



BOTANICAL SOCIETY OF THE BRITISH ISLES

WELSH REGION BULLETIN

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Aberystwyth, September 1964

Officers of the Welsh Region

Chairman: Dr. J.P.Savidge, Dept. of Botany, U.C.W., Penglais, Aberystwyth.

Vice-Chairman and Regional Representative: Mrs. H.R.H.Vaughan, M.B.E.,
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Regional Secretary: Dr. B.Seddon, Dept. of Botany, National Museum of Wales,
Cardiff.

Field Secretary: T.A.W.Davis, Esq., South Müllock, Haverfordwest, Pems.

AUTUMN MEETING, 1964

The 1964 Autumn Meeting will be held in the Dept. of Botany, University College of North Wales, Bangor, on Saturday, 3rd October. The morning session of lectures will be on 'Conservation in Wales', while the afternoon session will be on 'Studies on Plant Distribution in Wales'. Members and non-members are invited to attend and a full programme is enclosed with this Bulletin. The Annual General Meeting will be held after the lecture sessions, at 5.00 p.m.

Bulletin 4

Bulletin 4 will be published at the beginning of January, 1965. Members are asked to send articles and other contributions to Dr. Seddon by 31st December, 1964.

Subscription rates for the Welsh Region Bulletin

Members of the B.S.B.I. resident in Wales receive the Bulletin free of charge. Other B.S.B.I. members and non-B.S.B.I. members can obtain the Bulletin for 5/- biennial subscription payable to the Regional Secretary or at 9d (plus 3d postage) a copy. The Bulletin appears three times a year.

THE "00" SURVEY - A SURVEY OF PLANT DISTRIBUTION IN WALES

The main purpose of this survey is to obtain detailed information concerning the distribution of flowering-plants and ferns in Wales, relating their distribution to factors such as altitude, topography, climate, soils, biotic competition and the history and development of the Welsh flora since the last ice-age. By using a sampling area of 1 square kilometre (= 0.39 sq. mile) it should be possible to clearly define the conditions under which the various species are able to grow and to investigate changes in their distribution by resampling certain kilometre squares once every ten or more years. To obtain a reasonable sample of the Welsh vegetation it is proposed to survey every "00" square on all the 2½ inch to 1 mile Ordnance Survey Maps covering Wales, thereby covering a 1/100th of the total area. This should provide a reasonably representative sample of the Welsh flora and include all the major habitats. Table 1 gives frequency of the major habitats in the "00" squares, but a more suitable biological classification of the habitats will be made, during 1965, in which there will be nine major habitat classifications, each of which will contain a number of sub-categories.

Table 1. Percentage of "00" squares containing certain major habitats.

<u>Habitat</u>	<u>%</u>	<u>Habitat</u>	<u>%</u>
streams	78	towns	5
minor roads	71	sea cliffs	4
woodland	52	mountain craggs	4
hill pasture	38	mountain tops above 2,000'	3
moorland	30	bogs	2
A and B roads	24	sand-dunes	2
rivers	21	salt-marsh	1
villages	17	fens	1
railways	16	islands	0.5
lakes	6		

Within each "00" square the geology, soils, climate and other environmental factors should be fairly uniform, although there are a few exceptional squares in which these factors are very variable. The number of species likely to be found in a 1 km. square ranges from between 400 and 450 in a square containing eight or nine major habitats, to about 150 in a square containing only moorland above 1,250 ft.

Altogether there are 221 "00" squares in Wales, but 12 of these contain less than 100% of Welsh terra-firma. It is hoped that the majority of Welsh B.S.B.I. members will be able to survey one, or preferably two, "00" squares during the three years of the survey. All the field work must be completed by the end of 1967 to enable the data to be analysed and ready for publication in 1969-70. Each kilometre square can be adequately surveyed in about 12 hours of field-work,

comprising an initial visit of six hours and two or three subsequent visits of about two hours to areas that might provide additional records. Experienced botanists may find that they can survey a "00" square in about four hours initially and two further visits of two hours, but a lot depends on the topography and the types of habitats occurring in the square. The most satisfactory system of collecting the data would seem to be for two members to combine and survey a square jointly and helping each other with problems concerning identification, although it is best to collect unidentifiable specimens for identification at home, rather than spending valuable time on identification in the field. Several of the Welsh Region field meetings during the next three years will be partly devoted to collecting records in "00" squares and it is hoped that county recorders will organize a few meetings in their own county to help members with the survey. The number of "00" squares in each county is given in Table 2. In cases where a "00" square is shared between two or more counties, the square is allotted to the county containing the majority of the square.

Table 2. Number of "00" squares in each county

Anglesey	10	Denbigh	19	Monmouth	19
Caernarvon	16	Flint	6	Montgomery	20
Cardigan	21	Glamorgan	21	Pembroke	16
Carmarthen	29	Merioneth	19	Radnor	10
Brecon	19				

In addition to crossing off the species on the B.S.B.I. record cards (as in the original Maps Scheme) members are asked to make a record of the coverage and frequency of all, or most, species. This may sound rather difficult, but in practice it should not amount to much extra work. Coverage and frequency are being recorded in six class groups and the data put onto special record sheets. The main object of this is to find which species are widespread and occur in numerous habitats, which are rare and restricted to a particular type of habitat and environment, and to record changes in the distribution of certain species. In most cases only a rough idea of coverage and frequency is required. An instruction sheet provides further information on this topic.

The information obtained in the field will be put onto various types of record cards, including punch-cards, and the data will be analysed in various ways. A series of maps will be prepared, including overlay maps of climatic and other factors of each "00" square. These will enable the organizers to see if the distribution of a particular species is closely correlated with one or more environmental factors and to group together species exhibiting similar distribution patterns. The results of the survey will be published in a book 'Plant Distribution in Wales' which is being prepared by the Welsh Region (see Bulletin 2, April 1964). It must be emphasised that the information obtained during the survey will be particularly useful in studying future changes in the Welsh flora - changes brought about by agriculture, forestry, industrialization, and the local environment.

The records obtained in the "00" survey could easily form the starting point of a more detailed analysis of the vegetation of a particular county. For this the survey could be extended to include "05", "50" and "55" squares at first, and "22", "27", "72" and "77" squares if more information was required, or it could form part of the 'tetrad' system. The "00" survey should prove of greater interest than the more intensive 'tetrad' or similar surveys being carried out in Warwickshire, Hertfordshire and Surrey. This is because of the greater range of environmental factors, the larger size of the sampling area, and the fact that the vegetation of most of the area is far more natural than in the industrialized areas of the Midlands and south-eastern England. This can be readily seen in the case of Warwickshire where there is virtually no land above 750 ft (and little below 250 ft), the geology is reasonably uniform as are many other environmental factors such as rainfall where the mean annual totals throughout the county range from 25" to 30".

It might be questioned whether this survey will provide information that has not already been obtained in the Maps Scheme of the past few years. If one examines the maps in the Atlas of the British Flora only the broader aspects controlling distribution are obvious, such as the restriction of certain species to limestone or coastal habitats. The main disadvantage of the 10 km. square used in the Maps Scheme is that there is a considerable amount of variation within each 10 km. square, whereas the environmental factors are relatively uniform in a 1 km. square. Furthermore, in studying distribution it is essential to know if a certain species is common and widespread throughout the area or very rare and restricted to a specialized habitat. By recording coverage and frequency we shall be able to obtain this type of information. The other advantage of the 1 km. square is that it is possible to find about 95% of the species occurring in the square, whereas it would take many solid weeks of field work to examine an area 100 times the size in as much detail and it would be more difficult to estimate both coverage and frequency in such a large unit area.

During the summer of 1964 several Committee members of the Welsh Region have taken part in a provisional "00" survey. This has resulted in the finding of a number of uncommon species in areas that would not have normally been visited by botanists. For instance, in one square two species, Meum athamanticum and Selaginella selaginoides were found much further south than any of the localities indicated in the Atlas. In some cases several dozen species have been found which were not recorded for the 10 km. square in which the "00" square was situated. All those who have taken part in the provisional survey have found the work most interesting and stimulating.

The Committee hope that there will be a good response to the survey from Welsh Members. Instruction sheets, record cards and other information can be obtained from the Chairman.

Postscript. The "00" survey is not, in any respect, duplicating work being done in connexion with the Upland Survey of the Land Utilization Survey in Wales. It should be regarded as a complementary survey and that both surveys should provide us with an up-to-date account on the many aspects of plant distribution in Wales.

J.P.Savidge

FIELD MEETING REPORTS

ANGLESEY : Fens and orchids

We were fortunate in having ideal weather for this meeting on 20th June, and an enthusiastic party met at the venue: the Caernarvonshire end of the Menai Suspension Bridge, at 10.30 a.m.

The first site visited was Cors Erddreiniog, botanically one of the richest areas in Anglesey, and one which has only recently been fully explored. It is particularly noted for its wealth of orchid species, and we were fortunate to find a few plants of Dactylorhiza traunsteineri still in flower, though the vast majority were over, with well-developed pods. D.purpurella was, however, at its best but in much smaller numbers; D.fuchsii and D.maculata were also present, with a fine show of Gymnadenia conopsea and several plants of Ophrys insectifera. The latter is very restricted in its distribution in Wales and was only discovered in this locality as recently as 1957. Though it was too early for Epipactis palustris to be in flower, many plants were seen with flower buds, giving promise of a display of a different kind later on. Among other species noted in the same area were Parnassia palustris, Pinguicula vulgaris, Serratula tinctoria, Platanthera bifolia, Carex hostiana, C.lepidocarpa, and Briza media, the "var. albida" of the latter being abundant.

Communities dominated by Cladium mariscus, Schoenus nigricans and Juncus subnodulosus were seen, and in a mixed-fen community a colourful display was made by Aquilegia vulgaris. Near the lake some of the larger sedges included an abundance of Carex elata, and some puzzling forms which appear to be hybrids of C.elata and C.acuta. Here also occurs Scutellaria galericulata and Solanum dulcamara. Beside the water-lilies in the lake there was a good deal of Hippuris vulgaris, but we failed to find any Sparganium minimum which is known to grow here. In the ditches Potamogeton coloratus and Baldellia ranunculoides were abundant.

After a picnic lunch, the party made its way to Cors Goch, much of which has now been acquired as a reserve by the North Wales Naturalists' Trust. Here the striking alternations of heath, limestone grassland, bog, fen and aquatic communities were well displayed, and the time spent here could hardly give more than a fleeting impression of the wealth of plant life in this remarkable area. On the heath Viola lactea was long past flowering, but near by a fine show of Gymnadenia conopsea, where heath gave way to more basic grassland, stood among large numbers of plants in fruit, showing where Scilla verna, Orchis mascula and O.morio had flowered earlier in the summer.

At the edge of the fen many orchids were examined, and amongst these the hybrid D.fuchsii x D.purpurella frequently attracted attention. Platanthera bifolia and Coeloglossum viride were also in flower, as well as D.incarnata of which the deep purple-flowered forms occurs as well as the flesh-pink one. Notable absences (though the habitat seems entirely suited to them) are D.traunsteineri and Ophrys insectifera. On the limestone outcrop at the edge of the fen Antennaria dioica was in full flower with Briza media, and on our way back we saw Myrica gale, Eleocharis pauciflora, Cladium mariscus, Schoenus nigricans, Carex hostiana, C.lepidocarpa, as well as the hybrid

of these two Carices, C.diandra, C.paniculata, C.lasiocarpa and Utricularia in the shallow pools among the sedges.

Our last call of the day was at the small fen near Talwrn to see Ranunculus lingua, which occurs there in some quantity, together with Berula erecta, Carex diandra and C.lasiocarpa, but apart from noting Lithospermum officinale among the bushes around the fen, as it was at Cors Goch, there was no time to see more of this rich plant locality.

Our thanks should be recorded to the North Wales Naturalists' Trust for permission to visit Cors Goch and thus helping to make this meeting an enjoyable one for us all.

R.H.ROBERTS (leader).

BRECON : Llangorse Lake and Craig y Cilau

The meeting was attended by 14 members and was favoured by warm, fine weather which reserved its threat of thunderstorms until Monday. We assembled after dinner on Friday, 29th May in the lounge of the Castle of Brecon Hotel for mutual introductions and talks. On Saturday evening we were able to sort and name our specimens in a workroom of the Brecon Museum which was kindly made available to us by its Curator, the Revd. J.Jones-Davies. Saturday was spent exploring the margins of Llangorse Lake, from the Common westwards in the morning, and from Llangasty Church southwards in the afternoon. The swamp and wet meadow flora varies from place to place and in a cattle-trampled area it included Callitriche stagnalis, C.obtusangula, Veronica catenata, Nymphoides peltata, Lemna trisulca, Ranunculus trichophyllus, Eleocharis palustris, Berula erecta, Potamogeton crispus, Polygonum amphibium, Rumex maritimus and two species which were additions to the known flora of this lake. One was Zannichellia palustris, seen here growing on mud and later in an attenuated form growing on a gravel shore near Llangasty Church. The other was Hippuris vulgaris which is also new to the county of Brecon. The ungrazed parts of the shore supported sedge meadows principally of Carex nigra, C.elata, C.disticha, C.rostrata and C.vesicaria. In the afternoon near Llangasty Church the party fought its way through acres of unusually luxuriant sedge-swamp comprising Carex acuta, C.aquatilis, C.acutiformis and hybrids (which are still awaiting determination).

On Sunday the venue was Craig y Cilau National Nature Reserve, part of a six mile long escarpment of Carboniferous limestone situated at 1,200 - 1,750 ft. The lower parts of the cliff-face and the steep slopes of the scree below were clothed in woodland of ash, elm, beech and yew with scattered limes of both species and field maple. Every crevice in the cliff-face was occupied by beech, yew and one of the Sorbus species. Of these we saw Sorbus aucuparia, S.aria, S.anglica, S.minima, S.porrigentiformis, and S.rupicola. Locally Populus tremula was noted also.

Within the woodland Ranunculus ficaria ssp. bulbifer, Geranium lucidum, and Taraxacum laevigatum were seen. On the cliff-ledges the most notable plants Hieracium sub-britanicum, Taraxacum spectabile, Scabiosa columbaria, Poterium sanguisorba, Pimpinella saxifraga, Arabis hirsuta, Cystopteris fragilis and locally Hornungia and Asplenium viride. Shaded places under boulders supported Thelypteris robertiana and on coarse scree Saxifraga hypnoides was abundant. A full day was concluded with a look at the small and closely grazed raised bog at the foot of the slope below the cliffs.

B.SEDDON (leader).

CARMARTHEN : Limestone and sand-dunes

Twenty members booked for the Carmarthenshire meeting, although it would have been even better had there been more from Wales. At the headquarters at Golden Grove on Friday evening, 24th July, the programme for the weekend was outlined and geological maps and sections, most kindly provided by Dr. Bassett of the National Museum, were distributed.

On Saturday, the 25th, we met at Dryslwyn where the castle walls are draped with Polypodium australe. Dryslwyn stands on an isolated outcrop of Carboniferous limestone which bears an unusual community on the rocks of Plantago coronopus, Erodium cicutarium, Ceterach officinale, Trifolium striatum, etc. The summit, well nitrogenized by cattle and sheep, has much Chenopodium bonus-henricus and Conium maculatum. The next stop was near Carmel to see a strong stand of Equisetum hyemale at a quarry edge, and then to Carreg Gwenlais, one of 4 farms sharing an area of calcareous woodland on rising ground. These woods, dominantly ash-hazel but with spindle, buckthorn and Cornus in the shrub layer, are better in Spring when they produce Convallaria majalis, Lathraea squamosa, Viola reichenbachiana and other species, but a good stand of Sedum reflexum was seen, together with Epipactis helleborine, Aquilegia vulgaris and Alchemilla vestita. Geranium phaeum was naturalized at the entry to the farm lane with Cystopteris fragilis on the opposite bank.


The last venue of the day was Carreg Cemen where the Veronica hybrida displayed beautifully at the chasm edge and Allium schoenoprasum showed spent flower heads just beyond sheep-reach. One plant of Rosa pimpinellofolia was growing in a rock cleft. The screes below the cliff had Rosa micrantha, R. tomentosa and other good plants but unfortunately time did not allow us to make the rather steep descent.


On Sunday we met at Carmarthen Bridge. A halt was made just beyond Kidwelly for a pond and ditch normally rich in the batrachian Ranunculus spp., Callitriche platycarpa, Zannichellia palustris, Veronica catenata, Berula erecta and Sparganium spp., but drought conditions and the thirsty cattle has obliterated almost everything. After a short halt on a railway bridge for Inula helenium and Linaria repens we parked at the edge of a salt-marsh of Towy Burrows. This area of fixed dune and dune slack is bounded on the seaward side by mobile dunes, along the river by salt-marsh, and on the south by Forestry Commission plantations. With a gradual transition from one habitat to another it is full of ecological interest. Amongst the more notable plants seen were Pyrola rotundifolia, Liparis loeselii, Epipactis palustris, Equisetum variegatum, Centaurium littorale, C. pulchellum, Gentianella uliginosa, G. anaxelle, Sagyrinchium bermudiana, Ophioglossum vulgatum and Elymus arenarius. This was a very strenuous day with long hours of walking but interest seemed to outweigh fatigue to make a happy party.

Thanks for help are due in many quarters, but especially to Dr. Bassett for maps, to Principal James of Golden Grove for unfailing co-operation, and to Mr. Thomas of Carreg Gwenlais for permission to park in his yard and go at will about his land. Mrs. H.R.H. Vaughan (leader).


Key

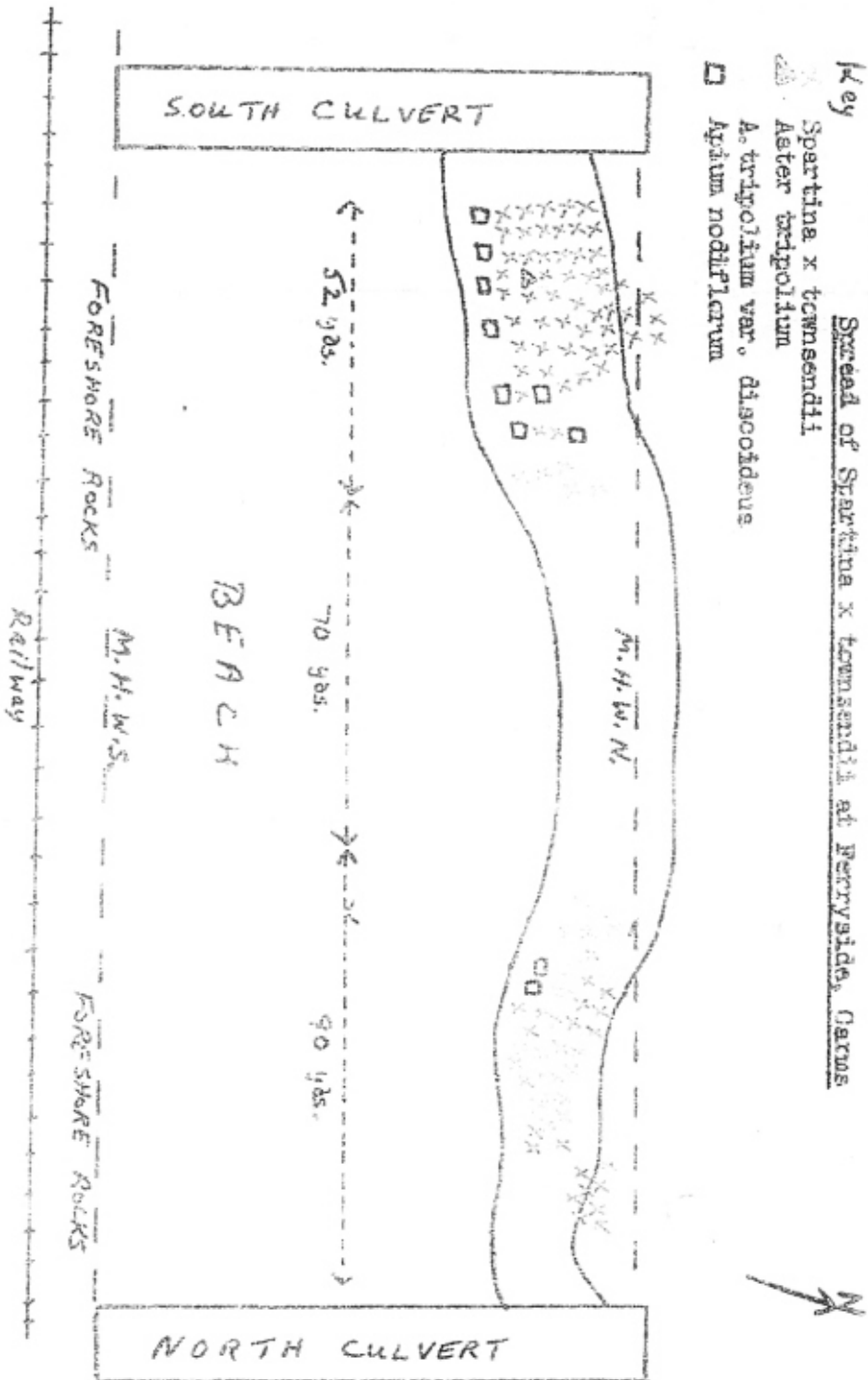
Spread of *Spartina x townsendii* at Ferryside, Garrow

 *Spartina x townsendii*

 *Aster tripolium*

 *Aster tripolium* var. *discoideus*

 *Aquium nodiflorum*



MONMOUTH : Wye Valley Woods

The leader, Mr. A.E.Wade, was accompanied by only two members to the Wye Valley on 2nd May. Soft drizzle fell in the morning, but the afternoon was sunny. The time was spent mainly at Blackcliffe where limestone cliffs and block screes provide a rich habitat within the beech woodland. Carex digitata occurs beside the path and Neottia nidus-avis and Convallaria majalis were present locally. Among mossy boulders Chrysosplenium alternifolium and Cardamine impatiens were seen. Of the ferns, Polystichum aculeatum, Phyllitis scolopendrium and Asplenium trichomanes were frequent, as was the fern-like liverwort, Plagiochila asplenoides. On deeper soil Paris quadrifolia and Euphorbia amygdaloides appeared among the general cover of Mercurialis perennis and Endymion non-scriptus.

A shorter stop at Wyndcliffe enabled us to see dense beechwood on smooth slopes where the understorey included Ligustrum vulgare and Daphne laureola. The only other plant present in quantity, and thus able to tolerate the very low light intensity here, was ivy. We were sorry that more members were not present to enjoy this excursion and the fine views which it afforded of the lower course of the River Wye.

B.SEDDON

Changes in membership of the Welsh Region

December, 1963 to April, 1964

Barnes, Mrs. Mary, Malvern, Penally, nr. Tenby, Pembro. (change of address).
Benson, Miss Maureen, B.Sc., Dept. of Botany, U.C.W., Aberystwyth.
Cook, R.J., St. Trillo, Baye Coch Lane, Mold, Flint. (now in SE. region).
Evans, J.O., Brynheulog, Cefn Coed, Nr. Merthyr Tydfil, Glam.
Hawkins, Miss G.I., Garden Flat, Druidstone, St. Mellons, Cardiff (now in England).
Henderson, R.A., 27 Heol-y-nant, Whitcomb, Cardiff (junior member).
Page, F.H.E.B., B.Sc., Orierton Field Centre, Pembroke.
Richards, G.Paul, Woodhouse Close, Peryouat Road, Knighton, Rad. (junior member).
Rosser, Mr. C.M., 12 Aberpernar St., Mountain Ash, Glam. (from Cambridge).
Russell, Miss B.E., "Windrush", Sluvad Road, Panteg, Pontypool, Mon.

Spread of *Spartina x townsendii* at Ferryside, Carmarthenshire

by R.F.Hay

During the night of 25th/26th March, 1956, the southern end of the village at Ferryside was flooded to a depth of three feet following almost 48 hours of continuous rain. Surface water from the hills to the east descended into the village and was unable to drain away owing to the high equinoctial tides which overflowed into the drainage ditches.

Much controversy took place at the time over the adequacy, or otherwise, of the local system for leading away surface water. As a result of consultations two additional culverts were laid to drain water from the main village ditch under the railway and out to the beach. These culverts were completed and started to drain surface water in February, 1956. A fresh-water channel

appeared in the beach and water drained from the south culvert exit in a northeasterly direction for a distance of some 230 yards to the north culvert.

Silt brought down by the drainage water was deposited along this channel, and in August, 1958, it was observed that Spartina x townsendii had started growing in the silt. In the following summer of 1959, Spartina was seen to be establishing itself in two distinct patches along the channel, and in 1960 two more species made an appearance. These were Apium nodiflorum (fool's parsley) and Aster tripolium (sea aster). The sea aster was represented by both the normal type and the rayless variety, var. discoideus. The normal sea aster appeared, however, only as a single plant in the more southerly of the two groups.

Observations and measurements made on 16th October, 1960, revealed that the southern colony of Spartina extended for 52 yards from the culvert towards the north-east. There was then an uncolonised stretch of some 70 yards before the start of the second colony. This second colony extended for a distance of 90 yards towards the northern culvert. The channel made by the drainage water was situated between the mean high water level of neap and spring tides. The position of the Apium and Aster was on the landward bank of the channel and was, therefore, covered only at spring tides.

Spartina x townsendii has already extensively colonised both banks of the River Towy along its estuary, and has formed a substantial meadow at Llanstephan. Its appearance at Ferryside hitherto has been confined to detached clumps on the beach and saltmarsh about a half-mile to the north-east of the new site.

In 1962 the fresh-water channel disappeared following the blocking of the culverts by sand. The problem of draining surface water has thus returned to the village and is again the subject of discussion between the local authorities.

Welsh Plant Records, 1964

Members are reminded that interesting plant records should be submitted to county recorders in the first instance. The recorders will then send in county lists to the National Museum of Wales and from these any new or unusual county records will be forwarded for publication in the B.S.B.I. Proceedings. It may be possible to include occasional lists in the Welsh Region Bulletin to help members to keep Welsh Flowering Plants up-to-date.

Notes and observations on particular plant species or communities can be sent to the Editors of the Welsh Region Bulletin who are prepared to include a number of short contributions in future issues. Except in special circumstances, they are not prepared to publish lists of plant records for a certain locality or county.