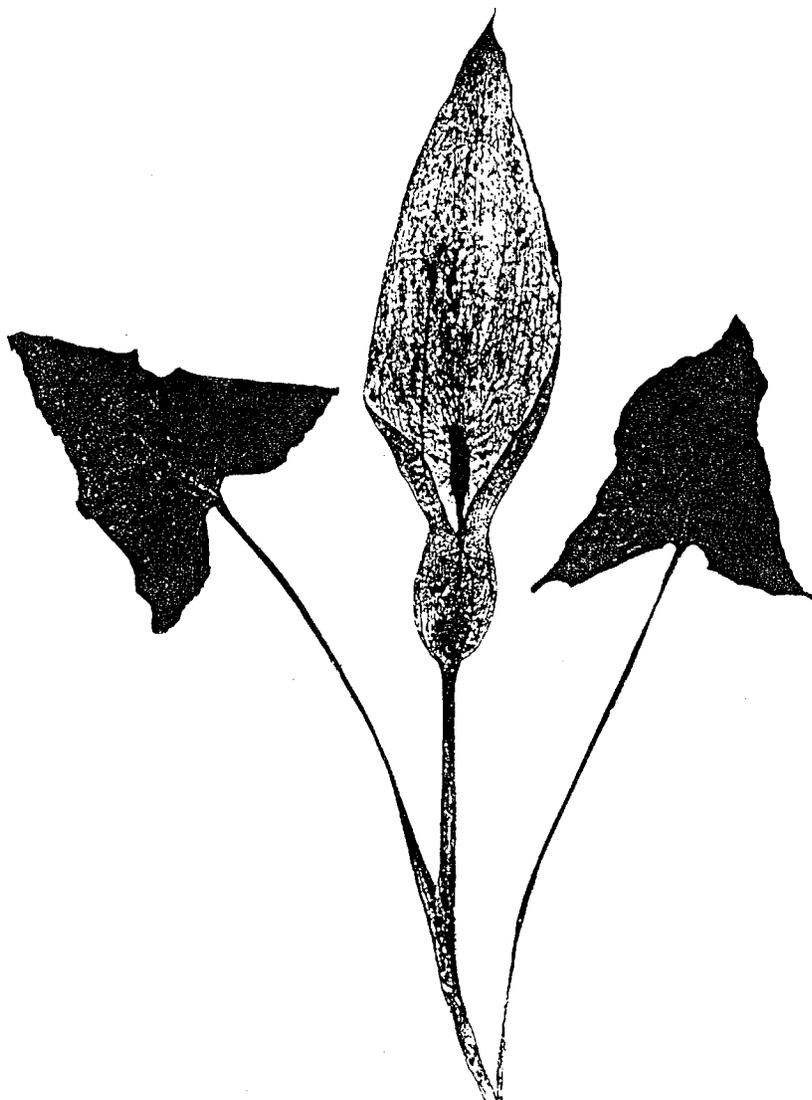


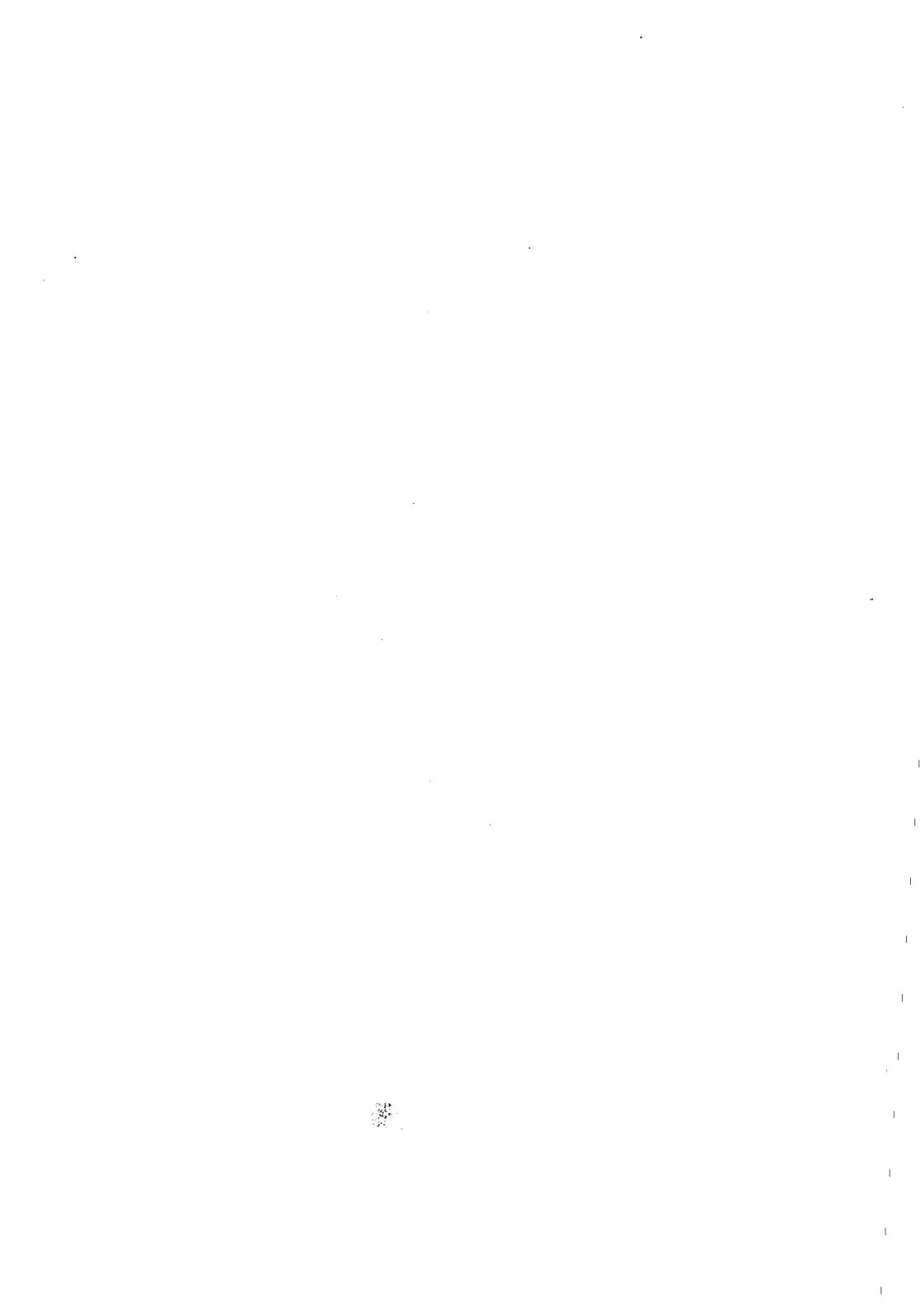
BOTANICAL SOCIETY OF THE BRITISH ISLES
WELSH BULLETIN

Editor: I.K.Morgan

No. 43, SPRING 1986



Photocopy of Specimen of *Arum maculatum*



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EDITORIAL

Firstly, I would like to express my gratitude to those members who have kindly provided articles or notes, resulting this time, in a hefty Welsh Bulletin and even necessitating us to keep over some material for the next issue. As I have stated before in this Editorial, the success or failure of the Welsh Bulletin depends almost entirely on whether members give their support by contributing articles or notes. It is not too early to write an article for our autumn issue, so please send in your contributions.

Only two stalwarts of the BSBI in Wales, A.O. Chater and T.G. Evans, responded to my request for information regarding the relative success or failure of different species in the variable weather of recent years. Trevor Evans considers the following species as having done well (i.e. flowered well or increased in number) in Gwent (vc. 35) during 1985:- *Crataegus monogyna* (Hawthorn), *Galanthus nivalis* (Snowdrop), *Leucanthemum vulgare* (Oxeye Daisy), *Ophrys apifera* (Bee Orchid), *Primula veris* (Cowslip), *Lychnis flos-cuculi* (Ragged-Robin) and several other species. The flowering masses of *Leucanthemum* and *Lychnis* was noticeable too in Carmarthenshire, where good flowering over many meadow plants was noticeable, due greatly to the fact that the wet season did not allow farmers to cut hay until well after flowering. Mr Evans also noted an increase of *Trifolium scabrum* (Rough Clover) and *T. striatum* (Knotted Clover) at their Gwent coastal sites.

Farther NW, in Ceredigion, A.O. Chater too, comments on the abundance of coastal *Trifolium* (Clover) in 1985, the success of which he attributes "to the mild, wet winters rather than earlier hot, dry summers". Still on the Ceredigion coast, *Armeria maritima* (Thrift) in 1985 was "exceptionally floriferous - for the first time in my Mother's memory (53 years at Aberystwyth) it could be seen, when in flower, as a pink sheet on the north slope of Allt Wen, Aberystwyth, from over 1 km away". Mr Chater also records that *Ornithopus purpusillus* (Bird's-foot) and *Sedum anglicum* (English Stonecrop) "became vastly more abundant in 1983, in several sites in vc. 46, notably on top of Pendinas, Aberystwyth. Both remain more abundant in these sites than they did before". The ash fruit crop in both Ceredigion and Carms. was abundant. 1985 was considered a poor year for *Orchis mascula* (Early-Purple Orchid) in Ceredigion and *Primula vulgaris* (Primrose) in Gwent.

The recent spate of cold February weather ("the coldest since 1947") has had an obvious effect on the commencement of flowering. What a contrast, to the balmy days of the early-mid 1970's!, when, for example, (so my diary states), on February 12th 1975, "Sycamore saplings were in full leaf, elder and hawthorn coming into leaf"; and

there are many other examples!).

To end on a lighter note (but still complaining about the weather). As a Welshman, and writing this on St. David's Day, the Siberian weather has, apparently locked the leek crops solidly into the ground, resulting in a great paucity of that celebrated Allium. A cloth leek, I am afraid, will have to do this year, but it is not quite the same!

I.K. Morgan,
1 March, 1986

HON. SECRETARY'S REPORT

Annual General Meeting, 1985

The twenty-third Annual General Meeting of the B.S.B.I. Wales, was held at St David's University College, Lampeter, Dyfed on July 20, 1985. Running concurrently with the AGM was a four day meeting to assist with recording for the Flora of Carmarthenshire.

On the Saturday morning, early arrivals, together with those present for the 4 days, split into small groups and dashed off hither and thither tetrad recording. Many interesting records resulted and some of these are mentioned in the article by R.D. Pryce elsewhere in this Bulletin.

After an excellent lunch, twenty-four members and guests gathered for the afternoon session which was opened by the Chairman Mr M. Porter. He first welcomed members to the meeting and commented on the excellent turnout, and then introduced the guest speaker Mr R.D. Pryce.

Mr Pryce gave a very interesting account of the Carmarthenshire Flora, besides showing many excellent coloured slides of plants and habitats, he gave an appraisal of how the new recording scheme, based on tetrads, was progressing. (See article elsewhere in this Bulletin).

After tea the Chairman opened the AGM proper. Apologies for absence were received from Miss A. Powell, Mr N. Brown, Mr F. Webb and Mrs Mary Briggs the Society's Hon. General Secretary who sent her best wishes for the meeting. The minutes of the previous years AGM were approved and signed. The Chairman then commented on the sad loss of Miss Doris Pugh, vice-county recorder for Montgomeryshire who died in February and in tribute, the meeting stood in silent prayer. He then announced that a new recorder was being sought and an appointment would be made in the near future.

The Secretary was then invited to give his report on the years activities. He began by reporting that Mr I.K. Morgan had accepted an invitation to serve on the Committee for Wales made after last years AGM. Mr Morgan had also become sole editor of the **Welsh Bulletin**. The two issues that had been published since his appointment fully maintained the very high standards that were set by his two predecessors, Mr R.H. Roberts and Mr S.G. Harrison. The Secretary then reminded members that to maintain this standard the editor needed their active cooperation in providing articles, letters or any other form of contribution. This had now become an annual request which most often seemed to fall on deaf ears. Perhaps the coming year would be different!

The secretary then reported that **Welsh Plant Records** were again being published as a supplement to the **Welsh Bulletin**. This was because of the long delay in the publication of **Nature in Wales**. The supplement was being prepared using a computer and it was hoped that future issues would be more legible than that published recently.

He then reported on the field meetings that had taken place since the last AGM and thanked the leaders for their efforts. (R.D. Pryce; N. Brown; Q. Kay; G. Wynne; Mrs J. Green; A.O. Chater, and J.P. Curtis). He drew particular attention to two weekend meetings that had been held in 1985 specifically to study two of the most difficult and critical groups of British Plants, **Taraxacum** and **Hieracium**. He warmly thanked Chris Haworth and Dr John Richards for leading the former and Jim Bevan for leading the latter meeting. Both meetings were considered to have been very successful.

The secretary then reminded members of the field meetings still to come in 1985; Teifi Oxbows on the following day and Brynbeirian Moor on September 1st, both to be led by S.B. Evans, and the further tetrad recording on the Monday following the AGM under the guidance of Richard Pryce. He also reminded members that next year we hold our Quadrennial meeting as well as the AGM, at which we will have to elect a new Chairman and Vice-chairman. Nominations for either of these posts should reach the Secretary before the end of May 1986.

Finally he thanked the Officers of St David's College for the marvellous way in which they had looked after our needs and Mr R. D. Pryce who organized the meeting.

FINANCIAL REPORT

The Treasurer Mr R.D. Pryce reported that our financial situation was stable. As in previous years our main source of income was from BSBI funds and our main expenditure was on the **Welsh Bulletin** but this year we also had extra costs in the form of travelling expenses for the leaders of the **Taraxacum** weekend. This is shown on the Balance Sheet presented on the next page which covers the 12 months to December 1985.

BALANCE SHEET

SUMMARY OF FINANCIAL ACCOUNTS FOR THE YEAR ENDING 31 DECEMBER 1985

GENERAL ACCOUNT

INCOME	£	EXPENDITURE	£
Excess income over expenditure 1984:	61.24		
Carmarthen meeting 1984:	4.95		
Taraxacum weekend:	83.0	Taraxacum weekend accommodation:	73.91
		Taraxacum weekend leaders expenses:	20.00
Lampeter A.G.M.:	340.70	Lampeter A.G.M. accommodation:	330.10
Welsh Bulletin subs.:	5.00		
Welsh Bulletin back issues:	5.45		
		Bulletin 42 production:	75.00
		Bulletin 42 distribution:	40.17
	<u>500.34</u>		<u>539.18</u>
Excess expenditure over income:			£38.84
			<u>£36.92</u>
SPECIAL ACCOUNT			
Carried forward from 1984:			£75.76
Current Account Balance:			£8.73
Deposit Account Balance:			£24.69
			<u>£36.92</u>
Cash in Hand.			£ 3.50

Richard D. Pryce (Treasurer)
12.1.86

ELECTION OF OFFICERS

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

Committee Members

Messers T. Blackstock; N. Brown; T.G. Evans and R.G. Woods were all due to retire under Rule 5 of the constitution and were eligible for immediate re-election. All four had indicated their willingness to stand again and in the absence of any nominations from the floor were duly elected to serve for a further period of two years. Mr I.K. Morgan, who had been co-opted to the committee following last years AGM, was elected to serve for a further period of one year.

There being no further business, the Chairman closed the AGM, and invited all present to look at the various exhibits that had been laid out for them.

EXHIBITS

Miss Ann Conolly: Two enigmatic roses from the Lleyn Peninsula; **Rosa arvensis x canina** and **Rosa obtusifolia/dumetorum**.

T.G. Evans: Plants new to Wales; **Anthriscus cerefolium** (Garden Chervil) from a roadside West of Boughrood, vc.43; and **Oenanthe pimpinelloides** (Corky-fruited Water-dropwort) from a roadside bank West of Bettws, v.c.35.

T. Crosby: A plant resembling **Valeriana phu**.

R.D. Pryce: An exhibit on the Carmarthenshire Flora Project.

I.K. Morgan: Specimens of Hoverflies including Wasp and Bee mimics. Mr Morgan also gave a fascinating talk on hoverflies to many interested if slightly bemused members.

R.G. Ellis: Exhibits on new or interesting publications; books for identification of plants; and a first draft of a new pocket guide to the identification of British Flowering Plants & Ferns.

Many of the interesting specimens collected during tetrad recording were also exhibited.

Slides were shown by Mr J.P. Curtis; Mr R.G. Ellis; Mr T.G. Evans; Mrs J.A. Green; Mr & Mrs Lambourne and Mr R.D. Pryce.

COMMITTEE FOR WALES, 1985-86

Following the election of Officers and Members at the AGM, the composition of the Committee for Wales for 1985-86 is as follows:

Chairman	Mr M. Porter
Vice-Chairman	Mrs J.A. Green
Secretary	Mr R.G. Ellis
Treasurer	Mr R.D. Pryce

Committee members:

Mr S.B. Evans*	Mr T. Blackstock
Dr Q.O.N. Kay*	Mr N. Brown
Mr G. Wynne*	Mr T.G. Evans
Mr I.K. Morgan*	Mr R.G. Woods

* Members due to retire in 1986.

BOTANICAL SOCIETY OF THE BRITISH ISLES - WALES

6th QUADRENNIAL MEETING

24th ANNUAL GENERAL MEETING

4th WELSH EXHIBITION MEETING, 1986.

NOTICE IS HEREBY GIVEN that a meeting of Members of the Society, normally resident in Wales, will be held at Coleg y Bala, Bala, Gwynedd on **Saturday July 12th, 1986** at 3.30 pm.

AGENDA

1. Election of Chairman
2. Election of a member to serve on Council
2. Any other business

Wales consists of the counties of Dyfed, Clwyd, Gwent, Gwynedd, Powys, Mid Glamorgan, South Glamorgan, and West Glamorgan : and the vice-counties of Monmouth, Glamorgan, Brecon, Radnor, Carmarthen, Pembroke, Cardigan, Montgomery, Merioneth, Caernarvon, Denbigh, Flint and Anglesey.

Nominations of members for election as Chairman or to council must be in writing, signed by two members normally resident in Wales and accompanied by the written consent of the candidate to serve if elected. Such nominations should be sent to the Hon. Secretary of the Committee for Wales, Mr R.G. Ellis, Dept. of Botany, National Museum of Wales, CARDIFF, CF1 3NP, to arrive not later than May 31st 1986.

Nominations for membership to the Committee for Wales or for the posts of Hon. Secretary or Hon. Treasurer should be made in writing with the signature of the nominee before May 31st to the Hon. Secretary at the above address.

PROGRAMME

- 10.00 am Visit to Ffridd Fannog bog at SH8538
- 1.00 pm Lunch
- 1.30 pm Meeting of Committee for Wales
- 2.30 pm "Conservation and Plants in the Bala Area"
by **D. Elias**
- 3.30 pm Quadrennial and Annual General Meeting
- 4.00 pm Tea
- 4.30 pm Welsh Exhibition Meeting - Exhibits, short talks
with slides etc.
- 6.30 pm Dinner
- 7.30 pm Exhibition Meeting (continued)

Advance notice would be appreciated of any exhibits or slides but they will also be accepted on the day.

Dormitory accomodation is available at Coleg y Bala at c. £15 per night full board from 11-14 July. Lunch and Dinner at Coleg y Bala are available on the Saturday for non-residents. All BSBI members and their guests are welcome. A list of B&B and Hotel accomodation is also available.

Further details can be obtained from the Secretary to the Committee for Wales : Mr R.G. Ellis, Department of Botany, National Museum of Wales, Cardiff, CF1 3NP. Please apply before May 31st.

FIELD MEETINGS, 1986

- Sunday 15 June** Holy Island, Anglesey
Leader: N. Brown
The best coastal heath in Anglesey with a rich and varied flora.
Numbers limited to 20
- Saturday 28 to Monday 30 June** Carmarthen
Leader: J. Bevan
A meeting of the *Hieracium* study group. Visits will be made to as many sites in the county as possible.
Accommodation is available in the Halls of Residence at Trinity College Carmarthen.
Please apply for details and booking form to R.D. Pryce, Rhyd-Deg, Maesybont, Llanelli, SA14 7HG before May 28th.
- Sunday 13 July** Llyn Tegid (Bala Lake),
Gwynedd
Leader: P.M. Benoit
Visits to some of the interesting sites on the shores of Llyn Tegid.
(In conjunction with BSBI Wales AGM at Bala).
- Friday 1 to Monday 4 August** N.E. Carmarthenshire, Dyfed
Leader: R.D. Pryce
A flora of Carmarthen recording weekend based at St. Davids College, Lampeter which will concentrate on tetrad recording in the upland region in the N.E. of the county.
Accommodation is available in St. Davids College Halls of Residence.
Please apply for details to R.D. Pryce at the address given above before July 1st.
- Saturday 16 August** Machynys, Llanelli, Dyfed
Leader: I.K. Morgan
Waste ground and wetland flora.
- Saturday 23 August** Severn Estuary, Gwent
Leader: T.G. Evans
A long and strenuous walk over potentially dangerous mud flats to examine the populations of the three British species of *Zostera*.
Only the fit should apply, numbers limited to 20.
- Sunday 24 August** Cardiff Docks, Glamorgan
Leader: J.P. Curtis
The rich and varied alien flora of this industrial site will be visited.
Numbers limited to 25.

For details of any of the above meetings, please apply to the Hon. Secretary at least one month in advance.

CARMARTHENSHIRE FLORA PROJECT

PROGRESS IN 1985

R.D. Pryce

I am able to report another very satisfactory season of recording in 1985. I continue to have the support and enthusiasm of the same small group of recorders who I can rely upon to provide a steady flow of reliable records (many from those parts of the county that other recorders apparently cannot reach!). Another very successful recording meeting, combined with the B.S.B.I. Wales A.G.M., attracted a number of eminent botanists from around the country who were also able to add some good records and cover a large area of ground. I have also received several cards and individual records from the more casual enthusiasts.

There are now only 34 tetrads with no post 1970 records (out of 698) and 21 of these are squares that straddle the county boundary. Many of these comprise a very small land area and a few are almost wholly offshore (I'm looking for volunteers to record *Zostera* (Eelgrass)!). Of the unrecorded complete squares, I think only five have roads through them, the remainder being inaccessible by car.

There were eight new vice-county records, six of which were of native species. Probably the most notable was Mrs Pell's (AMP) *Valerianella carinata* (Keeled-fruited Cornsalad), growing in abundance around the graves in the chapelyard in Ammanford where she discovered *Euphorbia exigua* (Dwarf Spurge) two years ago. The remaining NCRs were of more critical taxa. George Hutchinson (GH) collected specimens of *Euphrasia confusa* x *memorosa* (a hybrid Eyebright), (det. A.J. Silverside) from a bank of lime waste at Van Quarry, Meinciau, Gwynn Ellis (RGE) picked out a stand of *Juncus foliosus* (a Toad Rush) growing on a trackway at Cilyblaidd, Pencarreg during the B.S.B.I. Wales A.G.M. and Ian Morgan (IKM) collected *Chara globularis* var. *virgata* (a Stonewort), (det. Mrs J.A. Moore) from a pool on Tywyn Burrows.

In November Jim Bevan looked at the collection of Carmarthenshire *Hieracia* (Hawkweeds) in the National Museum of Wales and identified one NCR amongst sheets sent in by Mrs Vaughan in 1965, namely *H. salticola* from a railway embankment at Cyngordy. GH also recorded this species from a railway site at Whitland in 1985. Finally, another rather belated NCR was *H. lasiophyllum* which was recorded from several cliffs in the Allt Rhyd y Groes area by a Nature Conservancy Council survey team in 1982.

The third vice-county record (vcr) of *Dryopteris aemula* (Hay-scented Buckler-fern) was made by IKM: about twelve strongly growing plants in

a small wooded valley adjacent to the West Wales Trust's reserve at Gors Goch, Llanllwch. This species probably occurs in similar habitats elsewhere in the county but is likely to be overlooked: wintergreen woodland *Dryopteris* plants should be checked. Other interesting ferns were the first records of *Polypodium cambricum* (= *P. australe*) (Southern Polypody) from native habitats: on degraded Old Red Sandstone cliffs, Dylan's Walk, Laugharne (IKM, T.S. Crosby & J. Rees); on oaks and elms in Castle Woods and Dynefwr Park, Llandello (IKM) and several plants on limestone scree, Craig-ddu, Llanybri (A.O. Chater, IKM & RDP).

Also at Craig-ddu, the colony of *Ophrys apifera* (Bee Orchid) was refound by IKM and Peter Jones (PSJ) (last seen in the early seventies). They noted seven spent spikes in closed ground cover dominated by *Hedera helix* (Ivy) in this heavily overgrown and neglected old limestone quarry: there must be a case for active conservation measures here, as the owners appear to have abandoned the use of it. Other species recorded from this site during the year included *Viola reichenbachiana* (Early Dog-violet), *Orobanche hederæ* (Ivy Broomrape), *Cystopteris fragilis* (Brittle Bladder-fern), *Geranium columbinum* (Long-stalked Crane's-bill), *Listera ovata* (Common Twayblade), *Inula conyza* (Ploughman's-spikenard), *Lithospermum officinale* (Common Gromwell) and *Clinopodium vulgare* (Wild Basil). An old *Ophrys apifera* (Bee Orchid) record came to light with the publication of a facsimile of "Tyler's Book on Laugharne", a handwritten composition by R.H. Tyler, Headmaster of Laugharne Elementary School, his senior assistant and pupils, in 1925. He states, "The bee-orchis is found on Coigan, a limestone headland." but despite mentioning cowslips (plentiful in the fields and a sight to be remembered) and primroses, he gives no other localised records. Still at Laugharne, Ian Smith of the Nature Conservancy Council, Wales Field Unit surveyed the open field system and recorded two new saltmarsh-margin sites for *Alopecurus bulbosus* (Bulbous Foxtail), at Whitehill Down and The Lees. I look forward to seeing the final report on this outstanding site.

Further along the coast a new station for *Orobanche rapum-genistæ* (Greater Broomrape) was recorded by Tim Frampton: two stands on *Ulex*, near Ferryside and *Parentucellia viscosa* (Yellow Bartsia), growing in great profusion in disturbed areas of Pembrey Forest, both on the sides of the main access ride and on a newly clear-felled area (RDP et al).

The meeting to record the limestone flora of the Carmel area started in pouring rain but it was not long before one of the expected specialities was discovered amongst *Mercurialis perennis* (Dog's Mercury) in a small area of craggy, native woodland near Maesybont, namely *Paris quadrifolia* (Herb-Paris), this being a rediscovery of a

record made by Mrs Vaughan in 1965. Other localities examined during the day included the species-rich pastures at Pant llyn, Pentregwennals, where dry, calcareous grassland with *Avenula pubescens* (Downy Oat-grass) and *Listera ovata* (Common Twayblade) grades into wet *Carum* meadow with *Valeriana dioica* (Marsh Valerian) and *Cirsium dissectum* (Meadow Thistle). In the nearby limestone quarries *Lithospermum officinale* (Common Gromwell) was very frequent in the thin limy soil, whilst *Typha latifolia* (Bulrush) and *Eleocharis palustris* (Common Spike-rush) were found to have colonised a spring-fed quarry pool. Incidentally, *Paris* was also recorded by Ray Woods in Coed Tregyb, Llandello, presumably from the same locality as D. Morgan's c1895 herbarium specimen in Carmarthen Museum.

Another meeting which turned up a number of calcicolous species was that to the Green Bridge valley and Morfa Bychan, west of Pendine. Mrs T. Holland very kindly led the party to some overgrown limestone quarries in the area in which we recorded *Geranium sanguineum* (Bloody Crane's-bill), *G. columbinum* (Long-stalked Crane's-bill), *Sherardia arvensis* (Field Madder), *Poterium sanguisorba* (Salad Burnet), *Lithospermum officinale* (Common Gromwell), *Avenula pubescens* (Downy Oat-grass) and *Trisetum flavescens* (Yellow Oat-grass). Both *Erodium moschatum* (Musk Stork's-bill) and *E. glutinosum* (Sticky Stork's-bill) were recorded on the storm beach together with *Rumex acetosella* subsp. *tenuifolia* (a Sheep's Sorrel), *Desmazeria rigida* (Fern-grass), *Aira caryophyllea* (Silver Hair-grass) and *Jasione montana* (Sheep's-bit), while *Conium maculatum* (Hemlock) had colonised much of the length of the valley, in great profusion, where the water authority had laid pipes the previous year.

More limestone specialities were recorded by IKM in the Mynydd Cerrig area. He noted a new site for *Lathraea squamaria* (Toothwort), parasitic on hazel, in partial shade, on the bank of a track leading to an old quarry. In the quarry was *Clinopodium vulgare* (Wild Basil) and in a nearby hedge was a single bush of *Rhamnus catharticus* (Buckthorn). Another important discovery this year was his 58+ plants of *Spiranthes spiralis* (Autumn Lady's-tresses) growing together with 81+ *Gentianella amarella* (Autumn Gentian) plants on limestone at Llandyfan. Associated with these species were *Geranium columbinum* (Long-stalked Crane's-bill), *Carlina vulgaris* (Carlina Thistle) and *Sherardia arvensis* (Field Madder). He also discovered *Asperula cynanchica* (Squinancywort) growing on limestone waste at Banc-y-Mansel.

The field-work associated with the well attended B.S.B.I. Wales A.G.M. based in Lampeter added a very significant number of records especially in the northeast of the county. *Utricularia minor* (Lesser Bladderwort) was recorded in a moorland pool at Bylchau Duon by Jean Green and John Killick, only the second vcr since 1920. Other species they recorded from this locality included *Pinguicula vulgaris* (Common

Butterwort), *Drosera rotundifolia* (Round-leaved Sundew), *Narthecium ossifragum* (Bog Asphodel), *Menyanthes trifoliata* (Bogbean), *Carex rostrata* (Bottle Sedge) and *C. curta* (White Sedge). A similar habitat was recorded by Jeff Curtis, GH, PSJ and RGE at Esgair Wen where the flora included *D. rotundifolia* (Round-leaved Sundew), *Pinguicula vulgaris* (Common Butterwort), *Menyanthes trifoliata* (Bogbean), *Narthecium ossifragum* (Bog Asphodel), *Equisetum sylvaticum* (Wood Horsetail), *Hypericum elodes* (Marsh St. John's-wort), *Wahlenbergia hederacea* (Ivy-leaved Bellflower) and *Carex pilulifera* (Pill Sedge). AOC discovered another rich, heathy habitat at Bryn mawr, south of Lampeter where he recorded *Dryopteris carthusiana* (Narrow Buckler-fern), *Narthecium ossifragum* (Bog Asphodel), *Eriophorum vaginatum* (Hare's-tail Cottongrass), *Viola lutea* (Mountain Pansy) and *Carex pilulifera* (Pill Sedge). Naturalised on a hedgebank in the same tetrad was *Dicentra formosa*. RGE and GH recorded *Lysimachia vulgaris* (Yellow Loosestrife), *Mimulus guttatus* (Monkeyflower) and *Scutellaria galericulata* (Skullcap) from the Cothl near Abermangoed. Trevor Evans identified several poorly recorded grasses from two tetrads he visited north of Llandovery, including *Agrostis gigantea* (Black Bent), *Bromus racemosus* (Smooth Brome) and *Poa nemoralis* (Wood Meadow-grass).

The "organised" field meeting to Cilyblaidd, Pencarreg, on the Sunday proved very memorable and was an excellent example of the extreme richness and diversity of natural habitat present in parts of Carmarthenshire. A steep bank took the party from the farmyard to an area of tall-fen and carr, the flora of which included *Dryopteris carthusiana* (Narrow Buckler-fern), *Menyanthes trifoliata* (Bogbean), *Potentilla palustris* (Marsh Cinquefoil) and *Carex vesicaria* (Bladder-sedge). Drainage ditches close to the river Teifi contained *Apium inundatum* (Lesser Marshwort) and were lined in part with *Salix purpurea* (Purple Willow), a characteristic species of this valley but rare elsewhere in the vc. Ox-bow mires adjacent to the river contained fine stands of *Rumex hydrolapathum* (Water Dock) whilst in the river itself was *Ranunculus penicillatus* var. *penicillatus* (Stream Water-crowfoot), the usual Teifi water-crowfoot, though *Potamogeton x olivaceus* (a hybrid Pondweed), another Teifi species, was not seen. After having lunch on the river bank next to a stand of *Bidens tripartita* (Trifid Bur-marigold), the party examined more ox-bow fens, some containing *Carex aquatilis* (Water Sedge) and then ascended the valley side to the kettle-hole lake of Llyn Pencarreg. This acid, steep-shored water-body is not noted for its diversity of plant-life but *Lysimachia vulgaris* (Yellow Loosestrife) was present in small quantity. On the return to the cars a detour was made to a further wet area which proved to be a small, completely vegetated kettle-hole, forming a floating fen dominated by *Juncus*. There were, however, significant stands of *Carex curta* (White Sedge), *C. vesicaria* (Bladder-sedge), *Potentilla palustris* (Marsh Cinquefoil), *Menyanthes trifoliata* (Bogbean) and *Eriophorum angustifolium* (Common Cotton-grass).

The Lampeter meeting also turned up a significant number of new localities for **Carum verticillatum** (Whorled Caraway), especially in the northeastern part of the county, such that reference to the distribution map would indicate that the coalfield does not stand out as the stronghold of the species any longer. There is still no doubt, however, that it is far less frequent in these new localities than in its classic area although several acid, heathy, **Carum** pastures were discovered around Cefn Llwydlo, with associates including **Genista anglica** (Petty Whin) and **Pedicularis sylvatica** (Lousewort). **Carum** is still not, however, recorded from SN30 or SN32 although it was found in SN52 for the first time in 1985.

Other species that appeared more frequently this season were **Geranium columbinum** (Long-stalked Crane's-bill) with four new 10km square records being made, together with numerous new tetrad records, mostly during the Lampeter meeting and **Carpinus betulus** (Hornbeam), not a native but uncommon in the vc. and worthy of mention, which was seen, for example, as a quite extensive former coppiced woodland at Pont Felin Gat near Middleton Hall (RDP).

Several new records for **Polygonatum multiflorum** (Solomon's-seal) were recorded by James and Mary Iliff in the northwestern part of the county, mostly in roadside hedges but one of their notes reads, "apparently native in valley woodland near Tyddynfari, south of Cenarth." This is Brian Reely's stamping ground and his 1985 record cards included **Platanthera chlorantha** (Greater Butterfly-orchid), three plants growing on a roadside verge at Maudsland. Also in this area AMP visited graveyards at Cenarth and Saron where she found **Filipendula vulgaris** (Dropwort) to be present in both and **Lilium pyrenealcum** (Pyrenean Lily) in the latter, plants apparently characteristic of West Wales burial grounds.

In addition to the records from graveyards already mentioned, **Listera ovata** (Common Twayblade) and **Ononis repens** (Common Restharrow) were seen at Halfpenny Furze Chapel (IKM), **Vicia tetrasperma** (Smooth Tare) at Calfarlia, Penygroes (AMP), **Euphorbia exigua** (Dwarf Spurge) at Caersalem, Tycroes and Bethany, Ammanford (AMP) and **Silene vulgaris** subsp. **vulgaris** (Bladder Campion) at St. Paul's, Ammanford (AMP). It would appear from some cards, that some recorders have visited churchyards whilst tetrad recording but have incorporated all records on a composite species list for the square. If they had just had the presence of mind to annotate the relevant species with a symbol or letter, extra valuable data would have been available for the production of the final manuscript. Similar comment could also be made regarding the addition of habitat details to species lists.

It seems to be increasingly difficult to do justice to all the

recorders who are now contributing to the Flora Project but I hope that I have been able to convey an idea of the success which, I feel, we have achieved to date. I extend my sincere gratitude to all participants, whether mentioned in the text above or not, hope for your continued support and invite any newcomers to join us in the coming season.

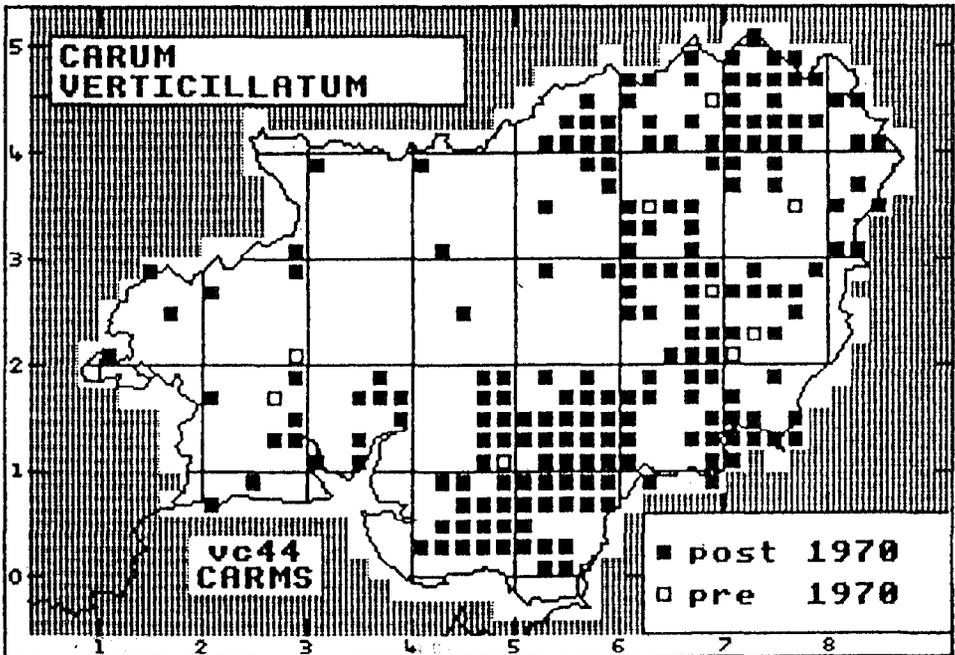
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ST DAVID'S HEAD EXCURSION
3rd JUNE 1984
A LATE REPORT!

S.B. Evans

About 40 members and friends gathered at Whitesands Bay for the 2 mile round walk to St. David's Head and back, in cold, windy but bright weather.

The coast path was followed and specimens of bugloss (*Lycopsis* or *Anchusa arvensis*) were soon examined along its sandy margins. Hybrids between white and red campion (*Silene alba* x *dioica*) with pink petals were also sighted, and patches of chamomile (*Chamaemelum nobile*) lawned the path where it entered National Trust property. At this point, a fruitless search was made for upright chickweed (*Moenchia erecta*) seen here in 1978 at the foot of an outcropping rock. Overlooking the beautiful Porthmelgan beach, an area of recently burnt maritime heath revealed stands of pale dog-violet (*Viola lactea*) and spring squill (*Scilla verna*) mixed with dwarf heath spotted-orchid (*Dactylorhiza maculata* ssp. *ericetorum*). Although some maritime heath can be regarded as a natural wind and salt-induced vegetation type, sporadic burning over the centuries has effectively extended heathland inland into areas once dominated by scrub and perhaps even woodland. The bright show of colour one year after burning impressed members. The late Tommie Warren Davis had observed similar recovery on the exact spot in September 1960, after a fire the year before. He commented that "complete ground cover has nowhere been formed, but the recovery is progressing and plants of former heath communities are more abundant than annual weeds". On the south facing headland of St. David's itself, waves of kidney vetch or ladies' fingers (*Anthyllis vulneraria*) adorned both the classic zonation of maritime grassland and heathland that paralleled the cliff edge. The fact that this windswept coastal fringe remained free of trees since the Ice Ages accounts for the occurrence of several rare plants intolerant of competition. When walking through the maritime heathland, members examined mats of hairy greenweed (*Genista pilosa*), some of which were still bright with their yellow flowers. This Red Data Book species has one of its British strongholds on the coastal heaths between Newgale and Fishguard. Lunch was consumed in shelter on the north side of the tip of the headland within the confines of the relict Iron Age fort. Just below the tip of the headland, chives (*Allium schoenoprasum*) was admired, prospering in the crevices of the Ordovician dolerite. Cowslips (*Primula veris*) were still in flower on these north-facing cliffs. Using binoculars, the party later examined clumps of roseroot (*Sedum rosea*) - Pembrokeshire's

only arctic-alpine flowering plant - on a vertical, damp, north-facing sea-cliff. It was found here by A.H.G. Alston and C.I. & N.Y Sandwith in August 1931, who described it as "very local in damp fissures of steep cliffs". The plant is at its southermost coastal location at St. David's Head - a true relic of a colder climate.

After returning to Whitesands Bay car park, the "hardier perennials" amongst the party visited the ancient harbour of Porthclais. Here, the introduced Italian Lords-and-ladies (*Arum italicum*), pale flax (*Linum bienne*) and musk thistle (*Carduus nutans*) were noted adjacent to the coast path. The destination was the headland at Porthlysgi to see the parasitic (annual?) common dodder (*Cuscuta epithymum*). Large populations were found on western gorse (*Ulex gallii*) and bell heather (*Erica cinerea*). Extensive pink mats were trailing over the ground as well as the host plants, even though the heath and scrub had been burnt the previous winter. Back at Porthclais, in the damp ground at the foot of the lime kilns, a relict plant of the fragrant leaved wild celerey (*Apium graveolens*) was the final subject for the day's botanising.

WEST LLEYN 1985

Miss A.P. Conolly

After several years recording in the same area, one comes to expect additions to be restricted, in the main, to aliens and introduced species. Not so for West Lleyn 1985. In this category though, is certainly the first ever Lleyn appearance of *Mycelis muralis* (Wall Lettuce): some half-dozen plants on a newly built-up bank supporting a 'porta-office' at the entry to the Nanhoron Quarries (SH/23); brought doubtless with the imported soil and 'foreign' slate which must have come from a distance.

Another new species for W. Lleyn, *Trisetum flavescens* (Yellow Oat-grass), may well have been introduced too: with seeding of the grassy bank on which it grew below a bungalow on a new housing estate outside Abersoch (SH/32). Apart from an unconfirmed record from Bardsey, the next nearest locality for this species seems to be Criccieth (which holds too for *Mycelis*).

In contrast, are the additions of native species not previously seen (or recognized). Foremost is *Parapholis incurva* (Curved Hard-grass), a

fine discovery by Dr John Akeroyd, on a muddy drift cliff above the shore at Porth Ysgaden (SH/23) on the north Lleyn coast. Morfa Harlech is the only other Welsh locality for this species north of Pembrokeshire and the Glamorganshire coast.

New to me too, but presumably overlooked, is another grass: *Koeleria macrantha* (Crested Hair-grass) which I found on Cilan head (SH/22) in late September on a grazed grassy slope above precipitous cliffs - hardly the chalk or limestone with which I associate it from my earlier days in southern (or eastern) England. Suitable communities for this grass from other coastal sites in Lleyn have however been mapped by the National Vegetation Classification Survey (J. Rodwell, pers. comm.), so more localities may well yet be traced.

Recent determinations of herbarium material (of various dates) by specialists in some critical groups have added several taxa not previously recognized in Lleyn, and extended or confirmed ranges for others. Dr Philip M. Smith has identified genuine *Bromus hordeaceus* subsp. *thominii* (Lesser Soft-brome) from three localities: dunes south of Abersoch (SH/32), 1957 (APC & Patricia M. Smith); sandy ground Porth Neigwl (SH/22), 1980; and Bardsey Island (SH/12), 1954 (APC & PMS); 1956 (Kershaw & Agnew, UCNW). Although recorded from Anglesey (Roberts, 1982) and Merioneth (Morfa Dyffryn) this taxon has not apparently been authoritatively listed before from Caerns. vc. 49 (Ellis, 1983). Dr Smith also re-named other specimens collected on Bardsey in 1956 (UCNW) as *Bromus racemosus* (Smooth Brome) new to this 10km square (SH/12), though mainland sites are known for the adjoining SH/13: pasture nr Rhoshirwaen, north of Aberdaron, 1957 (APC & PMS); 1980.

Critical determinations of segregates in the *Festuca ovina* (Sheep's-fescue) complex have been made by Mr M.J. Wilkinson. These include *F. ovina* subsp. *ovina* (the diploid, northern Europe taxon) from three sites: nr Llangian (SH/22) 1957; Porth Dinllaen (SH/24), 1987; and coast north of Tudweiliog (SH/23) 1984. *F. ovina* subsp. *hirtula* (Hack.ex Travis) M. Wilkinson collected from Porth Meudwy, Uwchmynydd (SH/12), 1985; Porth Neigwl west end (SH/22), 1985; Mynydd Rhiw north end (SH/23), 1985 and Pared Mawr, Cilan (SH/32), 1983; this taxon is probably quite widespread. *F. ovina* subsp. *ophiolicola* (Kerguelen) M. Wilkinson from below Mynydd Cefnamwlch (SH/23), 1985, is the third taxon now recognized from W. Lleyn by Mr Wilkinson, whose nomenclature, used here, has recently been published (1985).

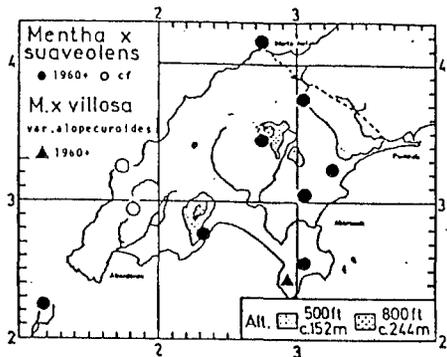
For the genus *Mentha* (Mint), further identifications of Lleyn specimens have been made by Dr R.M. Harley. This, with additional field search, confirms the wide occurrence of *M. suaveolens* (Round-leaved Mint) whereas the other Applemint (Bowles') *M. x villosa* var *alopecuroides* is

quite rare (see map 1). Many additional stations for *M. x gentilis* (Bushy Mint), *M. x piperita* (Peppermint) and *M. x verticillata* (Whorled Mint) have now been verified (see maps 2 & 3). The hairy Mint *M. x villosa-nervata* has been confirmed from several sites and distinguished from the much less frequent *M. spicata* (Spear Mint).

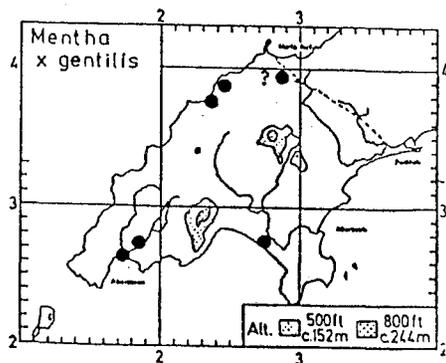
Field work in 1985 also concentrated on previously inadequately mapped (or understood) 'difficult' or critical taxa. This revealed widespread *Poa subcaerulea* (Spreading Meadow-grass) and led to a more accurate mapping of *Brassica rapa* (Wild Turnip) (map 4) (common) and *B. napus* (Rape) (rare). *Rosa canina* (Dog Rose) in the strict sense (Wolley-Dod non C.T.W.) was shown to be widespread and cf *R. dumetorum* (Thicket Rose) was scattered; but far more understanding of the interpretation of forms with intermediate characters indicative of hybridization with other (non 'canina') taxa is required.

Highlights of the 1985 season, though not adding to the species checklist, have extended ranges or local abundance of species only found before as single specimens or extremely scarcely. Most striking were remarkably extensive stands of both *Linum usitatissimum* (Flax) and of *Trifolium subterraneum* (Subterranean Clover). The Flax, seen only in earlier years as single plants, was growing in hundreds, and all sizes, over a large abandoned scrubby area in process of being bull-dozed for yet more Abersoch (SH/32) housing - a glorious final fling before extermination? The *Trifolium subterraneum*, seen only twice before on mainland Lleyon as single plants 5 or so kilometres apart, demonstrated the importance of visiting at different seasons. For extensive sheets of this species were strikingly obvious in very early July beside the track to Tan-yr-Allt (west-end Porth Neigwl) (SH/22) where, over 50 yards or so, the sward on a close-grazed slope, was thickly white flecked over ground I have walked on, and searched closely, on numerous occasions - but never before on July 2nd: The characteristic community with *Trifolium micranthum* (Slender Trefoil), both conspicuous and 'diagnostic', had other annuals: *Trifolium striatum* (Knotted Clover), *Aira praecox* (Early Hair-grass), *Erodium maritimum* (Sea Stork's-bill) and *Sagina apetala* subsp. *apetala* (Fringed Pearlwort). The very next day below Anelog, Uwchmynydd (SH/12), large patches of *Trifolium micranthum* again caught my eye, and there too were hundreds of white *T. subterraneum* flowers flecking the damp grassy slope. Only once before, and then on Bardsey, had I thus seen similar sheets, at the very end of June where, in early June or later July, only the odd flower could be found.

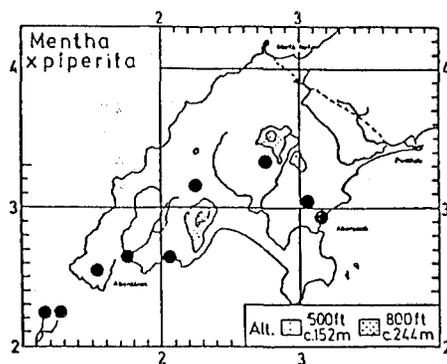
1985 also saw the re-discovery of *Filago vulgaris (germanica)* (Common Cudweed) last seen in 1955 by R.S.R. Fitter in the Aberdaron area. It was growing on rock by the boats at Porth Meudwy, the embarkation bay for Bardsey, to which island Fitter went in September 1955, but not



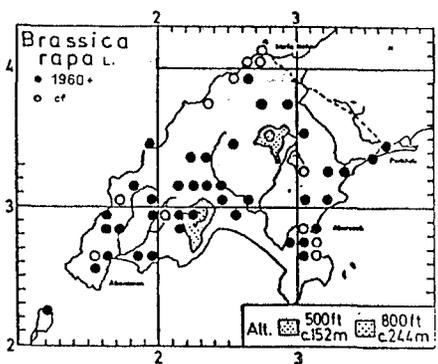
Map 1



Map 2



Map 3



Map 4

certainly from here; he recalls though, he may well have seen it by a farm east of Aberdaron (pers. comm. 1985). The only other recent, but unverified, record (near Pwllheli) comes from a manuscript map of the late A. Vaughan Jones.

Pleasing too, was another find of *Zannichellia palustris* (Horned Pondweed), the fifth since 1955, this time from a farm pond in Uwchmynydd (SH/12). Then, in August, on the north coast beyond Porth Iago (SH/13), a tiny plant of Pink Centaury agreed precisely with the hybrid *Centaureum erythraea x littorale* which we had seen 2 or 3 years ago on similar drift cliffs on the Porth Dinllan peninsula in company with Lady Rosemary-FitzGerald's newly discovered *C. littorale* (Seaside Centaury).

The rapid spread and increase along roadsides during recent years has been even more marked in 1985 for at least two species. For example, the inland, roadside spread of *Cochlearia officinalis* (Common Scurvygrass) and the profusion of *Alliaria petiolata* (Garlic Mustard) away from habitation. Chater (1975) has referred to the inland extension of *Cochlearia officinalis* in Cardiganshire (v.c. 46). Likewise in Llein the last 5-10 years has seen a similar inland invasion of the steep roadside banks giving long stretches of white in late spring. Most notable has been the eastward extension along the road from Aberdaron through Rhoshirwaun. But here, unexpectedly, local knowledge points to the source as a nearby garden down a side track from whence, it spread rapidly once it reached the main road. Does the fast road traffic aid this?, or maybe the verge-cutting machine carries seed along? A similar sudden increase has been observed in road-verge *Alliaria petiolata* in the last few years. Ten years ago a much restricted species, only found around a few hamlets and villages it suggested a relict of one-time herbal cultivation; but now there are vast quantities along certain road edges, at the foot of stone-walls or earth-banks, as up the Nanhoron valley (SH/23) over long stretches quite remote from any houses. Has the lateness of the first season's road-verge cutting helped, or does the damaging bank-shearing machine give more suitable open soil for successful germination? Seedlings now abound here.

Other recent increased recording of weedy and of introduced species is perhaps related more to the new housing estates (Abersoch, Llanbedrog) and the enhanced gardening activity with its attendant dumping of garden refuse on convenient road verges - much more noticeable now than in former years. This probably accounts for the great increase in *Veronica hederifolia* (Ivy-leaved Speedwell) records in the last 5-10 years.

Roadside dumping of earth and soil not only comes from gardens, but roadworks nowadays involves machine removal and transport by lorry

often to a distant quarry or road 'bay', and then later used for 'infill' yet elsewhere. It is some such process that has spread *Brassica nigra* (Black Mustard) far from its 'original' (1950's) restriction to Aberdaron, to, for example, quarries by Mynydd Rhiw (SH/22) in 1977 and Mynydd Cefnamwlch (SH/23) in 1974, and this year (1985) to a farm pond infill at Ty Hen (SH/13).

This year too saw three new sites for *Artemisia verlotiorum* (Chinese Mugwort) all within 2-3 miles of the first Lleyn record (1960) north of Abersoch, apparently with transported soil and as garden outcasts. They show a remarkable cluster of sites for this alien otherwise mainly recorded from S.E. England. I suspect that dispersal by some such means to quite new localities, often at some distance, is often much underestimated by recorders. Here in Lleyn with observations over 30 years, positive evidence has been possible.

I am much indebted to Dr Philip Smith, Dr R.M. Harley, Mr M.J. Wilkinson and Mr T.C.G. Rich for identifications and help with critical genera, and for information, to Dr J. Rodwell and R.S.R. Fitter. All records are my own unless indicated otherwise.

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|--------------------------------|------|--|
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ARUM MACULATUM L. IN FLINTSHIRE

P. Harnes

Arum maculatum L. (Pidyn y Gog; Lords-and-ladies) is a widely distributed species in Flints. vc. 51. In fact, out of a possible 178 tetrads, there are only 52 recorded absences for the county (G. Wynne pers. comm.). Apart from A. A. Dallman's writings (1883-1963), little is known about the local distribution of *A. maculatum* in Flints.

Over the past five years, I have recorded the distribution of discrete populations of *A. maculatum* within the 1 km grid squares of the national grid. These records are listed below and while only preliminary, they clearly show that *A. maculatum* is of common occurrence in this area. Each record includes details of locality, habitat and six-figure grid reference.

Lords-and-ladies is a plant of diverse habitats. Broadly speaking, it occupies three types of habitat within Flintshire:

(a) deciduous woodlands on base-rich soils, (b) shady hedgerows, and (c) roadside verges and banks. The type of habitat is indicated by the following letters: W= woodland, H= hedgerow, and R= roadside.

DISCRETE POPULATIONS OF ARUM MACULATUM L. IN FLINTS. VC. 51

- (1) Mold Road (B5126): GR33/281.687 (H).
- (2) Connah's Quay: GR33/288.671 (W).
- (3) Morley Ave., Connah's Quay: GR33/294.688 (H).
- (4) Connah's Quay: GR33/287.686 (W).
- (5) Higher Shotton: GR33/295.677 (W).
- (6) Hawarden Park: GR33/316.655 (W).
- (7) Buckley: GR33/278.626 (H).
- (8) Padeswood Road: GR33/276.626 (H).
- (9) Padeswood: GR33/277.616 (W).
- (10) Padeswood: GR33/277.617 (H).
- (11) Mynydd Isa: GR33/251.637 (W).
- (12) Coed Uchaf: GR33/233.681 (W).
- (13) Ddol Uchaf: GR33/142.713 (W).
- (14) Kelsterton Lane, Kelsterton: GR33/276.702 (W).
- (15) Kelsterton Lane, Kelsterton: GR33/276.705 (R).
- (16) Kelsterton: GR33/279.708 (W).
- (17) Stag's Head Lane, Higher Shotton: GR33/303.679 (H).
- (18) Quarry Lane, Connah's Quay: GR33/295.689 (H).
- (19) Wepre Wood, Connah's Quay: GR33/289.683 (W).
- (20) Wepre Wood, Connah's Quay: GR33/291.679 (W).

- (21) Connah's Quay: GR33/284.685(W)
- (22) Golftyn Lane, Golftyn: GR33/282.699 (H).
- (23) Killings Lane, Higher Shotton: GR33/301.683 (H) (R).
- (24) Waen Wood: GR33/245.616 (H) (R).
- (25) B5444: GR33/256.620 (H) (R)
- (26) Loggerheads: GR33/196.625 (H) (R).
- (27) Buckley: GR33/272.631 (W).
- (28) Ewloe: GR33/308.665 (H) (R).
- (29) Rhualt: GR33/081.752 (H) (R).
- (30) Gerddiduon: GR33/221.659 (H).
- (31) Buckley: GR33/281.627 (W).
- (32) Hope: GR33/307.581 (H).
- (33) Northop: GR33/243.678 (R).
- (34) Higher Shotton: GR33/304.678 (H).
- (35) Connah's Quay: GR33/301.689 (R).

THE FLORA OF CEREDIGION CHURCHYARDS (VC. 46)

A.O. Chater

A survey of all the churchyards and some of the church cemeteries in vc. 46 (Cardiganshire, or the Ceredigion District of Dyfed) was begun in 1976 and was later subsumed in the BSBI/RSNC churchyard survey. I have published some comments on this Ceredigion survey as part of more general articles on churchyards and their conservation (Life in the graveyard, Natural World 6: 17-19 (1982); God's acre, the conservation of consecrated vegetation, Churchscape 3: 21-27 (1984)), but it would seem useful to give here some more detailed floristic results of the survey.

A hundred churchyards were surveyed, although five of them are omitted from some of the statistics as I have never found them uncut for long enough in summer to make a thorough survey possible. In size they vary from less than 0.2 acres to 3.7 acres (St. Peter's, Lampeter, SN/575483) and 5.3 acres (Plas Crug cemetery, Aberystwyth, SN/591813); the old and new parts of Llanbadarn Fawr churchyard, SN/599811, 2.3 and 2 acres respectively, were treated as separate. The average size is exactly 1 acre. They are distributed fairly evenly over the county, except in the uplands, and vary in altitude from less than 5m.a.s.l. (Llanina, SN/405598 and St Mary's, Cardigan, SN 181460) to 300m. (Llantrisant, SN/727750). The rocks of Ceredigion are Silurian and Ordovician and the soils are generally rather acidic, although many

churchyards, especially in the south-west, are on slightly calcareous clays. Some 60 of the churchyards are of medieval origin, but most of these have integral nineteenth or twentieth century extensions. The majority of the remaining churchyards are Victorian in origin. Only ten churchyards are urban, and at least half the rest are rural rather than embedded to a greater or lesser extent in villages. Solely because of limited time, the 200 or more chapel graveyards were omitted from the survey, although there is evidence that they are generally of even greater floristic and ecological interest than the churchyards.

Methods.

All native and naturalised higher plants in each churchyard were recorded on standard field record cards (BRC RP6). A sketch map showing the main features, including paths, areas occupied by gravestones, trees, position of quadrats, use of adjacent land, etc., was marked with indications of the extent of various major plant communities and the location of species of particular interest. An average of 3 or 4 quadrats, each 1m square, were recorded on a Domin frequency scale, the quadrats, being chosen from representative or particularly interesting areas of grassland within each churchyard; this was a convenient way of recording and assessing the ecological interest of the communities. Extensive notes on the topography, vegetation and management, measurements of major trees, historical references, etc., completed the survey. Visits were made at several different times of year, and care was taken to visit each churchyard as late as possible before the main early summer cutting. (Apart from its intrinsic interest, documentation of this sort should help in monitoring change or stability in the vegetation of each churchyard in the future, and this should help in attempts at conservation and advising on management).

Special numbers.

The average number of species in the 95 completed churchyard surveys was 89, the minimum being 45 in the 0.3 acre St. Mary's, Aberystwyth, SN/583815, and the maximum 151 in the second largest, the 3.7 acre St. Peter's, Lampeter, SN/575483. Although there is a general tendency for the larger churchyards to be the richer, many small ones are among the richest. Henllan, SN/354402, 0.5 acre, has 124 species, and Penbryn, SN/294521, 0.75 acre, has 114. Such densities of species are unusual in any sites of such a size in Ceredigion, and already indicate that the churchyards are disproportionately rich in higher plants.

Ecological interest.

About a third of all the churchyards were judged, on the basis of the quadrat data, to contain semi-natural grassland of significant local

interest. Such grassland can be loosely defined as a community, stable under the management regime of the churchyard, belonging to one of the characteristic vegetation types of the district. Most of the churchyards were enclosed before modern agricultural practices depleted the species richness and altered the nature of most of our grasslands. Many that were enclosed from permanent pastures or hay meadows (and this applies especially to those enclosed in the nineteenth and early twentieth centuries) are still at least in part undisturbed by burials, and have been cut more or less regularly ever since and have not been ploughed or treated with lime or other chemicals, and have mostly not even been grazed. For these reasons they are among the best-preserved relics of semi-natural grassland that we have. The medieval churchyards, or parts of churchyards, have been repeatedly dug over for burials, both disturbing and enriching the soil, and although they may be rich in species they are unlikely to represent relics of medieval grassland. What effect any change of management from grazing to cutting, once the land was converted into a churchyard, will have had on the grassland is uncertain. In many churchyards the vegetation is, surprisingly, more similar to unimproved, continuously grazed grassland than to our few remaining hay meadows. It seems probable that grazing has been uncommon in Ceredigion churchyards, at least for most of the present century. It was actually prohibited for some decades, but is now allowed again and is being used as successful form of management in several churchyards, notably Eglwys Newydd, SN/768737, and Llanychaiarn, SN/585768.

Outstanding examples of rich grassland communities occur at St. Peter's, Lampeter, SN/575483, where one area has calcareous grassland dominated by *Briza media* (Quaking-grass) and *Anthoxanthum odoratum* (Sweet Vernal-grass), with abundant *Brachypodium pinnatum* (Tor-grass) and *Festuca rubra* (Red Fescue), as well as such species as *Trisetum flavescens* (Yellow Oat-grass), *Leontodon hispidus* (Rough Hawkbit), *Leucanthemum vulgare* (Oxeye Daisy) and *Ranunculus bulbosus* (Bulbous Buttercup). Such a strongly calcicolous community is unrepresented elsewhere in Ceredigion. This area is just south of the present Vicorian church, around the site of the medieval church, so whether it is a relic community or has developed there for some other reason remains uncertain. At Gartheli, SN/586567, the 1890 extension to the north of the church, still mostly unoccupied by graves, is occupied by a neutral grassland dominated by *Danthonia decumbens* (Heath-grass), *Anthoxanthum odoratum*, *Agrostis tenuis* (Common Bent) and *Festuca rubra*, with abundant *Carex caryophyllea* (Spring Sedge), *Leontodon hispidus* and *Leucanthemum vulgare*. At Gwenlli, SN/392535, enclosed in 1895, the north-west part has a similarly rich grassland, again dominated by *Danthonia*, *Anthoxanthum* and *Agrostis tenuis*, with abundant *Lathyrus montanus* (Bitter-vetch), *Leontodon hispidus* and *Linum catharticum* (Fairy Flax) and such species as *Knautia arvensis* (Field Scabious),

Listera ovata (Common Twayblade), *Dactylorhiza fuchsii* (Common Spotted-orchid), *D. maculata* (Heath Spotted-orchid) and *Orchis mascula* (Early-purple Orchid). It is neutral grassland, rich in species with often 20-25 species per 1m square, that is the most conspicuous and frequent community of interest in Ceredigion churchyards. Many have more acidic grassland, such as Llangybi, SN/609532, where one area is dominated by *Festuca rubra*, *Anthoxanthum* and *Galium saxatile*, and some, such as the upland churchyards of Gwnnws, SN/685695, and Llantrisant, SN/727750, have areas of heath with *Vaccinium myrtillus* (Bilberry), *Calluna vulgaris* (Heather) and *Festuca ovina* (Sheep's-fescue).

Churchyards enclosed from woodland, such as Eglwys Newydd, SN/768737, and Blaenpennal, SN/625639, have conspicuous relic populations of *Hyacinthoides non-scriptus* (Bluebell), *Conopodium majus* (Pignut) and *Ajuga reptans* (Bugle). Some churchyards, such as Llandre, SN/623869, and Silian, SN/572513, contain substantial areas of woodland. Few contain any sort of wetland, and the small area of marsh at the bottom of Brongwyn churchyard, SN/287437, dominated by *Filipendula ulmaria* (Meadowsweet) and with *Oenanthe crocata* (Hemlock Water-dropwort) and *Angelica sylvestris* (Wild Angelica), is a rare example.

The numbers of churchyards, out of the total of 100, in which the following selected ecological indicator species occur is a simple method of suggesting something of their importance:

<i>Briza media</i>	3	<i>Danthonia decumbens</i>	13
<i>Trisetum flavescens</i>	7	<i>Succisa pratensis</i>	8
<i>Carex caryophylla</i>	13	<i>Brachypodium sylvaticum</i>	26
<i>Galium mollugo</i>	5	<i>Ajuga reptans</i>	11
<i>Leontodon hispidus</i>	35	<i>Hyacinthoides non-scriptus</i>	66
<i>Pimpinella saxifraga</i>	10	<i>Chenopodium majus</i>	47
<i>Lotus corniculatus</i>	68	<i>Allium ursinum</i>	3
<i>Rumex acetosa</i>	92	<i>Bromus ramosus</i>	4
<i>Cardamine pratensis</i>	45		

Rare species.

A striking feature of churchyards in several parts of Britain is the number of species that are to a significant extent confined to them in that particular area. This is not unexpected in a predominantly arable area, such as north-east Norfolk where (B. Leaney, The churchyard conservation scheme, Norfolk Naturalists' Trust Annual Report 1983: 18-23 (1984)) about 50% of the *Galium verum* (Lady's Bedstraw), *Rumex acetosa* (Common Sorrel) and *Saxifraga granulata* (Meadow Saxifrage) populations, and 75-90% of the *Leucanthemum vulgare*, *Pimpinella saxifraga* (Burnet-saxifrage) and *Conopodium majus* populations, are in churchyards, but in Ceredigion this phenomenon calls for careful

explanation. The only Ceredigion record for *Calamintha ascendens* (Common Calamint) since 1941 is from Llangoedmor churchyard, SN/199458, where it has been known since 1907. *Brachypodium pinnatum*, apart from a fugitive railway embankment population, and *Hordeum secalinum* (Meadow Barley) are known only from St. Peter's churchyard, Lampeter, SN/575483. *Trisetum flavescens* is known from 7 churchyards (and at least one chapel graveyard), but otherwise only from 5 sites, all coastal and probably traceable to limestone imported for various limekilns. *Briza media* is known from 3 churchyards, but otherwise only from 7 sites, in at least 4 of which it is undoubtedly native in species-rich pasture (all being in SSSIs or PSSSIs). *Galium mollugo*, in 5 churchyards, is otherwise known only from 6 sites (3 roadside banks, one coastal limekiln and 2 pastures).

None of these last 3 species, so disproportionately frequent in churchyards, could conceivably owe their occurrences there to having been deliberately planted. One possible explanation of their presence there is that such species were once more widespread, and survive chiefly in churchyards because of the relict nature of churchyard vegetation. If so, it is surprising that there are so very few non-churchyard occurrences, unless we have lost much more than is generally realised. It has been suggested that churchyards may often have deliberately been sited on the deeper soils because of the need to dig deeply for burials, and the deeper soils outside were the first to be "improved"; yet, in the uplands at least, some chapel graveyards were deliberately sited off the better soils, and in the case of medieval churchyards it would be difficult to prove, not least because burials have often resulted in the raising of the level of the ground in these churchyards. The species under consideration are by no means confined to the unoccupied, more recently enclosed parts of churchyards where the richer grassland tends to occur, and this suggests that even if these species are relics, they are not restricted there to being components of the actual relic communities.

Another possible explanation is that these species, in particular the more calcicole ones, have come into the churchyards by some unknown means of natural dispersal, and thrive there because the soil has been so enriched by centuries of burials; once in, the lack of ploughing, "improvement" and grazing allows them to persist, which they would not do if they tried to become established and were submitted to these inimical influences outside the churchyards. As there are no soil analyses available for our churchyards, much remains uncertain, but to set against any presumed enrichment of the soils by burials is the fact that most of the pasture outside will have been repeatedly treated with lime and basic slag, whereas the churchyards will obviously not have been. The presence of these species remains largely unexplained. (The suggestion that the records simply reflect a bias in recording is

unconvincing, as even though much botanising has been done in churchyards, vastly more has been done outside them and the areas of unimproved grassland in the county have been especially thoroughly searched out and surveyed.)

The most spectacular graveyard species in Ceredigion is undoubtedly *Orchis morio* (Green-winged Orchid). Characteristic of unimproved, calcareous pasture, it is known from only 7 sites. Colonies with from 1 to 25 flowering plants occur in 3 pastures, on one coastal heath and by one limekiln. Capel Rhiwbwys graveyard, SN/546692, near Llanrhystud, has a few plants. Llangeithr churchyard, SN/621601, has, in a good year, 400 flowering plants, and the chapel cemetery at Aber-Porth, SN/266506, can have over 1000. In all three graveyards the colonies are predominantly in the undisturbed parts still free of graves, in grassland enclosed, or added to the graveyards, in the nineteenth century.

The species discussed above are all, at least to some extent, calcicoles, but at least one species with no bias towards calcareous soils, *Festuca arundinacea* (Tall Fescue), seems to have a distinct bias towards churchyards in Ceredigion. It occurs alongside the Dyfi and Teifi estuaries, and by several streams near the sea, and is also known inland where it occurs in grassland in 5 churchyards and in 8 other pasture or roadside verge sites. It has probably rarely been deliberately sown in Wales, but occurs in several different forms, the tall, robust estuary plants being very distinct from some of the short, slender pasture plants. The high proportion of churchyard occurrences calls for some explanation, and it would be interesting to investigate the exact nature of the different forms at the various sites.

Naturalised species.

A number of naturalised species, for example *Pilosella aurantiaca* subsp. *carpathicola* (Fox-and-cubs) and *Centaurea montana* (Perennial Cornflower), have a majority of their Ceredigion sites in churchyards, and this is clearly because of the frequency with which they are planted on and around graves. The same would seem to apply to *Filipendula vulgaris* (Dropwort), a once common cottage garden plant that is well-naturalised in 12 churchyards (and many chapel graveyards), but in only a handful of other sites. Yet this species is native in parts of Wales, chiefly on limestone, and if *Galium mollugo*, *Trisetum flavescens* and even *Brachypodium pinnatum* occur un-introduced in churchyards, it might be unwise to be too certain that *Filipendula vulgaris* is never native there in Ceredigion.

The only population of *Hieracium grandidens* (a Hawkweed), an introduced species probably of long standing, is mostly inside Eglwys Newydd

churchyard, SN/768737, where I have seen it in flower in every month of the year. The only two sites for another introduction, *Poa chaixii* (Broad-leaved Meadow-grass), brought in to improve the grassland in open woodland in the nineteenth century, are in Maestir, SN/554493, and Llanfigangel Ystrad, SN/524562, churchyards.

Taxus baccata.

The problems of dating churchyard yews should not prevent us from recording as much about them as possible. Many Ceredigion churchyards contain large yews. The oldest extant tree may well be the one on the north side of Strata Florida church, SN/747658, under which Dafydd ap Gwilym is reputed to have been buried in about 1370. Only two thirds of the trunk remains, but the minimum girth encompassing what does remain is 700 cm, and the actual girth if the trunk was complete would be well over 750 cm. This yew could certainly have been a sizeable tree in the late fourteenth century. (Another yew, of which only a small segment remains, to the north-east near the edge of the churchyard, has also been claimed as the site of the poet's grave, as indeed has a yew at Talley Abbey in Carmarthenshire). The fine yew in Llanfair Clydogau churchyard, SN/624513, has an intact trunk 693 cm in girth, and the four well-known yews in Llangeitho churchyard, SN/621601, are 599, 570, 439 and 427 cm in girth. The two largest of the 14 old yews in St. Peter's churchyard, Lampeter, SN/575483, are 500 and 434 cm in girth. The three largest in Eglwys Newydd churchyard, SN/768737, two of them fused together at the base, are 413, 412 and 410 cm in girth, and presumably date from the founding of the church in 1620. Yews c.700 cm in girth may well be 750 years old, those c.500 cm may be 500 years old, and the rate of growth of younger trees is generally faster so that a tree c.250 cm in girth may be 100 years old. (Girth is measured at 1.5 m from the ground, unless the trunk is narrower below this when it is measured at the narrowest point below 1.5m). But it is impossible to estimate accurately the age of yews from their girth, and the rate of growth depends to a certain extent on topography, soil, shading and other factors.

A group of three yews on the north-east side of Llandre church, SN/623869, may possibly be fragments of a single tree of great age rather than separate young trees; if so, the tree would seem to have been at least 900 cm in girth. A century ago this group is said to have consisted of an "original bole divided into twelve distinctly separated pieces to the very ground" (E. Lees, *An old yew tree*, Gardeners Chronicle n.s., 9:44 (1878)).

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A SURVEY OF SOME OF THE CARMARTHENSHIRE BURIAL GROUNDS
PART 1 CAPEL HENDRE GRAVEYARD

Mrs A.M. Pell

In the year that Napoleon entered Moscow, the first chapel was built on this enclosure; it was a tiny chapel with just one seat around the walls, an earth floor and walls white-washed inside and out. The first recorded burial was not until 1831.

It is a sunny and sheltered spot being well protected by higher ground; there is a hedge of *Corylus avellana* (Hazel), *Hedera helix* (Ivy) and *Crataegus monogyna* (Hawthorn) on the West boundary and tall *Quercus robur* (Pedunculate Oak), *Q. petraea* (Sessile Oak) and *Fraxinus excelsior* (Ash) growing along the banks of the stream, protected from the North and East winds.

The flora is rich and varied: 150 species of flowering plants and ferns have been recorded, from an area of only 0.66 acres.

There are many plants typical of wood margins e.g.:

- Teucrium scorodonia* (Wood Sage)
- Dryopteris dilatata* (Broad Buckler-fern)
- Dryopteris filix-mas* (Male-fern)
- Agrimonia eupatoria* (Agrimony)
- Lathyrus montanus* (Bitter-Vetch)
- Lonicera periclymenum* (Honeysuckle)
- Viola riviniana* (Common Dog-violet)
- Holcus mollis* (Creeping Soft-grass)
- Hypericum maculatum* (Imperforate St. John's-wort)
- Epipactis helleborine* (Broad-leaved Helleborine)
- Holcus lanatus* (Yorkshire-fog)
- Listera ovata* (Common Twayblade)
- Dactylorhiza praetermissa* (Southern Marsh-orchid)

There are meadow plants e.g.:

Filipendula ulmaria (Meadowsweet)
Cirsium palustris (Marsh Thistle)
Senecio aquaticus (Marsh Ragwort)
Lathyrus pratensis (Meadow Vetchling)
Geranium pratense (Meadow Crane's-bill)
Vicia cracca (Tufted Vetch)
Juncus effusus (Soft Rush)
Juncus acutiflorus (Sharp-flowered Rush)
Taraxacum Sect. spectabilia (Broad-leaved Marsh-dandelion)
Trifolium repens (White Clover)
Trifolium pratense (Red Clover)
Trifolium dubium (Lesser Trefoil)

Some parts of the graveyard have drainage systems from higher ground and where it is damp, *Phalaris arundinacea* (Reed Canary-grass), *Carex hirta* (Hairy Sedge) and *Sanguisorba officinalis* (Great Burnet) fare well.

Weeds of arable land are numerous e.g.:

Euphorbia peplus (Petty Spurge)
Euphorbia helioscopia (Sun Spurge)
Calystegia sepium (Hedge Bindweed)
Stachys arvensis (Field Woundwort)
Vicia sativa (Common Vetch)
Senecio vulgaris (Groundsel)
Viola arvensis (Field Pansy)
Urtica dioica (Common Nettle)
Veronica agrestis (Green Field-speedwell)
Geranium dissectum (Cut-Leaved Crane's-bill)

The soil is heavy clay but the soft mortar of the boundary walls, the early white-washed buildings of which there is only a little rubble left, and the gravestones have encouraged lime-loving species, e.g.:

Asplenium trichomanes (Maidenhair Spleenwort)
Asplenium adiantum-nigrum (Black Spleenwort)
Asplenium ruta-muraria (Wall-rue)
Phyllitis scolopendrium (Hart's-tongue)

All these ferns grow on the stone boundary wall. There is a little *Ceterach officinarum* (Rustyback) but it has been discouraged by overzealous cleaning of the wall. Cenarth Churchyard and Llangadog Cemetery among others have thick incrustations of *Ceterach officinale*, growing with *Polypodium interjectum* (Polypody).

A little *Phyllitis* also grows on the Hazel - Holly hedge-bank together with some naturalized *Convallaria majalis* (Lily-of-the-valley) and *Saxifraga x urbium* (Londonpride). It was on this hedgebank that *Lathyrus montanus* (Bitter-vetch) was first noticed but it is now spreading to lower areas.

Briza media (Quaking-grass) and *Linum catharticum* (Fairy Flax) grow in a grassy dry part of the enclosure which is, as yet, unused. They grow along with:

Poa pratensis (Smooth Meadow-grass)
Poa trivialis (Rough Meadow-grass)
Anthoxanthum odoratum (Sweet Vernal-grass)
Dactylorhiza maculata (Heath Spotted-orchid)
D. fuchsii (Common Spotted-orchid)
Festuca pratensis (Meadow Fescue)
Lolium perenne (Perennial Rye-grass)
Luzula campestris (Field Wood-rush)
in some years *Listera ovata* (Common Twayblade) has also appeared here.

It is in this section, near the scanty mortar-rubble remains of the early chapel that *Allium roseum* ssp. *bulbiferum* (Rosy Garlic) grows, the only Carm. record. It is a dainty plant with an umbel of pretty little pink bell shaped flowers. Unfortunately its flowering period coincides with the early summer cutting of the hay, which could explain why this species has only been recorded from four other 10 km squares in Wales.

Another *Allium*, *Allium vineale* (Wild Onion) grows almost all over the graveyard. Thirty five years ago it grew only in the grass on a bank of the wooded stream but in the meantime it has advanced relentlessly across the adjacent meadow, through the graveyard and reaching the forecourt of the present magnificent Chapel Buildings across the road. It has reached the status of a pest; so have some *Equisetum* species. Both *Equisetum arvense* (Field Horsetail) and *Equisetum x litorale* (a hybrid Horsetail) grow prolifically but there is more of the latter than the former. Where they do grow they cover the grave completely and are difficult to eradicate. *Equisetum x litorale* was first identified in 1981 and is not known anywhere else locally.

Reynoutria japonica (Japanese Knotweed) is a worse pest. It is tall and virile and spreads fast. Much more effort is needed to keep it in check.

In 1984, flanked by this *Reynoutria japonica*, a sturdy pair of *Euphorbia lathyrus* (Caper Spurge) plants appeared. It is not a common

species. In 1982, two specimens appeared in the village on a roadside verge; in 1985 one appeared on the verge of a farm lane.

In the oldest part of the graveyard, where not all the headstones are still upright and where the graves are untidily and unevenly buried in the grass, many garden plants have established themselves:

Galanthus nivalis (Snowdrop)
Lilium pyrenaicum (Pyrenean Lily)
Lilium martagon (Martagon Lily)
Vinca minor (Lener Periwinkle)
Centaurea montana (Perennial Cornflower)
Rosa rugosa (Japanese Rose)
Hesperis matronalis (Dame's-violet)
Aquilegia vulgaris (Columbine)
Fuchsia megellanica (Fuchsia)
Paeonia sp. (Peony)
Iris sp. (blue) (Iris)

There are also a few, not many, plants of *Crocus vernus* (Crocus), *Hyacinthoides non-scripta* (Bluebell), *Narcissus pseudonarcissus* (Wild Daffodil) and one large jolly looking bush of *Buxus sempervirens* (Box). *Symphoricarpos rivularis* (Snowberry) is well established along the South boundary wall.

There used to be a Caretaker's Cottage and garden adjacent to the graveyard, which could account for so many garden plants in such a small area.

Towards the centre of the graveyard sandwiched between two gravestones and protected by tall headstones, a very pretty white-flowered *Malva moschata* (Musk Mallow) thrives beautifully.

There is an abundance of *Hedera helix* (Ivy). It grows on the West boundary wall and in the hedge. The *Hedera helix*, *Ilex aquifolium* (Holly) and the lone *Buxus sempervirens* are the only evergreens in the graveyard. But if in Winter the enclosure looks sombre, everything begins to brighten up in March when the Snowdrops appear. In a good year there are about 200 plants all growing close together giving a splash of white. In April before the other plants have got going, *Primula vulgaris* (Primrose) is in bloom. Small low primroses carpet the grassy bank, the paths and graves. In 1985 there were about 2000 plants.

In May, *Lilium pyrenaicum* (Pyrenean Lily) huddled densely together give a patch of yellow. There were 150 in 1985. In contrast is the blue of the *Centaurea montana* (Perennial Cornflower) which grows

profusely.

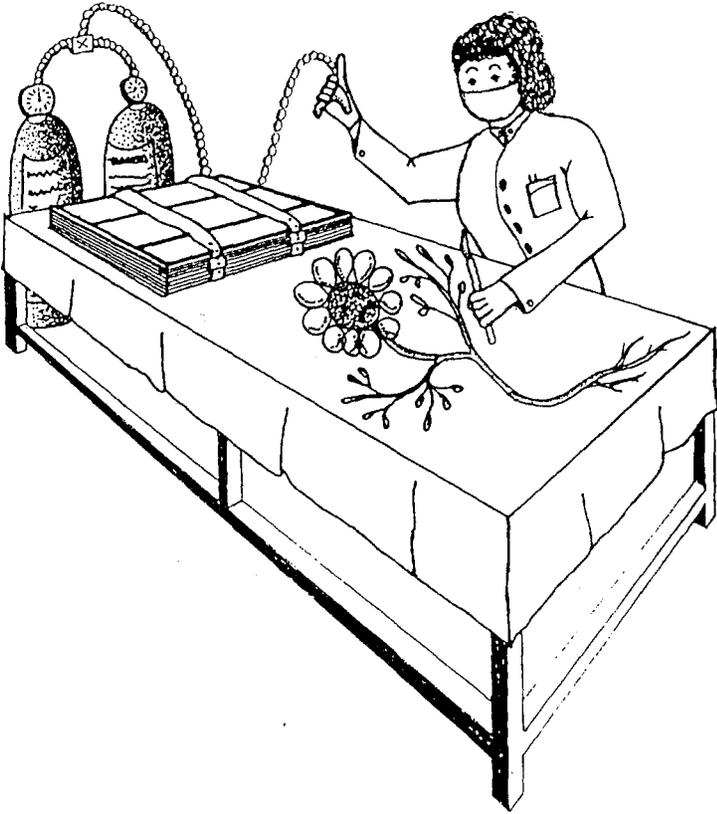
There are only about 17 Irises but they are a rich blue and very beautiful.

In June the *Lilium martagon* (Martagon Lily) blooms. It grows with *Listera ovata* (Common Twayblade). They are not a colourful couple but are tall, interesting looking and eye catching. Only a patch of *Phalaris arundinacea* (Reed Canary-grass) stands between them and a single stately reddish *Dactylorhiza praetermissa* (Southern Marsh-orchid) which appears nearly every year.

June also brings *Rosa canina* (Dog Rose) and *R. rugosa* (Japanese Rose) and many other plants into bloom: the beautiful elegant purple-blue *Geranium pratense* (Meadow Crane's-bill) and *Vicia cracca* (Tufted Vetch) both commonly found in burial grounds, *Lotus corniculatus* (Common Bird's-foot-trefoil) and tall *Trifolium pratense* (Red Clover).

In July there is a colourful display of *Hypericum maculatum* (Imperforate St. John's-wort), *Pulicaria dysenterica* (Common Fleabane), *Senecio jacobaea* (Common Ragwort), *Senecio aquaticus* (Marsh Ragwort) and of course the handsome *Epilobium angustifolium* (Rosebay Willowherb). These continue flowering well into September and give the place almost a festive air.

Thus this enclosure which, for 174 years, has escaped the effects of grazing, ploughing and artificial fertilizers has become a sanctuary for a large number of plants. It holds the custody of one rare plant, *Allium roseum* ssp. *bulbiferum* (Rosy Garlic), *Euphorbia lathyris* (Caper Spurge) is not common, whilst *Lilium martagon* (Martagon Lily), *Rosa rugosa* (Japanese Rose) and *Equisetum x litorale* (a hybrid Horsetail) have not been recorded elsewhere in square SN51.



"NOW, THIS WON'T HURT A BIT!"

