi) 74A. Close to above: extended scattered colony of Huperzia c.717418 along a mostly flat strip of ground bordering the Merchon to the S, in a variety of micro-habitats, wet and dry, May 1985. Difficult to monitor: re-visited once before 1989; in 1989 found to be reduced to a few depauperate plants on an isolated wet outcrop.

(vii) 74A. Colony of Lycopodium, amongst Calluna, extending over a few yards of steep rocky shoulder in NE angle between the Merchon and its last tributary to the N, c. 715419, roughly opposite the W part of (vi) above, May 1985. Monitoring as for (vi); found to be shrinking, and entirely vanished by 1989.
(viii) 74A. Separate colony of Lycopodium 100 yards or so E of (vii) on steep bank in Nardus - Festuca ovina turf, N side of Merchon. Discovery and monitoring as for (vi) and (vii); vanished by 1989.

(ix) 74H - and I? Extensive scattered colony of Huperzia on steep heavily grazed hillside just N of Crugiau Merched, above Bwlch-y-Rhiw, 1985. Thought to be in 74H, but the H/I dividing line lies close by and is difficult to determine. The hillside is covered with tumbled blocks, and almost all the plants were in crevices between these or, where a block had perched on others, in the cavity underneath, as ferns often do in such circumstances. Not monitored.

(x) 74G. Colony of Lycopodium c. 733423, 1987.
A clear path follows the N bank of the Gwenlais as far as the unnamed tributary which meets the main stream at 734423. The path crosses the tributary and then climbs the hillside diagonally NW, ultimately petering out. Colony (x), comprising some dozen plants, lined the outer edge of the ascending stretch of the path where this is still clearly evident. The plants were entwined in close-cropped Calluna or Erica or under light bracken cover. They seemed to have disappeared in 1990, but recently (Jan. 1991) one has been re-discovered.

(xi) 74G. Scattered colony of Lycopodium, c. 732425, on the same hillside as the above, 1987. The plants grew at a higher level, above the demise of the path. To the SE they were under light bracken; to the NW amongst vigorous Calluna. No trace could be found in 1990, but the area is large.

(xii) 74G. One very large Huperzia at edge of tiny rivulet on W side of Gwenlais which meets the main stream at sharp corner at 729426, 1987. The plant was 50' or perhaps more up from the bottom, deep within a huge growth of heather. It is presumably quite safe; but of course the life-span of individual plants is unknown. A Lycopodium was found a few yards to the N, and may have companions on the same slope.

(xiii) 74F. Detached fragment of Lycopodium S of Merchon, c. 727417, 1987. No source could be seen.

(xiv) 74H. 6 Huperzia along about 100-yard stretch of upper Nant-y-Clun southward from bend at 739457, 1990. Most of the plants hidden below overhanging banks of stream, in genial conditions with Anemone, Viola riviniana, Valeriana officinalis etc.; one, on E bank, below foot of Betula covered with Hymenophyllum wilsonii. 2 most southerly plants on rock face, W side of stream and some 50' above
it, about 100 yards below isolated Sorbus on other side of stream. Not seen again but seemed fairly safe. No plants were seen further down the stream in 74M.

(xv) 74I. 1 Huperzia in safe but deprived situation in crevice of rock-face about eye-level above ground, Craig Diferion, 1990.

(xvi) 74H. 1 Huperzia at foot of rocky outcrop ("Creigiau Ladies") N of summit cairn (Crugiau Merched), 723458, 1990; probably a southerly outlier of colony (ix) above, and not given a separate symbol on the map. Unfortunately there was not time on this occasion to monitor the rest of (ix). The plant was fully exposed to the vacuum-cleaners and can hardly survive.

(xvii) 64Z. Extinct populations of all three spp., 681488.

In recording this tetrad for the Carmarthenshire Flora Survey in 1990 I had great help from Mrs E. Lewis, Pumsaint, and Mrs L. Davies, Abergorlech, both formerly of Blaen-Twrch. As well as knowing the area well, both had some botanical training as undergraduates. They told me that all three spp. had been widespread around the above grid-reference in 1956/60 and that voucher specimens had been sent to NMW for determination. The site has now been re-seeded, but its original character is preserved within the small cross-shaped plantation nearby. The very rough turf contains Vaccinium oxycoccus, Carex nigra and Juncus squarrosus. Interestingly the site, unlike most of those listed here, is fairly flat and level. Some time was spent searching unimproved grassland in the area without finding any relic of the colony.

(xviii) 74M. Composite population along E. slope of upper Nant Gelynen valley, mostly in short dry V. myrtillus - E. tetralix - F. ovina turf, seen in 1990, comprising

(a) extended scattered colony of Diphasiastrum from c. 747456 to 745451;
(b) 1 Huperzia in amongst Diphasiastrum at c. 747454;
(c) 1 (or possibly more than 1) Lycopodium at 745451;
(d) 1 Lycopodium in short bracken at edge of wooded area c. 747457;
(e) 1 depauperate Huperzia in very dry Galium saxatile - F. ovina turf on steep ridge at 748457, with dead fragments nearby.

(xix) 74X. Dead fragment of Lycopodium on slope above pool in disused mine area, just below Economic Forestry road, Nant-y-Bai, 788448, June 1990. Of interest in suggesting the possibility of the presence of Lycopodium E of the Tywi. There were traces of wool on the fragment, though of course sheep-carriage does not preclude the
possibility of bird-carriage from a distance at some stage. We walked the length of the Nant Bai and back by the promising-looking open ridge to the N but found no sign of a source. It might at least be thought that such a fragment could hardly be very ancient, for presumably it would be likely to disintegrate over a winter season. It might be worth searching the open hillsides in the direction of Ystradffin.

(xx) 74G. 1 Lycopodium in Calluna in NE angle between Afon Gwenlais and unnamed N tributary, 734423, beside the footpath mentioned under (x) before this crosses the tributary and starts to climb.

First seen in September 1990. We cannot be sure that it is new, but the path is the regular route to the moor via the upper reaches of the Gwenlais and we must have passed the spot scores of times. It is natural to link the plant with colony (x). The altitude is strikingly low: the site can hardly be more than 500' A.O.D. As it is a natural point of passage both for people and for sheep we constructed a guard of pegged branches. At the time of writing (January 1991) both this and the plant are intact.


(xxiii) 74L. Composite population W of Craig y Rhaeadr comprising
(a) 1 Lycopodium beside small outcrop, 756434;
(b) 5 Huperzia, S face of large dry gulley, the height of a large tree down from the skyline, in heather-brush on slanting strata, with small colony of Diphasiastrum a little higher and further S on sloping turf, 755437;
(c) A little to N, at edge of steep descent to waterfall on a level with upper branches of ivy-covered Sorbus, 10 small Huperzia; plus 3 more below tree, in heather, near small flat area beside river. Again 755437.

(xxiv) 74L. Scattered population of Huperzia and Diphasiastrum along S bank of Nant y Rhaeadr above waterfall, comprising
(a) scattered Huperzia (1 very large, in deep shade at eye-level under heather on large ivy-covered outcrop) E and W of sheepfold on S side of small unnamed S tributary, with small Diphasiastrum colony W of sheepfold, 753438;
(b) 1 large Huperzia at edge of Nant y Rhaeadr, 752439;

(c) small Huperzia colony near lone Betula at junction of 2nd unnamed S tributary, including 1 large plant under heather on outcrop just above tree, and c. 8 more, rather depauperate, in exposed flush at slightly higher level, 751439.

I am most grateful to Mr David Davies for sparing the time to show me the plants at (xxiii) and (xxiv), which I had not known before.

(xxv) 74L. A few small Huperzia in exposed flush amid very scanty Nardus and E. tetralix on slope above S bank of Nant Rhosan and in cleft just below, with 4 more just to E in moss humus on steep damp rocks exactly opposite unnamed N tributary, 750429.

(xxvi) 74I. Small colony of intermixed Lycopodium and Diphasiastrum, with 2 isolated Huperzia, in cropped Vaccinium - F. ovina turf at edge of steep descent, Craig Llys-fedw, 739462. (E of Craig Diferion.)

(xxvii) 74P. Small colony of Huperzia on NW side of unnamed S tributary of Afon Pysgotwr just beyond boundary fence of wooded area, including 1 large plant in recess under N end of horizontal slab colonised by Rhacomitrium and Polytrichum spp. on NW side of gnarled Hawthorn beside waterfall, with 5 smaller plants in turf or moss humus scattered a few paces below, 759485.

(xxviii) 74P. Cribyn du, SW bank of Afon Pysgotwr. As approached from the SE, the first part of the slope below the Cribyn du crags is bracken-covered and unpromising, and this is followed by extensive bare scree. There was not time to examine the crags above, which are unexpectedly well wooded, or to proceed further than 753489. The fruitful area was mostly found to be beyond the scree, perhaps 200' up from the Pysgotwr, around the unnamed S tributary at 755487. This tributary is double, running in two parallel channels. A composite population was seen, comprising

(a) a fairly extensive colony of Diphasiastrum, mixed with some Huperzia, in short Vaccinium - F. ovina turf on open hillside some 20 paces W of W channel;

(b) some 15 Lycopodium at same level, in disjunct patches, a few plants just to W of W channel, the remainder between the channels on poor mixed substrate, plus a few additional patches of Lycopodium between the channels at a somewhat higher level (the indication of
this population on the map is misleading: by comparison with others it is now considered that the symbol should be large;

(c) many scattered Huperzia in short turf between two very large slanting exposures of strata E of E channel;

(d) 3 outlying Huperzia to NW: 2 plants below crag beside Pysgotwr opposite hugh Ilex at 753489; 1 plant on large isolated outcrop diagonally up hillside to the S.

The following promising localities were searched without finding specimens:

74M. Craig Beynon, edge of steep descent, 752450.

74M. Craig Troed-y-rhiw-fer, edge of steep descent, 759450.

The following localities of former records near to the present (xxii) and (xxiii) (R.G. Woods, 1980) were searched without finding any specimens:

74L. Huperzia, 754436. The site is a gentle turf slope with occasional bracken amid frequent outcrops, heavily grazed.

74L. Lycopodium and Diphasiastrum, 753433. The site is a long gentle slope now heavily encroached upon by bracken.

Lastly it has unfortunately not been possible to monitor the following old record:


References


J. ILIFF, EITHIN TEWION, CILYCWY, LLANDOVERY, DYFED SA20 OTF
The Victorian slaves built the railways west of Cardiff reaching the Swansea area by the early 1850's. Since then this network has offered an area rich in wild flowers which is in a continuous state of flux mainly due to the actions of man.

With a proportional increase in the number of motorised field botanists, both amateur and professional, particularly during the 1980's, large tracts of these lines and adjoining land are being neglected by many recorders throughout the British Isles because they remain undetected from cars or are in inaccessible areas.

Introduction

A survey of rural and semi-rural habitats on the existing British rail network took place between 1977 and 1981 (Sargent). The Rutland rail network was surveyed on a tetrad basis (Messenger) and pteridophytes were recorded in a railway closed for maintenance near Chepstow (Dyce). There has been much interest in recording plants along disused railways (Jones; Somerville). However, all these surveys were on foot. Records obtained while in moving cars and a jumbo jet have recently been briefly reported (Badmin; Leach; Scott; Ellis ed.), also indicative of the decline in rail travelling recorders.

However records made from a moving train are rarely reported. Field outings certainly used to start and end on the train as was often mentioned in the field meeting reports of the Swansea Scientific Society (e.g. Jackett, 1894) and to some extent this kind of meeting was re-enacted in 1986 on the BSBI sesquicentenary excursion (Burt). The Rev. H.J. Riddelsdell must have travelled on the rail network from Aberdare, guiding "a botanical excursion to Port Talbot docks and Britonferry" in 1905 - "Railway Fare - 2nd Class Return [from Swansea] 2/6" (Pontifex & Lewis). On a train from Swansea to a field meeting in the Llyn Fach area 'Epilobium angustifolium and Linaria repens were seen at intervals along the Vale of Nedd [Neath] branch of the G.W.R. line' (Anon. 1914). What can be seen in the Rheidol valley by passengers on a narrow gauge railway (Young ed.) is the best example in Wales of observing nature from the train.

Throughout the 1980's it was possible for me to record plants and locate potentially interesting sites from a moving train for the 'Flora of Glamorgan' survey, which used a 5-km recording unit. But how does one record from a high speed Intercity 125 train travelling at over 70 m.p.h. and overtaking speeders on the adjoining M4 motorway? The techniques used are explained here, essentially in the order required.
Techniques

Preparation for the journey the day before has to be part of the enjoyment. Pocket train timetables are essential. Optional times of departure for the return journey are circled in red. After assessing the isobarred television chart and concluding there will be no interfering rain the next day, the expedition is on.

The relevant OS maps (1:50000) are chosen and the boundaries of the recording units used in the survey work are marked clearly on the maps with a blunt HB pencil, but only where they intersect the railway line. This saves valuable seconds on the train and only have to be drawn in once over the duration of the survey. In time one gets to know the boundaries.

Many records are from random observations but as most plants have peak flowering times it is possible to choose the species one wishes to scan for. If distributions are already known, squares where they have not been recorded are marked with a lower case code letter, for example 'b' for Buddleja davidii, where the railway enters the square, enabling target squares to be detected rapidly on the moving train. Once seen the species is marked on the map where it occurs in the square with the corresponding capital code letter. One can then relax until the next target square.

The data is processed from the maps at one's leisure, after which the pencilled records can be rubbed out. Using this technique it has been possible to scan for Buddleja davidii, Poeniculum vulgare, Hirschfeldia incana, Lathyrus latifolius, Linaria repens, L. vulgaris, Picris hieracioides and Verbacum thapsus, but it was Pastinaca sativa which had the highest number of new 5-km squares. In the first half of May a peak of Crepis vesicaria occurs which flowers before Crepis capillaris. After flowering, plants were visited near Bridgend and achenes checked for general ratification of these records. In spring Galanthus nivalis, Primula vulgaris and P. vulgaris are easy targets. The valley lines north to Merthyr Tydfil gave a few sightings of Lunaria annua, mostly on the banks of cuttings below terraced houses above the twisting River Taff. Arabidopsis thaliana has been recorded from most railway halts north of Pontypridd.

A small pencil and note card should be in one's possession at all times. I use 6" x 4" record card, ruled both sides, which is folded vertically making four pages with two columns per page. The pages are marked 11,12,13,14 with the date and general destination in the top right hand corner. The next card is numbered 21,22,23,24 as required etc. Pencil sharpener essential. Waiting for a train can have its exciting moments with long stretches of Intercity platforms to explore including the flower beds and gaps between the paving stones. Valerianella carinata was recorded in this way in a raised flower bed at the west end of platform 3, Cardiff Central, ST17, with Rumex

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acetosella at the other end, probably brought in with peat compost, and an uncommon plant for central Cardiff. Arabidopsis thaliana, Saxifraga tridactylites, Cochlearia danica, Erophila verna, Sagina procumbens, Poa annua, Vulpia bromoides and V. myuros are the usual ones sought and all have been found at various Glamorgan railway stations; Pontardulais station (SN 50), the only one in Glamorgan on the Central Wales line, being particularly rich.

Positioning oneself in the correct seat on the train is essential for efficient recording. Rear and front coaches are favoured because when the train stops at a station the less frequented areas containing the most flowers can be observed. A seat facing the front of a train is best because this results in the earliest detection of an oncoming plant, allowing one to maximise the observing time by turning one's head as one stares at the plant passing by. On double tracks the time spent can be enhanced by sitting on the right hand side as it gives a wider field of view across a whole width of track. Do not sit with the sun in your eyes. Unanticipated stops due to signals or breakdowns are to be exploited.

Three classes of train operate in Glamorgan. The old blue diesel multiple unit offers the best views with the Intercity 125 a close second but the latter has better suspension for taking notes. The smoothest ride is on the new Sprinter train, but alas it gives poor views with few seats aligned with the windows which are too high up to see along the railway cess (the free draining area of chippings) and the adjoining verge. It is more suitable for writing draft articles, such as this one, during the lean months.

Working out one's location from a moving train is essential as the record is worthless without a grid reference. If an OS map is not at hand, first of all note what stations one is between. Look for useful features in the landscape that would be marked on maps. Pylons and bridges are useful, noting the angle of dissection to the line by means of a small diagram. Farms close to the line, streams, adjoining roads and woods are also useful. The compass direction, or if that can’t be worked out, the direction to the next station should be marked on any diagram to avoid inversion. Another useful technique is to note the next yellow quarter mile post. These are on the right hand side of the line heading west from Paddington. On the main line through Glamorgan the figure represents miles west of Paddington with \( \| \), \( || \) and \( ||| \) referring to \( \frac{1}{4}, \frac{1}{2} \) and \( \frac{3}{4} \) of a mile respectively. This method comes into its own in nondescriptive countryside especially if one wishes to relocate the plant on the return journey. Distances between stations are given in a helpful recent booklet (Oakley).

At the advanced stages of a flora survey many ubiquitous species needn't be noted. Large numbers of plants cannot be determined from a moving train but they can often be detected as can sites
with some potential. These plants and areas can be noted and revisited at a later date, or as has often been the case, on the same day especially if it is within walking distance of a station. Breaking one's return journey for an hour is the usual technique. Many new 10-km square records have been found in this way including Nymphoides peltata and Hieracium strumosum at the Swansea West Loop, SS69. One of the best unexplored sites discovered from the train was the Bridgend Industrial Estate, SS97, described below, where an abundant yellow composite was initially investigated turning out to be Picris hieracioides.

Changing trains can allow time to explore derelict land close to the railway station. In this way Verbascum thapsus, Rumex frutescens, and Nigella damascena have been found near The Strand below Swansea station, SS69.

A Train Journey Through Glamorgan

The plants mentioned here cover the whole year so could not be seen on one journey. All were recorded or detected in the 1980's and most were new 5-km square records.

Cardiff Central has a new set of weeds in the raised flower beds earlier in the year before replanting and again in the autumn. Verbascum thapsus thrives on the cinders around the Canton depot, ST 17. Here the line branches to Penarth and Barry Island. Banks of Centranthus ruber showing the pink, red and white colour forms occur at Cogan, ST 17. Ranunculus peltatus can be seen in flower in small pools on the flood plain of the Cadoxton River, SW of Dinas Powis, ST 17. The old brick walls of Barry Island station, ST 16, provide refuge for several species of fern including Pteridium aquilinum. Nearby Little Island has Orobanche hederae along its northern shore, with Viola canina (det. D.M. Moore) in the short coastal turf around the old coastguard station, at its only extant site in east Glamorgan.

But back to the main line which continues westwards hugging the River Ely. Salix triandra x S. viminalis (S. x mollissima) (Meikle) has not been refound around Ely Bridge, ST 17. There are old exsiccatea of Miss E. Vachell's at K and NMW. Maps and old photographs located at Cardiff Central Library indicate that since 1904, bridge rebuilding, the destruction of a willow-clad eyot and considerable urbanisation have taken place. Salix fragilis and S. x sepulcralis nothovar. chrysocoma (Weeping Willow) now dominate.

A splash of yellow seen in late summer along an adjoining disused railway track west of the St. Fagan's level-crossing, ST 17 proved to be Hieracium vagum (first confirmed record for Glam.), H. umbellatum subsp. umbellatum, at its closest site to Cardiff, and H. perpropinquum, all det. J. Bevan. Here a winter-flooded area to the south of the line is white with Ranunculus peltatus in early summer. Hesperis matronalis, ST 17, and Armoracia rusticana, ST 17, are easily identified from a train. Flushes of
blue along wooded streams at the base of small railway embankments are stands of Aconitum anglicum, a plant widespread along the Ely valley, ST07, at its Welsh stronghold and now an SSSI.

The small industrial towns in the Vale of Glamorgan are worthy of further exploration. A brief revisit to the Tyle-garw level-crossing area, ST 08, gave Pisum sativum. Disused coal sidings at Bryncae, Llanharan, SS98, can be yellow with Hieracium but access is restricted.

The large industrial estate, SS 97, dominates the approach to Bridgend. Here unused areas have reverted to nature. Stands of Dactylorhiza maculata subsp. ericetorum with Primula veris, and Lathyrus nissolia, in one tall grassy area were some of the surprises. Cardaria draba, Hippophae rhamnoides, Hirschfeldia incana, Lactuca serriola, Papaver lecoqii, Leycesteria formosa occurred on disturbed ground. Close to the station, Lias limestone cuttings have fine stands of Primula veris around the unusual two-storey hexagonal pillbox, with Ribes sangineum, Clematis vitalba and Rheum rhaponticum (Rhubarb) seen in full flower on the vertical faces.

Taxus baccata is a feature of a small wooded slope NW of Bridgend, SS88, seen while approaching Court Colman, a 19th century mansion house now a floodlit hotel. I found it odd that the local endemic Hieracium radyrense, referring to Radyr nr Cardiff, could have been determined from the Bridgend area as well. (Perring & Sell eds.). The material collected was from Court Colman and while Jim Bevan examined the specimens at CGE, I was able to relocate it growing on old walls. It was clearly different from H. radyrense, one feature being that it flowers in early June whereas the Radyr endemic flowers in mid July. The plants maybe related to the Hieracium exotericum agg. An embankment of the bridge over the railway to the west has Fallopia sachalinensis fuelled by the farm dung heap.

Stable grassy dunes around the stump of Kenfig Castle have yielded little but as the train passes the unseen largest area of open water in Glamorgan (Eglwys Nunnydd reservoir), Port Talbot steelworks is approached, SS 78. The spread of Hirschfeldia incana through Glamorgan in the 1980's is apparent here with yellow flanks of this crucifer along the verges. Its long racemes are easily detected in areas of disturbed soil and waste ground. Further recording is required to monitor its spread and all records are welcome. The dark arboreal screen of the steel works containing planted Populus and Cotoneaster is lit up for many months of the year by the large bright yellow flowers of Spartium junceum (Spanish Broom).

Dykes between Port Talbot and Neath (Baglan Moors, SS79) are rich with Iris pseudacorus. The small artificial Baglan Pool, which turns green with algae in high summer, can produce high Mute Swan counts, sixty have been recorded. Delightful wooded slopes of
Craig-y-darren above Briton Ferry beckon Neath station, SS 79, where Sisymbrium orientale was growing among the paving stones. Cytisus scoparius is spreading along the cess in this area. Lathyrus latifolius adorns the embankment above the old Neath Grammar School but noticeably not every year.

The train now races through the cuttings of Skewen with fleeting glimpses of Japanese Knotweed-filled graveyards. Brunel's arches, SS 69, guard the entrance to the Swansea Valley and are surrounded by Calluna vulgaris and Erica cinerea with Hieracium strumosum on the brickwork. This heather community is a feature of many steep slopes on the eastern side of Swansea.

Now the view suddenly opens up to the broad basin of the Lower Swansea Valley, SS 69. Sadly, much of the recolonised metal-wastelands are being replaced by new roads with much featureless landscaping now in evidence. This prompted a brief visit to the area in the late 1980's when new records were obtained for Cotoneaster dielsianus, and C. simonsii (det. J. Fryer), Rhus typhina, Hesperis matronalis and Lolium multiflorum, a grass of the re-seeded landscape.

The approach to Swansea station is dominated by the dark heather-clad slopes of Kilvey Hill which turns pink in late August. Another unusual siting for Pteridium aquilinum was indoors at the concourse to Swansea station where it grew out half way up a drain pipe for many years reflecting the stations Victorian origins.

Over the past decade it has been possible to observe the ever-changing flora of the Glamorgan rail network, none more so than between Swansea and Gowerton. Fallopia japonica has overrun hill slopes, large banks and graveyards around Cockett tunnel. A small artificial pool before the tunnel, SS69 once choked with Nymphaea alba or one of its cultivars. This surface feature is now confined to a small area in a corner of the pool due to the arrival of Nymphoides peltata which now dominates; yet another example of aquatic competition; compare Elodea nuttallii, Lemna minuscula and Crassula helmsii. New records of Nymphaea alba need to be treated with caution, as there are about 200 cultivars to date according to a recent television programme from Wakehurst Place in Sussex. Daylight again at the end of the tunnel with old pink rose cultivars at overgrown Cockett station, recalling steam days of the 50's. It is downhill from here with the view northwards across to Fforestfach dominated by ever spreading Ulex europaeus. To the south a delightful heathland pool is passed on the edge of Gower with Drosera rotundifolia, Narthecium ossifragum and Eriophorum angustifolium. Once the low-angled light of the setting sun tricked me into thinking I may have passed a stand of Pitcher plants here, the heads reflecting the light, but the next day time scan in the shortening days of summer revealed the glossy capsules of Iris pseudacorus! In the 1970's I noted three plants of Cytisus scoparius at Gowerton
station, SS 59, this too has spread, forming a narrow band for a few hundred yards east of the station and spreading into the tall Ulex.

In the distance is the wooded valley of the Afon Llan, SS 69, in the historic Penllegaer estate with its large dried up lake. A visit in 1990 gave new sites for Narcissus pseudonarcissus, Scirpus sylvaticus, Sasa palmata and Polystichum aculeatum forma cambricum with mature sori. As the train speeds downhill to Loughor, SS 59, on what is now a single-track main line, Melilotus alba still survives on the edge of re-seeded former salt-marshes. There is much recent disturbance at Leucorum (Roman Loughor) with the building of a modern Roman road which needs to be scanned. Finally, the train belts across the waist of the River Loughor to enter the largest vice-county in Wales - but that's another story.

Acknowledgement

I am grateful to staff at Llanelli Reference Library for a selective computer search of railway references, some of which are cited here.

References


G. Hutchinson
Welsh Plant Records are compiled by R. Gwynn Ellis, Dept. of Botany, National Museum of Wales, CARDIFF CF1 3NP, from reports of BSBI vice-county Recorders to whom records should preferably be sent. Plants are listed for each county in the order of Dandy's List of British Vascular Plants (1958), the number in that list preceding the name, so that names recently changed can be used without giving the former name. However, for the critical genera Rubus, Hieracium and Taraxacum, the species numbers follow more recent works viz: Rubus - Brambles of the British Isles, Edees & Newton, 1988, Hieracium - Sell & West in Critical Supplement to the Atlas of the British Flora, F.H. Perring, 1968, and Taraxacum - C.C. Haworth's typescript, An Annotated List of British and Irish Dandelions, 1988. English names are those in English Names of Wild Flowers ed. 2 (1986) by Dony et. al.

The following symbols are used:
* to indicate a new v.c. record.
+ to indicate a new 10km square record.
! to indicate that the species is not native to Wales.
$ to indicate a species which, though native in some parts of Wales, is not so in the locality recorded.
[] to indicate that the record, previously published in error, should be deleted.

Where entries consist of one record only, the symbols appear before the species number: where entries consist of more than one record, the symbols appear before each record, except for the ! sign which, if required, is always placed before the species number.

In general only those records which are additional to those given in Flowering Plants of Wales by R.G. Ellis (1983) are included. Other records are included at the discretion of the vice-county Recorder.

The Vice-County Recorders from 1/1/1990 are:

MONMOUTH, v.c. 35; T.G. Evans, La Cuesta, Mounton Road, Chepstow, Gwent NP6 5BS.

GLAMORGAN (West), v.c. 41; Dr Q.O.N. Kay, Dept. of Botany, University College, Singleton Park, Swansea, West Glamorgan SA2 8PP.

GLAMORGAN (East), v.c. 41; J.P. Curtis, 12 St Lythan Close, Dinas Powys, South Glamorgan CF6 4UB.

BRECON, v.c. 42; M. Porter, Aberhaywy Farm, Cyffredyn Lane, Llangynidr, nr Crickhowell, Powys NP8 1LR.

RADNOR, v.c. 43; Dr D.R. Humphreys, Knill Court, Knill, nr Presteigne, Powys LD8 2PR.

CARMARTHEN, v.c. 44; R.D. Pryce, Trevethin, School Road, Pwll, Llanelli, Dyfed SA15 4AL.

PEMBROKE, v.c. 45; S.B. Evans, Glan-y-Mor, Dinas Cross, Newport, Dyfed SA42 OUQ.

CARDIGAN, v.c. 46; A.O. Chater, Windover, Penyrangor, Aberystwyth, Dyfed SY23 1BJ.

MONTGOMERY, v.c. 47; Mrs M. Wainwright, 'Troy', 1 Green End, Oswestry, Shropshire SY11 1BT.

MERIONETH, v.c. 48; P.M. Benoit, Pencarreg, Barmouth, Gwynedd LL42 1BL.

CAERNARFON, v.c. 49; N.H. Brown, Treborth Botanic Garden, University College of North Wales, Bangor, Gwynedd.

DENBIGH, v.c. 50; Mrs J.A. Green, Coed Duon, Tremerchion, St Asaph, Clwyd LL17 0UA.

FLINT, v.c. 51; G. Wynne, Gwylfa, Lixwm, Holywell, Clwyd.

ANGLESEY, v.c. 52; R.H. Roberts, Quinton, 51 Belmont Road, Bangor, Gwynedd LL57 2HY.
MONMOUTH, v.c. 35 (comm. T.G. Evans)


+24/5. Gymnocarpium robertianum (Hoffm.) Newman (Limestone Fern). Cleft, limestone rocks, Pwll-du, SO2511, R. Fraser, 1988. One of only two sites in Gwent.


Monmouth


+!227/2. *Cotoneaster simonsii* Baker (a cotoneaster). Growing with *Cotoneaster frigidus*, see below.

+!227/3. *Cotoneaster horizontalis* Decne (Wall Cotoneaster). Growing with *Cotoneaster frigidus*, see below.

*!227/5. *Cotoneaster frigidus* Wall. ex Lindl. (a cotoneaster). In a rough grassy area containing *Dactylorhiza praetermissa* and the above two species of *Cotoneaster*, Cwmtillery, SO2204, R. Fraser, 1988. First record.


+!331/1. *Ficus carica* L. (Fig). Base of wall over stream, Garndiffaith, SO2604, R. Fraser, 1988. Second record.


342/4. *Populus nigra* var. *betulifolia* (Pursh) Torrey (Black Poplar). Nine trees discovered in six sites with possibly two more young trees but leaves out of reach and trunks too young to show bosses; two trees with missing branches near railway line, Penpergwm, SO3110, T.G. Evans, 1986; one tree in field near 'Moor road', St Brides Wentlooge, ST3083, T.G. Evans & Recorder group, 1988; one tree at corner of road just SW of Llanwenarth Church, SO2714; one tree badly pollarded on roadside (A40T) opposite Pysgodlyn, SO2615; one tree near River Usk, SE of Mardy Farm, SO21615; and three trees just W of Tyrewen, SO2515, all R. Fraser, 1988. Few of the trees are in perfect condition due to storm damage or the attention of man.

Monmouth


459/3. Stachys arvensis (L.) L. (Field Woundwort). During the six years of the v.c. 35 Mapping Scheme, it has been recorded in 36 tetrads in 15 10km squares, usually in small numbers, but a large population was recorded near Llantilio Crossenny, SO3814, R.Fraser, 1988.


558/1/151. Hieracium subamplifolium (Zahn) Roffey (a hawkweed). Dockside, Newport, ST38C; also hegbank near Bettws Newydd, SO30S; and near scrapyard heath, Blackwood, ST1696, all T.G.Evans, 1988, det. J.Bevan.


563/2. Alisma lanceolatum With. (Narrow-leaved Water-plantain). In Monmouth - Brecon canal, Rogerstone, ST28U; and Risca, ST29K, both T.G.& U.T.Evans; Llanfoist, ST21R, C.Titcombe & R.Fraser; Goetre,
abundant, SO30C, R. Fraser; Llanover, SO30E, J. Jones & R. Fraser, all 1988. Other sites occur in reens near the River Severn.


+708/4. *Alopecurus aequalis* Sobol. (Orange Foxtail). Pond margin, Moorcroft, SO5109, J. Harper; and also in quantity at 'bay' at N end of Llandegfedd Reservoir, SO3300, R. Fraser, both 1988. A new 10km square and new site for this uncommon grass.

GLAMORGAN, v. c. 41 (comm. Q. O. N. Kay & J. P. Curtis)


Glamorgan


+!320/20. Reynoutria sachalinensis (Friedrich Schmidt Petrop.) Nakai (Giant Knotweed). Waste ground, Howardian School grounds, Cardiff, with Reynoutria japonica and Rubus idaeus, ST2078, G.Hutchinson, 1988


Glamorgan / Brecon


Brecon, v.c. 42 (comm. M.Porter)


RADNOR, v.c. 43 (comm. Miss A.C.Powell & D.R.Humphreys)


28/1. Botrychium lunaria (L.) Swartz (Moonwort). +Meadow, Troedrhiwdraen, Elan Valley, SN8957; +also meadow at Llanbister, SO1073, NCC Meadow Survey, 1988. Now known from 8 sites in the County.


!*39/1. Eranthis hyemalis (L.) Salisb. (Winter Aconite). A fine naturalized population on a wooded bank on the edge of Wyeciff garden, Clyro, SO2242, R.G.Woods, 1988. This population has obviously been in existence for many years but remained unrecorded until noted by Mrs M.Westwood.


Radnor

+168/9. *Geranium pyrenaicum* Burm. fil. (Hedgerow Crane's-bill). In rough grassland on site of former railway station, Llanelwedd, SO0451, BSBI Meeting, 1988. This rare denizen has not been recently recorded elsewhere in the County.


+171/4. *Impatiens glandulifera* Royle (Indian Balsam). By forestry track near Cold Oak, Presteigne; and by the River Lugg below Presteigne, both SO2863, R.G.Woods, 1988. This widespread alien of river banks appears to be a recent colonist of the River Lugg.


+223/1. *Sanguisorba minor* Scop. subsp. minor. (Salad Burnet). A few plants on side of rarely used forestry track, Caen Wood, Presteigne, SO3063, R.G.Woods, 1988. A calcicole, it may have been introduced with road stone. This may be the only extant site in Radnor.


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Radnor


**CARMARTHEN, v.c. 44 (comm. R.D.Pryce)**


21/2aff. *Dryopteris affinis* (Lowe) Fraser-Jenkins subsp. *affinis* (Scaly Male-fern). +Roadside hedgebank, 0.8km SE of Pontwelly, SN4239; +base of steep wood alongside River Teifi, SE side of unmotted road, Dol-Ilan, E of Llandysul, SN4240; +edge of wood near Sychnant Farm, 1.4km E of Llanedi, SN6007, all G.Hutchinson, 1988.


*21/2x1. *Dryopteris* x Fraser-Jenkins nothosubsp. *complexa* (*D. affinis* subsp. *affinis* x *D. filix-mas* (a hybrid male-fern). Driveway bank at entrance to Dol-Ilan, 0.8km NE of Pontwelly, SN4240, G.Hutchinson, 1988, det. C.R.Fraser-Jenkins. First record.


+192/5. Trifolium squamosum L. (Sea Clover). In grassy sward on fuel ash, Burry Port Power Station, SN4500 & 4600, R.Higgins & D.Lawrence, 1988.


Carmarthen


*!461/arg. Lamiastrum argentatum Smejkal (Variegated Yellow Archangel). Floor of shaded footpath, E of N end of Three Fields footpath near Cwmoernant, Carmarthen, SN4121, G.Hutchinson; +also limestone grassland, Capel Dyddgen, SN4612, I.K.Morgan, both 1988. First and second records.


663/60. Carex disticha Hudson (Brown Sedge). Ditch by old railway sidings 0.5km E of Burry Port Power Station, SN4500, R.Higgins & D.Lawrence, 1988.

+670/1x671/1. xFestulolium loliaceum (Hudson) P.Fourn (Festuca pratensis x Lolium perenne) (Hybrid Fescue). Species-rich meadow, Ty Mawr, Talsarn, Llanddeusant, SN7826, S.M.G., 1988. Fourth record.


Carmarthen / Pembroke


PEMBROKE, v.c. 45 (comm. S.B.Evans)


*220/3. Alchemilla filicaulis* subsp. *vestita* (Buser) M.E.Bradshaw (Hairy Lady's-mantle). Flushed grassland on gentle slope dominated by *Succisa pratensis* and *Agrostis canina*, Cwm Rhigian, 2.5km W of Newport, SN0339, E.Gwynn & S.B.Evans.


+663/33. *Carex lasiocarpa* Ehrh. (Slender Sedge). Molinia dominated centre of calcareous mire, Cors Penally, S of Penally railway station, SS1198, F.Rose, 1987. Second record; the record for SM80 in *Flowering Plants of Wales* is incorrect. The only previous record is from SR89.
CARDIGAN, v.c. 46 (comm. A.O.Chater)


16/1. *Asplenium ceterach* L. (Rustyback). Rock face of Ponterwyd Quarry, 1km W of village, SN78, A.O.Chater & A.P.Fowles, 1988. Apparently the only record from rock, as opposed to mortared walls, in Cards.


+29/1. *Ophioglossum vulgatum* L. (Adder's-tongue). 45 fronds in stony turf, Eaglebrook lead mine, NW corner of Nant y Moch reservoir, SN78, A.O.Chater, 1988. Apart from one old record from Devil's Bridge, not otherwise recorded from the uplands in Cards.


113/7. *Viola lactea* Sm. (Pale Dog-violet). Rank, horse-grazed *Molinia* pasture E of Aber-arth, SN4963, A.O.Chater & A.P.Fowles, 1988. Recorded apparently from two other sites in the general area by Salter in 1932-1939, but not seen in Cards. since; in the present site, which has since been destroyed, it occurred in several large colonies over about an acre.


+435/1/15. *Euphrasia confusa* Pugsley (an eyebright). Spoil heaps and acidic turf, Eaglebrook lead mine, NW corner of Nant y Moch reservoir,
Cardigan

SN78, A.O.Chater, 1988, det. P.F.Yeo. The commonest Euphrasia on lead mine sites in N. Cards.


+435/1/17. Euphrasia arctica Lange ex Rostrup subsp. borealis (Townsend) Yeo (an eyebright). Hay meadows, Nant Llwyd, NW of Llyn Brianne, SN75, A.O.Chater, 1988, det P.F.Yeo. In several upland hay meadows in this part of Cards.


+472/2. Plantago media L. (Hoary Plantain). Abundant in chapel graveyard, Ciliau Aeron, SN4958, A.O.Chater, 1988. As Trisetum flavescens is also present, there is no reason to assume that it is not native and another example of the occurrence of calcicoles in graveyards; it has not been seen in Cards. for over 40 years.


Allium vineale L. var. compactum (Thuill.) Boreau (Wild Onion). Hedgebank W of Wen chapel graveyard, Gilfachrheda, SN4159, A.O.Chater, 1988. Salter's remark that this is the only variety in Cards. is still true.

Hammarbya paludosa (L.) O.Kuntze (Bog Orchid). 16 plants in flush on NNW facing slope, Dyffryn Castell, SN78, A.P.Fowles & A.O.Chater; 107 plants in flushes on N facing slope, Bryn Bras, SN78, A.O.Chater; 15 plants in flush on S facing slope, Bryn Lluestydd, SN78, A.O.Chater, all 1988. At the three previously known sites in Cards., 10 plants were seen in a flush on S facing slope, Bryn Bras, SN77, A.O.Chater, W.M. & P. Condry, 89 plants were seen in one site in Cwm Ystwyth, SN87, and none in the other, making a total of 237 plants in 5 sites in Cards. in 1988.

Coeloglossum viride L. (Frog Orchid). Pingo rampart, Rhos Glynyr helygg D.W.T. Reserve, Gorsgoch, SN4951, BSBI Field Meeting, 1988. One spike only seen; last recorded in Cards. in 1926 by Salter at Llywernog, SN78.


MONTGOMERY, v.c. 47 (comm. Mrs M. Wainwright)


Montgomery


*122/1. Elatine hexandra* (Lapierre) DC. (Six-stamened Waterwort). North shore of acid mountain lake, Llyn Du, 5.5km NNW of Caersws, SO09, I.C. Trueman et al., 1984.


Montgomery / Caernarfon


*683/3. Bromus benekenii (Lange) Trimen (Lesser Hairy-brome). Wooded dingle near Llanfihangel-yng-Ngwynfa, SJ01; +also several plants with abundant Bromus ramosuson base-rich woodland, Abermule Dingle, SO19, both P.M.Benoit, 1988. First and second records.

CAERNARFON, v.c. 49 (N.H.Brown)


Caernarfon


+207/9. *Lathyrus palustris* L. (Marsh Pea). Clambering through *Phragmites australis* along drainage channel and extending a short distance into adjoining field, c.0.5km S of Caerhun Church and Roman Fort near Tyn-y-Groes, SH7759, R.Lewis, 1988. Three further colonies were notes in the same 1km square in 1988. All four colonies are additional to that recorded in 1987.


225/8can. *Rosa canina* L. s.s. (Dog-rose). The segregate has now been recorded from several 10km squares in the Lleyn Peninsula, +SH12, +SH13, +SH22, +SH23, +SH24, +SH32, +SH33, all A.P.Conolly, 1988, conf. A.L.Primavesi.


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Caernarfon


+1342/4. Populus nigra L. s.s. (Black Poplar). Three trees in hedgerow, 0.5km N of Roewen, SH7572, R. Lewis, 1988, conf. N. Brown.


+1409/2. Lycium chinense Miller (China Teaplant). One bush at edge of small wood near Talycafn, SH7772, J.A. Green et al., 1987.

+1420/2. Linaria purpurea (L.) Miller (Purple Toadflax). Roadside hedgebank between Conway and Hendre c.0.5km SW of Conway, SH7776, R. Lewis, 1988.

1424/5. Scrophularia vernalis L. (Yellow Figwort). Deganwy, SH7878, G. Battershall et al., 1987. First record since 1956 for this square.


+1445/4x5. Mentha x piperita L. (M. aquatica x M. spicata) (Peppermint). At side of stream in open grassland above Isallt Farm, S of lane between Roewen and Youth Hostel, c.1km W of Roewen, SH7472, R. Lewis, 1988.


Caernarfon / Denbigh

1988


*607/7. Allium carinatum* L. (Keeled Garlic). One patch with c.70 flowering heads on grassy verge of B5106 between Baclaw Farm and Groes Hotel c.3km S of Conway, SH7774, R.Lewis, 1988.


*670/6. Festuca rubra* subsp. *arenaria* (Osbeck) Syme (a red fescue). Drift cliff, Porth Towyn, Tudweiliog; also dunes to the W end of Pwllheli towards Llanbedrog, SH3634, both A.P.Conolly, 1988, det. A.K.Al-Burmani. First and second records.


DENBIGH, v.c. 50 (comm. Mrs J.A. Green)


16/1. *Asplenium ceterach* L. (Rustyback). One plant on mortared wall of farm, Taiteg near Melin y Wig, SJ0449, J.A.Green, 1988.


!*345/1. Rhododendron luteum Sweet (Yellow Azalea). Numerous bushes, sometimes dominant in wet ground in wood, Coed Cerrig y Wyallt near Talycafn, SH7870, probably planted originally but now seeding freely; also in woodland surrounding Llyn Syberí c.2km S of Talycafn, SH7869, both R.Lewis, 1988. First record and second records.
Denbigh / Flint


+462/3. Lamium hybridum Vill. (Cut-leaved Dead-nettle). In field cultivated with Brassica sp. S of Garth, c.0.75km S of Llansantffraid Glan Conway, SH7974, R.Lewis, 1988. First post-1930 record for the square.


+670/1x671/1. xFestulolium lolium (Hudson) P.Fourn (Festuca pratensis x Lolium perenne) (Hybrid Fescue). Wet meadow downstream from Rhyd-y-cyffin bridge, Penley, Bangor on Dee, SJ4141, G.Kaye, 1988. Second record.


FLINT, v.c. 51 (comm. G. Wynne)


Mentha suaveolens Ehrh. (Round-leaved Mint). River Elwy, St Asaph, SJ07, Anne Daly, 1988, det. G.Hutchinson. First post-1930 record.


Eleocharis multicaulis (Sm.) Desv. (Many-stalked Spike-rush). Marsh half a mile SW of Llyn Helyg, SJ1076, J.A.Green, 1988, det. G.Hutchinson. First record.


ANGLESEY, v.c. 52 (comm. R.H.Roberts)


