Short Notes

LENGTH AND INSERTION OF THE FILAMENTS IN *ENDYMION*

Chicken (1973) has recently drawn attention to the possible rapid increase of the Spanish Bluebell, *Endymion hispanicus* (Mill.) Chouard, and its hybrids with the Common Bluebell, *E. non-scriptus* (L.) Garcke, in northern England and has suggested that the plant may be under-recorded in Britain. In the attempt to check the identity of plants growing on a roadside verge near Bristol, N. Somerset (v.c. 6), I examined fairly closely the differences between the two species as given by Warburg (1962) and others. As Chicken says, the horizontal, more open perianth of *E. hispanicus* is recognizable at a distance, and the blue anthers of this species provide a confirmatory character; but a further distinction given by Warburg – 'Filaments all inserted about middle of perianth' in *E. hispanicus*, and '. . . outer inserted about middle of perianth, inner lower' in *E. non-scriptus* – cannot be upheld, as will be shown below.

Baker (1872) reported on a large collection of 'Wood Hyacinths' obtained from various sources, classifying them into eight groups distinguished mainly by the shape of the perianth and the length and attachment of the stamen filaments. These two characters were, in general, associated – 'the absolute length [of the filaments] being increased, and the proportion that is adnate [to the perianth] greater the higher and more distinctly the [perianth] segments are permanently connivent'. Numbering the groups in order in this respect and comparing them with the existing published figures, he found no difficulty in identifying nos 1 and 2 with *E. non-scriptus* and nos 5, 6 and 7 with *E. hispanicus*. Nos 3 and 4 were intermediate between these two, whilst no. 8 was 'a more extreme form' than *E. hispanicus*. He concluded that the whole range could scarcely be regarded as other than 'a single species in a broad scientific sense'. Unfortunately, he made no mention of the colour of the anthers.

Baker defined the attachment of the filaments in general terms, ranging from 'free at the top only' through 'free in the upper half' to 'attached at the very base only'. However, by expressing these characters numerically, as estimated percentages of the total filament length attached, it has been possible to represent Baker's data diagrammatically (Fig. 1A, groups 1 & 2; Fig. 1B, groups 5–7).

A similar diagram (Fig. 1C) has also been prepared from the account of *E. hispanicus* given by Turrill (1952). Turrill noted the ready occurrence of hybridization with *E. non-scriptus* when the two species are grown together in gardens and suggested that, in their natural distribution, they

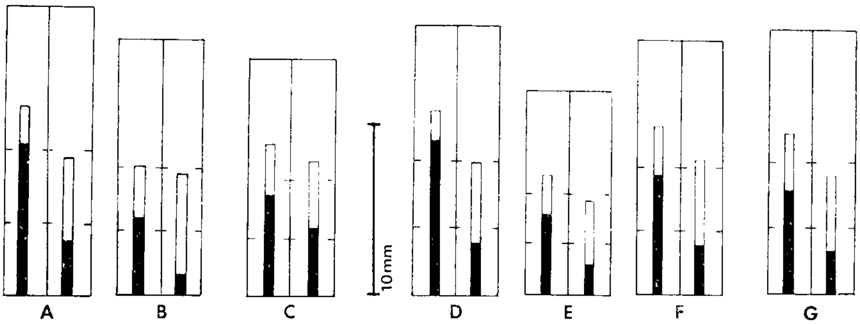

FIGURE 1. Diagrammatic representation of length of perianth segments and length and attachment of stamen filament in (A, D) *Endymion non-scriptus*, (B, C, E, F) *E. hispanicus* and (G) their putative hybrid. (See text for origins). In each diagram, the outer perianth segment and its associated filament is shown on the left, the inner on the right. The wide rectangles represent the perianth segments and the narrow the filaments (with the attached portion shown solid). The diagrams are drawn to scale in the vertical axis only.

are probably vicarious. Both species and their hybrid are illustrated, but the ultimate origin of the specimen of *E. hispanicus* is not stated. It is a typically robust plant, as commonly seen in gardens, and is depicted with blue anthers (although this character is not mentioned in the text). It would appear to agree fairly closely with group no. 7 of Baker (1872).

The remaining diagrams (Fig. 1D–1G) refer to my own data, from the following material:

1D. *Endymion non-scriptus* – 13 plants from three localities near Bristol, N. Somerset (v.c. 6); one of them within a few metres of the plants represented by Figure 1G, i.e. on the same roadside verge, the others in woods nearby.

1E. *E. hispanicus* – six plants collected in Portugal, 1908, and Spain, 1925 (**BRIST**).

1F. *E. hispanicus* – 20 cultivated plants, from three local gardens.

1G. The five plants which it was originally sought to identify, from a roadside verge near Bristol (see above).

All measurements were made as far as possible from flowers at a uniform stage of development, when the anthers of the inner stamens had just started to dehisce.

Study of the data summarized in Fig. 1A–1F suggests that the most consistent difference between the two species, as far as the length and attachment of their stamens is concerned, may be expressed as follows:

E. non-scriptus: Filaments distinctly unequal; the inner barely 3/4 the outer; the outer inserted just above the middle of the perianth, adnate to it for more than 3/4 their length.

E. hispanicus: Filaments subequal; the inner at least 4/5 the outer; the outer inserted below the middle of the perianth, adnate to it for less than 3/4 their length.

Smith (1975) stated that, in many of the hybrids, the stamens 'are inserted fairly close together near the middle of the perianth', noting that 'the anthers vary in colour from cream to blue'. My plants, represented in Fig. 1G, had the general appearance of rather slender *E. hispanicus*. They had the blue anthers of that species, but in relative filament length (inner a little under 3/4 the outer) they approached *E. non-scriptus*. Probably, they are best regarded as hybrids.

In recording *E. hispanicus* and its putative hybrids with *E. non-scriptus*, close attention to the length and attachment of the filaments is obviously desirable.

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T. E. T. Bond

CHROMOSOME NUMBERS OF BRITISH PLANTS, 4

		Grid Reference and locality
Cochlearia alpina (Bab.) H. C. Watson	$n=6$	35/71.31 Green Castle, Westmorland, v.c. 69
	$n=6$	34/98.89 Woodall, Wensleydale, N.W. Yorks., v.c. 65
	$n=6$	34/99.64 Grassington, Mid-W. Yorks., v.c. 64
	$n=6$	43/15.82 Dirtlow Rake, Castleton, Derbys., v.c. 57
	$2n=12$	As last
	$2n=26$	37/16.77 Glas Maol, Forfar, v.c. 90
	$2n=24$	31/46.54 Cheddar Gorge, N. Somerset, v.c. 6
Draba incana L.	$2n=32$	35/81.30 Widdybank Fell, Teesdale, Durham, v.c. 66
	$n=16$	As last

	$n=16$	35/84.28 Cronkley Fell, Teesdale, N.W. Yorks., v.c. 65
	$n=16$	43/16.72 Millers Dale, Derbys., v.c. 57
Juncus alpinoarticulatus Chaix	$2n=40$	35/81.29 Widdybank Fell, Teesdale, Durham, v.c. 66
	$n=20$	As last
	$2n=40$	35/83.31 Sand Sike, Teesdale, Durham, v.c. 66
	$2n=40$	35/90.27 Winch Bridge, Teesdale, Durham, v.c. 66
	$2n=40$	37/14.76 Glenshee, E. Perth, v.c. 89
	$2n=40$	37/14.70 Morrone, Braemar, S. Aberdeen, v.c. 92
	$2n=40$	37/72.56 Shiehallion, Mid Perth, v.c. 88
	$2n=40$	27/94.61 Ben Vrackie, E. Perth, v.c. 89
	$2n=40$	36/42.11 Branxholme, Roxburgh, v.c. 80
Juncus nodulosus Wahlenb. var. *marshallii* (Pugsl.) P. W. Richards	$2n=40$	28/50.57 Loch Ussie, E. Ross, v.c. 106
Carex ericetorum Poll.	$n=15$	35/81.30 Widdybank Fell, Teesdale, Durham, v.c. 66
	$n=15$	35/84.28 Cronkley Fell, Teesdale, N.W. Yorks., v.c. 65
	$n=15$	34/45.77 Arnside Knott, Westmorland, v.c. 69
	$n=15$	34/46.73 Jenny Brown's Point, W. Lancs., v.c. 60
	$n=15$	44/50.17 Kirk Smeaton, S.W. Yorks., v.c. 63
	$n=15$	43/50.74 Markland Grips, Derbys., v.c. 57
	$n=15$	53/80.90 Grimes Graves, W. Norfolk, v.c. 28
	$n=15$	52/73.77 Foxhole Heath, W. Suffolk, v.c. 26

G. M. FEARN

FLOWER-BASKING BY INSECTS IN BRITAIN

Hocking & Sharplin (1965) and Hocking (1968) showed that in the Arctic there is a predominance of white flowers, many of them cup-shaped, and concluded that the reason for this was that these reflected the sun to a focus so that the temperature inside the flower becomes greater than that outside. They postulated that, with this temperature increase, the fertilized ovaries could mature more quickly (important with such short summers) and also that nectar production would be stimulated. In addition it could act directly as an attractant for insect visitors in the cold environment. Using thermocouples, Hocking & Sharplin (1965) recorded a difference in temperature of up to 6·5°C in the corolla of *Dryas integrifolia* M. Vahl and 10·5°C in *Papaver radicatum* Rottb. (a larger flower) compared with positions outside the corollas. Hocking's (1968) figures are smaller, recording only up to 4·4°C difference in *Dryas integrifolia* (mean 1·6°C) and up to 3·6°C in *Papaver radicatum* (mean 3·4°C). My observations suggest that this phenomenon may be much more widespread.

Parnassia palustris in Britain flowers from July to October, with a peak in the area studied (Cothill Marsh, Oxon., v.c. 23) around mid-September, when the air temperature is considerably lower than earlier in the year. On the morning of 13th September 1975, a cool, still, sunny morning, several flies, in particular the syrphids *Helophilus pendulus* L. and *Eristalis tenax* L., were observed to visit the flowers of *Parnassia* and sit and groom themselves in addition to feeding on the nectar. In many cases the visits to *Parnassia* were interspersed with visits to other flowers, particularly *Succisa pratensis*. In these cases the insects fed quite briefly at the *Succisa* and rested for some time in the *Parnassia* flowers. Since several insects visited more than one flower of *Parnassia*, it is likely that these were incidentally pollinated. *Parnassia* is adapted particularly for pollination by the larger Diptera such as those above, and smaller insects rarely effect pollination (Knuth 1908). Knuth also noted that the larger Syrphidae usually settle across the middle of the flowers to feed at the nectaries, a habit which I also observed, and perhaps this is related to the position of focus of the warmth. The plant is clearly adapted for this habit since the anthers dehisce one at a time over the centre of the flower. Previous workers (see Proctor & Yeo 1973) have not considered this aspect.

No thermocouples were available to me at the time of the observations in Oxon., but on 7th October 1975, again a sunny though windy morning, I recorded the temperature inside and outside *Parnassia* flowers on Scotstown Moor near Aberdeen, S. Aberdeen, v.c. 92, using a thermocouple placed in roughly the position in which I had previously observed the hoverflies to sit. The temperature inside the flowers was significantly higher than that immediately outside, the difference being 1·4°C–2·9°C (mean 2·04°C). The ambient air temperature was approximately 10°C. These differences are quite similar in magnitude to those shown by Hocking (1968) in the Arctic, but would almost certainly be greater on a still day such as the morning of the initial observations. The added heat would probably be most important for the insects early in the morning when the air is cool.

Many intriguing questions are posed by these observations and there seems to be great potential for further study. How widespread is this phenomenon and what is the importance of it as a stimulus for increased nectar production in the flower and as a direct attractant for insects? It is probable that the temperature increase is more important for Diptera and small Hymenoptera than for bumblebees since it has recently been postulated (Newsholme *et al.* 1972) that these may be able to generate their own heat by internal enzyme reactions. Many plants common in Britain have pale, cup-shaped flowers and thus may show this effect to some extent, e.g. species of Ranunculaceae, Hypericaceae, Nymphaeaceae, Caryophyllaceae and Rosaceae. It is probably more important in spring and autumn than in summer, and this might be reflected in the succession of flower colour, pale colours predominating early in the year but blues and purples in midsummer.

ACKNOWLEDGMENTS

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A. J. LACK

THREE SPECIES OF POLYGONACEAE ESTABLISHED IN BRITAIN

The B.S.B.I. has in preparation a handbook for the identification of Polygonaceae found in the British Isles and it therefore seems desirable to report now three seldom-grown species which appear to be permanently established outside gardens.

1. *Polygonum alpinum* All., *Mélang. Philos. Math. Soc. Roy. Turin* (*Misc. Taur.*), **5**: 94 (1774).

Stems 30–70 cm, stout, erect, arising from a creeping rhizome. Leaves 1–3 cm wide, lanceolate or broadly lanceolate, tapering to both ends, puberulous. Ochreae hyaline or brownish, soon becoming torn and falling. Flowers in a loose, widely spreading panicle. Perianth segments white or pink, subequal. Nut (not yet seen in Britain) 4–5 mm, slightly exceeding perianth, trigonous, pale brown, shining. Pyrenees, Alps, Appennines, Carpathians, and mountains of Balkans, Orient, Central Asia and Siberia.

S. Aberdeen, v.c. 92: naturalized with lupins on river shingle, Ballater, 1968, *Lady Sally Paget*, comm. D. McClintock, **herb. J.E.L.**; Ballater, on a shingle island, patch some 3 m long, 1975, *J. E. Lousley*, **herb. J.E.L.** My own gathering has very much narrower leaves than Lady Paget's specimen although it is believed to be from the same colony.

The species was reported earlier from Argyll, v.c. 98: shore between Innellan and Dunoon, 10th July 1909, *J. Fraser*, E, *Ann. Scot. nat. Hist.*, **1911**: 102 (1911) and quoted (incorrectly) in *Rep. Botl Soc. Exch. Club Br. Isl.*, **3**: 30 (1912).

In addition there is an allied plant, with narrower leaves usually less than 1 cm wide and smaller and less congested flowers, which was collected in Stirling, v.c. 86: garden weed near Kirkintilloch, undated, *A. W. Exell* 2238, **BM**; one plant as weed in bed, Solsgirth, Kirkintilloch, 1967, *D. McClintock*, **herb. J.E.L.** This is a shorter plant which deserves a separate name, but it has not been found outside gardens. The two gatherings differ considerably.

2. *Polygonum molle* D. Don, *Prodr. Fl. Nepal.*, p. 72 (1825) (*Aconogonum molle* (D. Don) Hara, *Fl. E. Himal.*, **1**: 68 (1966); *Polygonum paniculatum* Blume, *Bijdr. Fl. Ned. Ind.*, p. 153 (1825–6); *Polygonum rude* Meisn. in DC., *Prodr.*, **14**: 137 (1856); *Polygonum frondosum* Meisn. in DC., Prodr., **14**: 137 (1856); *Aconogonum molle* var. *frondrosum* (Meisn.) Hara, *Fl. E. Himal.*, **1**: 68 (1966); *Aconogonum molle* var. *rude* (Meisn.) Hara, *Fl. E. Himal.*, **1**: 68 (1966)).

Stout, bushy perennial allied to *P. polystachyum*. Stems 60–100 cm; branches stout with appressed hairs. Ochreae cylindrical, or the upper cyathiform, covered with long silky hairs. Leaves lanceolate or broad-lanceolate, 2–7·5 cm wide, up to 25 cm long, acute or sometimes acuminate, ciliate, pubescent above, pilose below, the younger leaves subsericeous; petioles of upper leaves up to 1·5 cm. Panicle terminal, thyrsoid, flowers with small (less than 2 mm), white perianths on hairy branches. Perianth said to become fleshy. Himalayas, S.E. Asia.

N. Lincs., v.c. 54: Woodhall Spa, 'alien or escape', 1921, *A. H. G. Alston*, **BM**.

Argyll, v.c. 98: Coylet, Loch Eck, GR 26/143.878, 1956, 1969, 1970, *P. Macpherson*, **herb. J.E.L.**

At the Loch Eck station there are three patches, each about 20 m long, near a house with a walled garden, and there is no doubt that some or all of the colonies arose from material from this garden, where it still grows. The present owners say that when they took over the garden about 1960 they tried to dig out the 'roots' and threw them out on the other side of the road, where they spread down the slope towards the shore, but it had already attracted Dr Macpherson's attention four years earlier. There are three more clumps near the Coylet Hotel over half a mile to the north.

P. molle D. Don, as here recognized, comprises a group of closely related taxa which grade into one another in Asia, and are probably best treated as varieties of *P. molle* D. Don (the earliest name). Typical *P. molle* (var. *molle*) has densely hirsute stems, long-appressed-pubescent petioles, and densely pubescent leaf-laminae and inflorescence rhachides; *P. paniculatum* (*Aconogonum molle* var. *frondosum*) is more or less glabrous; and *P. rude* (*Aconogonum molle* var. *rude*) has hirsute stems, long-retrorsely-appressed-pubescent petioles, and pubescent leaf-laminae and inflorescence rhachides. The latter two have apparently not been found outside gardens in this country.

Most of the 'Hairy-stemmed Polygonums' exhibited by D. McClintock at the 1974 B.S.B.I. Exhibition Meeting (McClintock 1975) belong to *P. molle*, but the specimens are at present mislaid.

3. *Fagopyrum dibotrys* (D. Don) Hara, *Fl. E. Himal.*, **1**: 69 (1966) & *op. cit.*, **2**: 22 (1971) (*Polygonum dibotrys* D. Don, *Prodr. Fl. Nepal.*, p. 73 (1825); *Polygonum cymosum* Trev., *Nova. Acta. Acad. Leop.-Carol.*, **13**: 177 (1826); *Fagopyrum cymosum* (Trev.) Meisn., in Wall., *Pl. Asiat. Rarior.*, **3**: 63 (1832)).

Tall, branching, sparsely pubescent perennial with stout, annual stems 1m or more tall. Lower leaves *c* 10 × 9 cm, broadly triangular, cordate, acute or obtuse, sparsely pubescent; upper leaves narrower, acute, sometimes amplexicaul. Panicle open, with widely spreading branches each 4–10 cm. Flowers congested near tips of branches, mostly on short pedicels, white. Himalayas (Kashmir to Sikkim), Khasia Mountains, Manipur, Tibet, Thailand and China (Yunnan, Szechuan, Ichang, Shanghai).

Pembs., v.c. 45: 'A strong colony beside the road between Townsend and Cliff Cottages' (as *Fagopyrum esculentum*) (George 1961); (same place), just north of Dale, a large patch on the cliff side of the road, no houses very near, August 1975, *J. E. Lousley*, **herb. J.E.L., BM**.

Although not often grown today, it was introduced into Britain before 1846, said to have been sent to the Horticultural Society from China by Capt. Munro (Lindley 1846), and a little later stated to have been introduced by the East India Company (Lindley 1852). William Borrer (1781–1862) collected it from a garden (K).

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J. E. LOUSLEY

MARITIME SPECIES ON ROADSIDE VERGES

Rock salt is used for de-icing roads (Westing 1969) and it has been calculated (Davison 1971) that this can lead to roadside soils and vegetation receiving a deposit of 3 to 4 kg salt/m^2/year. This, coupled with the effects of grit, oil and other debris, often has a drastic effect on the roadside flora. Usually the number of species is reduced and the flora often consists solely of sparse patches of *Agropyron repens*, *Atriplex patula*, *Polygonum aviculare sensu lato*, *Poa pratensis*, *Taraxacum* sect. *Vulgaria* and *Agrostis* spp.

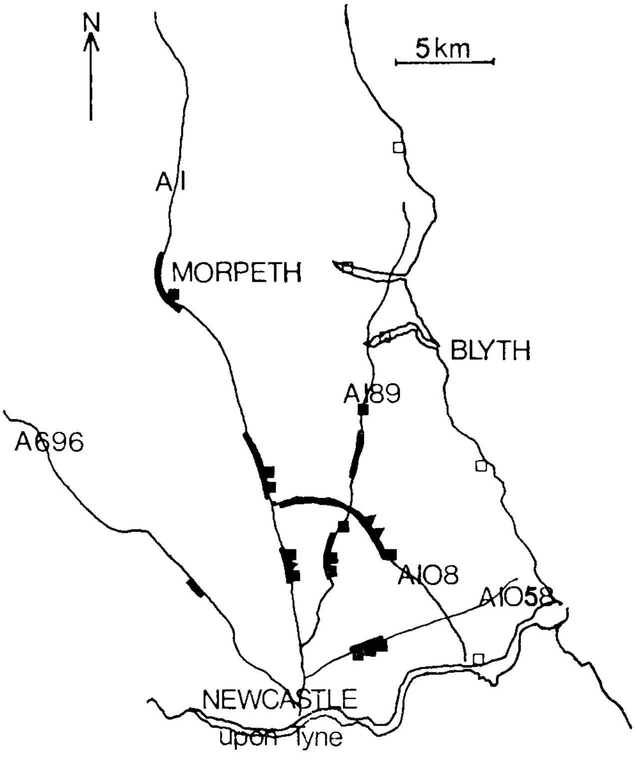

FIGURE 1. Distribution of *Puccinellia distans* showing areas of highest density of plants along the roadside (continuous heavy line).
■ Roadside localities for *A. tripolium*.
□ Some of the previously known localities for *A. tripolium*.
▲ Roadside localities for *S. maritima*.

Recently, however, the authors started a detailed floristic survey of verges in south-eastern Northumberland, and discovered a number of maritime species growing on the saline verges of several trunk roads (Fig. 1). The sites are 7 to 13 km from the coast. The maritime species found were: *Aster tripolium*, *Plantago coronopus*, *Plantago maritima*, *Puccinellia distans*, *Puccinellia maritima*, *Spergularia marina*, *Spergularia media*, *Suaeda maritima*.

The distribution and abundance of the species is very variable. Both species of *Puccinellia* occur along many kilometres of the A1, A696, A189, A108 and A1058, with *P. maritima* in tussocks up to 70 cm in diameter. All the species flower, and seedlings of *P. distans* have been recorded. Perhaps the most surprising records are those of *Aster tripolium* and *Suaeda maritima*. The latter species is scattered but populations consist of hundreds of individuals. The remaining species are less frequent though the individual plants are often large and flower well. One individual of *Plantago maritima* had 60 scapes.

There are three obvious sources of these plants. First, they could be deliberate introductions as part of an experimental trial. However, neither the Nature Conservancy Council nor the County Planning Office have any record of this being the case and it is difficult to see how such a large-scale operation could be done without the knowledge of either of the above organizations. At the same time, deliberate introduction cannot be ruled out at present and the authors would appreciate receiving information from any reader with any knowledge of experimental trials with maritime species. The second possibility is that the topsoil used on the verges was imported from maritime sites and therefore contained seeds and plants. Unfortunately, the authors have not been able to trace the sources of the soil, but there are no records of soil being removed on such a scale from any local maritime habitats. The third possibility is that seeds were transported and deposited by cars returning from the coast. There are several localities on the coast where cars have access to suitable habitats and so this is regarded as the most probable source. However, it is interesting that most of the roads have been in existence for less than three years, so incursion has been very rapid. It is also possible that birds (gulls, moorhens, rooks, jackdaws) might introduce some seed but this would appear to be a minor source compared with the scale and speed of the incursion. Introduction in the de-icing salt is not considered an important possibility because none of the species has been found near any of the salt stockpiles.

A full list of localities has been deposited with the vice-county recorder.

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P. MATTHEWS & A. W. DAVISON

REDISCOVERY OF *HYMENOPHYLLUM WILSONII* HOOK. IN SALOP

The rediscovery of *Hymenophyllum wilsonii* in Salop, v.c. 40, where it had previously been unrecorded for a century, occurred in 1973 during a survey of the distribution of *Oxalis acetosella* in the Long Mynd (GR 42/4.9). A specimen collected in 1975 is in **BM**. The following species were associated with *Hymenophyllum* in a 0·1m² quadrat:

Deschampsia flexuosa	*Dicranella heteromalla*
Oxalis acetosella	*Dicranum scoparium*
Vaccinium myrtillus	*Hypnum cupressiforme*
	Mnium hornum
Diplophyllum albicans	*Rhytidiadelphus squarrosus*
Lepidozia reptans	

The quadrat site faced almost due north, had a slope of 68° and was shaded by overhanging *Calluna vulgaris* established on the ledge above. Due to its steepness, the site was not grazed or trampled by sheep as in most of the Long Mynd. The soil pH was 5·8 and plants are subjected to very little water stress, indeed during wet periods water oozes continuously down the rock face on which the vegetation mat is established.

The presence of *Hymenophyllum* in Salop was noted by Phillips (1877), in which the relevant entry reads:

Hymenophyllum unilaterale Willd.

Longmynd, near the Stiperstones: G; on the same mountain Spout Valley, near Church Stretton: Rev. J. F. Crouch; Treflach Wood near Oswestry: Moore.

The G in the quotation is a reference to G. H. Griffiths, M.D., of Shrewsbury. The records of Dr Griffiths and the Revd Crouch are in the same grid-square and with the same underlying rocks, Pre-Cambrian Longmyndian sediments, as the present site. The few subsequent references to *Hymenophyllum* in Salop, such as Campbell-Hyslop & Cobbold (1904), seem all to derive from Phillips' list.

The addition of the new record to the distribution map for *Hymenophyllum wilsonii* given by Perring & Walters (1962) is of considerable interest as it is the most easterly locality in the southern part of its distribution. The rainfall on the Long Mynd (40 in.) is much higher than that in some other parts of Salop, that at Shrewsbury being only 23 in. (Burnham & Mackney 1964). This is of great importance to a filmy fern such as *H. wilsonii* and records for this species, and for *H. tunbrigense* also, are confined to areas where the annual rainfall is not less than 30 inches. The Long Mynd site also has a low evapo-transpiration rate, being at an altitude of over 1,000 ft. The associated species listed above commonly occur with *Hymenophyllum* in mountainous areas of Scotland and Snowdonia.

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J. R. PACKHAM

EVALUATION OF ROADSIDE VERGES

Many highway authorities now realise the important amenity value of their roadside verges, and are prepared to conserve those of high-amenity value. Devon County Council, for instance, feel that 'the quality of the landscape, as seen by visitor and resident from the roads is paramount. This quality depends upon a healthy wildlife habitat being maintained along the roadsides, whose most significant characteristic is the richest possible population of wild flowers' (Steventon 1973). How then might one identify high-amenity verges, so that appropriate management could be practised?

In an attempt to discover this in a local context the flora of a selected group of verges around Tring, Herts., was noted during August 1974 (Reeve 1975). (Ideally the verges should be visited throughout the flowering season.) The verges selected were those on both sides of the first road north of the intersections of the 1km national grid lines. Clearly other conventions could be adopted. A further verge, known from casual observation to be species-rich, was also included, making 40 verges in all. A species list of plants occurring on each verge was made over 100 yards. Some 120 species of flowering plants, other than grasses, rushes and sedges, were noted. The latter groups were excluded from the evaluation because they were considered to be of low amenity value. However, they could, of course, be included in an evaluation. Each species was assigned a value which was the inverse of its frequency; a species found at only one site would therefore be rated at 40. The value of each individual verge was derived by adding the values of all the species present. It follows that a verge with a high value is one with a large number of species of restricted distribution in the whole sample. The species-rich verge had a value significantly higher than any other verge. The results are summarized in Table 1.

TABLE 1. VALUE OF VERGES

No. of verges	Geology	Aspect	Range	Value Mean
1	chalk	W	1122	
11	chalk	SE–W	787–241	591 ± 54
11	chalk	NW–E	722–187	514 ± 40
6	gravel	SE–W	675–253	477 ± 66
7	gravel	NE–W	532–198	378 ± 36
2	clay	SE–W	362, 304	333
2	clay	NW–E	606, 330	468

The above method for evaluating verges provides a quantitative basis for identifying high-amenity verges from which verges can be selected for conservation. Conservation of rare or sensitive species would have to be considered separately.

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H. A. Reeve