Short Notes

A POSSIBLE SCENT DIFFERENCE BETWEEN *CRATAEGUS* SPECIES

An unpublished letter from R. P. Murray to E. F. Linton on 21 May, 1900, now among the latter's papers in the library of the Department of Botany, British Museum (Natural History), contains the following passage:

> 'When in Switzerland we had plenty both of *C. monogyna* and *C. oxyacanthoides*: the latter flowering a week or two earlier than *C. monogyna*. But I often gathered a lot of *C. oxyacanthoides* for decorative purposes: and tho' in smell quite like the other form when gathered, it used to absolutely *stink* of putrid flesh soon after:–sometimes within about half an hour. I do not remember that this *ever* occurred with *C. monogyna*.'

Murray goes on to suggest that it was this horrible smell that gave rise to the superstition found in many parts of western and central Europe that, if *Crataegus* blossom is brought into a house, death will occur there within a year.

Lecoq & Lamotte (1847) may have been the first to note the difference in flowering-time: in central France they found *C. laevigata* (Poiret) DC. (*C. oxyacanthoides* Thuill.) began 8–10 days earlier and was almost in full flower when *C. monogyna* Jacq. was first opening. In the English Midlands I have noticed that the time-interval is much the same, *C. monogyna* not normally opening before about the middle of May. In view of this it seems hardly possible for *C. monogyna* to have been the species whose first flowering was anciently such a matter of intense concern, particularly in England and France, that it is believed to have formed the centrepiece of the pre-Christian rites associated with the advent of spring. For before the change in the calendar in 1732 May Day fell thirteen days later than now–a date by which *C. monogyna* would not have been a sufficiently dependable flowerer to serve such a purpose, at any rate over much of England. While it is true that periods of more benign climate in the past will have made for earlier flowering, equally the adverse conditions that set in during the second half of the first millennium B.C. and those that prevailed through the medieval 'little Ice Age' will have operated to the contrary. It should also be borne in mind that the observed difference in flowering-time tends to be based on populations occurring in hedges, a habitat in which both species are liable to be relatively impure. If populations unaffected by crossing were to be studied exclusively, the difference would probably be found to be appreciably greater.

C. laevigata, accordingly, would seem to have been the original May-flower. This supposition would be considerably strengthened if Murray's finding that it is this species alone whose flowers are so pungently scented is correct. Grigson (1955) indeed has already made the suggestion that it was this putrid odour of trimethylamine that was responsible for fertility beliefs having become so powerfully attached to *Crataegus* in the first place.

Before the very extensive use of *C. monogyna* for hedging during the last three centuries or so, it may well have been a comparatively local plant, confined to fen carr, limestone ashwoods and downland scrub. In such habitats var. *laciniata* (Wallr.) Ledeb., with particularly deeply-cut leaves (allegedly in combination with greater thorniness (Elliott 1898), a tendency to flower less freely (Lees 1888), more slender shoots and smaller fruits), is especially common and Moss (1913) was led by this to suggest that it represents the original indigenous variety. It may in fact be 'true' *C. monogyna*, free of any *C. laevigata* influence.

The readiness with which the two species cross implies that they must once have been well separated ecologically. If *C. laevigata* was originally confined to the fairly deep shade on heavy clays where it now occurs most characteristically, this is likely to have been the case. Insofar as it is today a plant of hedges, it tends to feature only in those dating from 1,000 years ago or more (M. D. Hooper oral comm. 1974), suggesting that it owes its presence in this habitat to the assarting burst of late Saxon times, when it was evidently the practice for hedges to be created by being cut out of forest instead of being planted. On this assumption non-woodland *C. laevigata* is essentially a human artefact.

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D. E. ALLEN

FLIMWELL: EAST SUSSEX OR WEST KENT?

Dr Stace recently drew my attention to the fact that the records for *Lobelia urens* L. from Flimwell would have to be transferred from E. Sussex, v.c. 14, to W. Kent, v.c. 16, if the boundary dividing these two vice-counties as published in Dandy (1969) is correct.

The following one-inch to the mile (1:63,360) Ordnance Survey maps were compared:

Sheet 183. One-Inch Series, fully revised 1967, major roads revised 1969, printed in 1969, in my possession and marked by me some years ago to show the vice-county boundary, as shown on the set of maps in the Department of Botany, British Museum (Natural History). Referred to hereafter as Sheet 183.

Sheet 5. Published 1st February 1813, by Lt Col. Mudge. Tower., no survey date, library stamp dated 13th November, 1880, in the University Library, Cambridge. Catalogued as *Ordnance Survey 1805–73*. Ordnance Survey of England & Wales. Scale of 1 inch to a Statute Mile, 1:63,360 (1st Ed.) London 1805–73. Referred to hereafter as Sheet 5 (1813).

Sheet 5. Published 1st February, 1813, by Lt Col. Mudge. Tower., no survey date, no library stamp, dated in pencil (1858) in the University Library, Cambridge. Catalogued as *Ordnance Survey 1809–66*. Ordance Survey of England & Wales. Scale of 1 inch to a Statute Mile, 1:63,360 (Reprints from electrotypes, showing railways, various editions, with sheets dated 1809–66) London (*c.*1844–66). Referred to hereafter as Sheet 5 (1858?). Note: for 'various editions' one could, I believe, more accurately say 'various states'.

The county boundary in question was examined between GR 51/742.286 and 51/696.319. Sheet 5 (1813) shows the boundary as Dandy (1969). Sheet 5 (1858?) shows the boundary following the modern official county boundary line as marked on Sheet 183. The obvious conclusion from the examination of the foregoing Sheets is that a boundary change took place between 1813 and *c.*1858. Therefore, a brief search was made to ascertain when the change occurred, with unexpected results.

In Salzman (1937) there is a reproduction of Bugden's Map of Sussex, 1724, opposite page 1. This clearly shows the boundary following the official county boundary line as marked on Sheet 183. On page 252 is the following statement: 'Until 1836 the civil and ecclesiastical parishes of Ticehurst coincided; but in 1836 Stonegate and in 1839 Flimwell were made into chapelries and afterwards ecclesiastical parishes.' On page 257 'The church of St. Augustine at Flimwell built in 1839 . . . is a vicarage in the gift of the Bishop of Chichester.' These statements taken together indicate clearly that Flimwell has always been part of Sussex. Further references are given which show that the boundary in 1742 is identical with the boundary in 1451 and that Flimwell was always in Sussex.

Further supporting evidence comes from Copley (1977a, 1977b), where reproductions of maps of Kent and Sussex published by John Stockdale, Piccadilly, London, on 26th March, 1805, show that Flimwell was in Sussex. The boundary follows the official county boundary line as marked on Sheet 183.

I conclude that Sheet 5 (1813) marked the county boundary in the wrong position. The error would obviously have been noticed by many people and was corrected by the time Sheet 5 (1858?) appeared.

Vice-counties are defined in Watson (1859) where Watson states: 'To facilitate recognition the course of the dividing lines shall be given here by verbal explanation, adapted to the maps of England and Scotland, published under the auspices of the 'Society for the Diffusion of Useful Knowledge'.' This statement is repeated in both editions of Topographical Botany.

I examined Map 21 England, V., South-East. Wiltshire to Kent., scale 69.1 English Miles = One Degree, published by Baldwin and Cradock on June 15th, 1830, in *Maps of the Society for the Diffusion of Useful Knowledge*, in the University Library, Cambridge. This clearly shows the boundary between Kent and Sussex between GR 51/742.286 and 51/696.319 following the line shown on Sheet 5 (1813) and in Dandy (1969).

Thus, due to a series of errors and despite the fact that Flimwell is and always has been in Sussex, Flimwell is in botanical vice-county 16, W. Kent. The argument could be put forward that as Watson's boundary is based on an error the error should be corrected. I reject this reasoning because vice-county boundaries are only useful if they remain unchanged. Therefore, *Lobelia urens* must be omitted from the flora of E. Sussex, v.c. 14, and added to that of W. Kent, v.c. 16.

A comparison of the boundaries as shown on Ordnance Survey Sheet 4 (1816), Sheet 4 (1857?), Sheet 6 (1819) and Sheet 6 (1853?) with Map 21 of the Society for the Diffusion of Useful Knowledge revealed only one other variation between GR 51/435.401 and 51/987.180. This is at Tunbridge Wells, where the line followed by the boundary on Sheet 6 (1819) differs from that on Sheet 6 (1853?). The line followed on Map 21 is very close to that taken by Sheet 6 (1853?). I therefore conclude that the vice-county boundary as published in Dandy (1969) between E. Sussex, v.c. 14, on the one hand, and W. Kent, v.c. 16, and E. Kent, v.c. 15, on the other, is correct.

ACKNOWLEDGMENTS

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J. BEVAN

A NEW BRAMBLE FROM EAST ANGLIA

The bramble described below is widely distributed in Norfolk and Suffolk, occurring in the four vice-counties 25-28. It probably extends into N. Essex, v.c. 19, as well, since specimens gathered from a roadside wood near Birch, GR 52/93.20, on 18th July, 1978, seem to be this species. But its main area of distribution is the country east of a line from King's Lynn to Ipswich. It does not shun clay but is most abundant on sands and gravels, especially near Norwich and the E. Suffolk coast. It has been recorded for the following 10 km squares: 52/79, 87, 88; 53/60, 61, 70, 71, 72, 73, 90, 91, 93; 62/08, 19, 24, 25, 27, 28, 29, 34, 35, 39, 45, 46, 47, 48, 49, 58, 59; 63/00, 03, 04, 10, 11, 14, 20, 21, 23, 30, 31, 40, 41. A specimen from Geldeston, GR 62/40.92, E. Norfolk, v.c. 27, was sent to Professor H. E. Weber who replied that it did not match any Continental species known to him. The name commemorates the East Anglian queen who defied the Romans.

Rubus boudiccae A. L. Bull & E. S. Edees, **sp. nov.**

Turio alte arcuatus, angulatus, rubescens, glaber vel subglaber, aculeis *c.*5–10 per 5 cm, ad angulos dispositis, 5–8 mm longis, subpatentibus vel declinatis, basi rubris. Folia pedata; foliola 3–5, vulgo non contigua, superne parce strigosa, subtus pilis simplicibus saepe etiam stellatis molliter vestita; foliolum terminale *c.*6 × 4–5 vel 9 × 7 cm, obovatum vel late ellipticum vel suborbiculare, breviter cuspidatum, basi subintegrum vel subcordatum, irregulariter serratum, interdum convexum, nonnunquam longe

petiolulatum. Ramus florifer flexuosus, rubescens, praesertim ad apicem pubescens, aculeis 3–7 mm longis declinatis vel curvatis praeditus; inflorescentia inferne foliosa ramulis adscendentibus distantibus axillaribus aucta, superne aphylla e ramulis brevibus paucifloris erecto-patentibus composita. Flores *c.*3 cm diametro; sepala griseo-viridia, albo-marginata, tomentosa, reflexa; petala *c.*14 × 8 mm, elliptica, alba vel dilute rosea; stamina alba stylos virides multo superantia; carpella glabra; receptacula pilosa; fructus satis magni, sapidi.

Stem high-arching, angled with flat or slightly furrowed sides, green to bright red, glabrous or glabrescent with scattered, short and very short, simple and tufted hairs and with a few sessile and subsessile glands; prickles 5–10 per 5 cm, on the angles, the majority subequal, 5–8 mm, with a long compressed base, straight or slightly upturned, patent or declining, bright red with yellow point. Leaves pedate; leaflets (3–)5, usually not contiguous, deep green, with sparse to numerous, adpressed, short simple hairs above, soft and often grey-felted beneath with numerous short simple hairs and an underlayer of dense stellate hairs; terminal leaflet *c.*6 × 4–5 or 9 × 7 cm, obovate or obovate-elliptical, sometimes with nearly straight sides, or nearly round, with a short (0.5–1 cm) cuspidate point and subentire or emarginate or subcordate base, evenly or irregularly serrate or serrate-dentate, flat or convex, the petiolule 1/3 to 1/2 as long as the blade; petiolules of basal leaflets 3–6 mm; petiole usually longer than the basal leaflets, with sparse to numerous, short, simple and tufted hairs, scattered sessile and very short stalked glands and *c.*10 declining or curved prickles 3–5 mm. Flowering branch with 3–5-foliate leaves below and often 1–2 simple leaves above, not leafy to the apex; inflorescence compact or lax above, with 1–3-flowered peduncles 2–4 cm, and, when well developed, with one or more distant axillary peduncles usually shorter than but sometimes nearly as long as their leaves; rachis flexuose, green or red, with numerous spreading, short, simple and tufted hairs, numerous to dense stellate hairs, sparse to numerous sessile and subsessile glands and frequent declining or curved prickles 3–7 mm; pedicels clothed like the upper part of the rachis, with few slender prickles 1–2 mm or unarmed. Flowers *c.*3 cm in diameter; sepals greyish-green with white margin, felted, hairy, short-pointed, reflexed; petals *c.*14 × 8 mm, white or pale pink, elliptical, more or less entire, flat, not contiguous, with sparse short or very short simple hairs on the margin; stamens much longer than styles, filaments white, anthers glabrous; styles green; young carpels glabrous or slightly hairy; receptacle hairy; fruit fairly large, of good quality and flavour, but sometimes ripening unevenly, dull red before turning black.

HOLOTYPUS: Ringland Hills, GR 63/13.12, E. Norfolk, v.c. 27, *E. S. Edees* with *A. L. Bull* 21706 (**BM**)

In addition to the holotype the following exsiccata are representative:
Colney Wood, GR 63/167.080, E. Norfolk, v.c. 27, 24/7/1977, E.S.E. with A.L.B., **herb. E.S.E.**
Easton Lodge, GR 63/144.120, E. Norfolk, v.c. 27, 20/7/1977, E.S.E. with A.L.B., **herb. E.S.E.**
Gawdy Hall Wood, GR 62/250.850, E. Norfolk, v.c. 27, 24/7/1977, E.S.E. with A.L.B., **herb. E.S.E.**
Dunwich Common, GR 62/47.68, E. Suffolk, v.c. 25, 3/8/1978, A.L.B., **herb. A.L.B., herb. E.S.E.**
Chedgrave, GR 62/35.99, E. Norfolk, v.c. 27, 18/7/1978, A.L.B., **herb. A.L.B., herb. E.S.E.**
Covehithe, GR 62/51.81, E. Suffolk, v.c. 25, 9/8/1978, A.L.B., **herb. A.L.B., herb. E.S.E.**
Ashby Dell, GR 63/49.00, E. Suffolk, v.c. 25, 17/7/1978, A.L.B., **herb. A.L.B., herb. E.S.E.**

R. boudiccae can usually be separated from related brambles in the field without difficulty by the combination of leaf characters, glabrous, often red stem and large, white flowers. Professor Weber considers it not far from *R. polyanthemus* Lindeb. and perhaps derived from it, but *R. polyanthemus* has more finely toothed terminal leaflets with a less indented base and longer point, pink petals and a moderately hairy stem. Some herbarium specimens of *R. boudiccae* seem to resemble *R. maassii* Focke ex Bertram which has not yet been reliably recorded for the British Isles. There is a good series of authentic specimens of *R. maassii* in **MANCH** which we have compared with *R. boudiccae*. Some of the stem-leaves of the English and Continental specimens seem identical in shape, colour, texture and toothing, but others are less close. The leaflets of *R. boudiccae* are often felted and usually more coarsely serrated. *R. boudiccae* is perhaps most closely related to *R. cardiophyllus* Muell. & Lefèv. but has a distinct appearance in the field. The terminal leaflets are more often elliptical and tend to be convex rather than concave and the petals are flat.

A. L. Bull & E. S. Edees

SOLIDAGO × *NIEDEREDERI* KHEK IN BRITAIN

The hybrid *Solidago canadensis* L. × *S. virgaurea* L. was discovered in the Stoder district of Austria by a local schoolmaster called Niedereder in 1900 or 1901, and was named after him by Khek (1905), who gave it a lengthy description in German. Khek saw living material of the plant he described, but it is not clear how much. His publication, in an obscure and long defunct journal, remained the only reference to a natural *Solidago* hybrid in Europe for 70 years. Wagenitz (1964) considered Khek's identification doubtful in the absence of subsequent records. In 1966-75, however, a total of 15 plants of this parentage were found in five localities in Sweden and Denmark. Nilsson (1976), reporting these finds, adduced good reasons for his identification of the plants and, referring to Stace (1975), commented on the absence of British records, presumably with the implication that it is remarkable that British botanists, generally adept at spotting hybrids, should have missed this one. Having found one plant myself in September, 1979, I believe that there are probably more British occurrences, which have been overlooked.

The plant was found at the top of a railway cutting at Swanley, W. Kent, v.c. 16. *S. virgaurea* is only locally to be found in this neighbourhood, but there is quite a large relict population here where the railway cuts through the sandy Woolwich Beds. Post-war housing development has completely altered the character of this part of Kent; the modern boundary of Greater London passes about 150 yards west of the plant. In recent decades there has been ample opportunity for spread of the aggressive alien *S. canadensis*, one plant of which, at the foot of the cutting mentioned, flowers at a few centimetres distance from the native species. There must be many places in Britain and on the Continent where similar circumstances bring the two species together.

The principal characters of the British hybrid, which possesses a combination of the features of the two parents, are: plant forming a clump of tall, purplish-tinged stems which become leafless below; leaves mid green, lanceolate, with a weak longitudinal vein each side of the midrib and a very fine reticulation; inflorescence of numerous non-contiguous branches ascending at a narrow angle to the axis, the branches with reduced leaves in the lower part and rather crowded capitula $\frac{3}{4}$ of the way round the upper part (an abaxial strip being bare), the flowering parts of the branches together forming a cone; pedicels with numerous tiny bracteoles; capitula about twice the size of those of *S. canadensis*, the ligules 2.0–2.5 mm long; achenes not formed (none found in 15 capitula examined).

The most significant difference from Khek's description of his hybrid is that he says that the branches have capitula all round, which would be surprising in a hybrid involving *S. canadensis*, in which the capitula are closely crowded along only the upper sides of the branches. Also, he says that pappus is absent and discusses at some length the curvature of the branches of the inflorescence, which to me seems less important than their number, spacing and the angle they make with the axis. Nilsson's hybrids are not formally described, but their growth-form, height, inflorescence, leaves and capitula are contrasted with those of the putative parents in terms which equally embrace the British plant. He was able to find a small number of well-developed achenes in hybrid plants. Nilsson makes the additional observation, which I have not yet had the opportunity to confirm at Swanley, that the tip of the growing shoot of the hybrid is nodding, as in *S. canadensis*, making possible a ready field separation from *S. virgaurea* even before the plants flower. His paper illustrates this feature as well as a single leaf, an inflorescence and a capitulum of each of the three taxa. The hybrid leaf shown is rather more strongly serrate than that of mine.

Nilsson was able to take advantage of the known self-incompatibility of both parents by a simple experiment. He planted one individual of each species together in a garden isolated as far as possible from more remote individuals outside, and harvested the resulting achenes. With *S. virgaurea* as the ovule parent, but not *S. canadensis*, he was able to raise numerous hybrids. Further hybrid plants were among the progeny from *S. virgaurea* achenes he collected in mixed populations of the two species in two Swedish localities, concentrating on the earliest flowering plants which are most likely to have been fertilized by pollen of *S. canadensis*. This evidence supports the suggestion that the hybrid has occurred undetected in parts of Britain where *S. canadensis* and *S. virgaurea* occur in proximity. Unfortunately no attempt has ever been made to map the occurrence in Britain of the alien species, which is certainly widely naturalized. Several named clones are in cultivation. As these are interfertile and the achenes are dispersed by wind, *S. canadensis* escapes very readily from cultivation.

Artificial hybrids also exist. Nilsson was able to match *Solidago* 'Ballardii', found in a Danish garden, with his natural hybrids. This is one of a number of cultivars listed by Synge (1969, p. 93). I

have been unable to find it in the catalogues of herbaceous plants at my disposal, but 'Golden Wings' and 'Mimosa' are available and appear from the very brief descriptions offered to be similar. These are sometimes listed as variants of *S.* × *arendsii* Bergmans, said by Stearn (1956) to be a synonym of *S.* × *hybrida*. Both names were evidently intended to cover a number of interspecific hybrids and therefore have no botanical standing. *S.* × *niederederi* Khek remains the only name for naturally occurring *S. canadensis* × *S. virgaurea*.

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R. M. BURTON

THE DISTRIBUTION OF *CAREX RARIFLORA* (WAHLENB.) SM. IN BRITAIN

Of the four members of *Carex* section *Limosae*, three are British, while the fourth, *C. laxa* Wahlenb., ranges in northern Europe and Asia from Finmark to Japan. The three British taxa are all strongly calcifuge, but in other respects have markedly different ecological requirements. *C. limosa* L., a lowland plant of the north and west with small outlying populations in Wessex and East Anglia, is frequently found growing in standing water. *C. magellanica* Lam. (= *C. paupercula* Michx.) is more strictly northern and (though the two are sometimes together) is usually at a higher altitude and in somewhat drier situations. Though characteristically associated with patches of *Sphagnum*, it seems to dislike both swamp conditions and any appreciable flow of water, and its British stations are mostly level shelves of moorland, neither inundated nor sharply drained, at 1,000 to 1,500 feet. *C. rariflora* is in Britain confined to Scotland, and is there purely alpine. It occupies a limited area in the eastern Grampians, with a single outlier in Breadalbane, does not descend below 2,500 feet, and favours flushes in the high tablelands where there is perceptible but not marked movement of the water. A characteristic habitat is a fixed bank of silt in the headwaters of a burn before the gradient steepens. In such situations *C. rariflora* is a member of a fairly constant plant community, frequent associates being the alpine forms of *C. aquatilis* and *C. curta*, with dwarf *C. nigra*.

Though limited in range and confined to a very specialized habitat, *C. rariflora* may be locally very abundant and cannot in any sense be called a rare plant. Nevertheless it may be easily overlooked on account of its tendency, shared with *C. magellanica*, to be, in some seasons, extremely shy-flowering. Even when the dark inflorescences are present, they may escape notice except at anthesis, when the very white stigmas, disproportionately large for the plant, make them temporarily conspicuous. The foliage, however, is very distinct from that of all other sedges, and when the characteristics are known the little fans of greyish leaves, often with recurved tips, may be quickly recognized as forming extensive swards.

It is difficult to define precise localities for *C. rariflora*, as the colonies may be dispersed over a wide area. All recorded stations (with the exception of those in brackets) have been visited since 1970, and are here listed:

(E. Lothian, v.c. 82: a specimen in **K**, labelled 'Dunglass 1823', carries a pencilled annotation in another hand, 'Dumbarton or East Lothian'; but it is hardly possible that the specimen originated in either of these vice-counties.)

(Fife, v.c. 85: in a sheet of *C. limosa* in **CGE**, labelled 'Fifeshire, 1838, J. B. Bell', 3 stems are indubitably *C. rariflora*, but again some confusion must be suspected.)

Mid Perth, v.c. 88: 27/6.5, watershed between Lyon and Rannoch, a small starved-looking colony

discovered by R. Mackechnie & E. C. Wallace in 1937, and the only station known in the western Highlands.

E. Perth, v.c. 89: 27/8.8, sources of the Caochan Lub and tributaries, frequent; 27/6.7, Allt a' Chama Choire, local; 37/1.7, Glas Maol and Glen Beg.

Angus, v.c. 90: 37/1.7, locally abundant above Caenlochan, and between Canness and Glen Fiagh; 37/2.7, upper Glen Doll, between Glen Doll and Glen Isla, and very abundant on the tableland thence to Tolmount.

S. Aberdeen, v.c. 92: 37/1.7, head of Allt Coire Fionn; 37/1.8, very abundant south and west of Corrie Kander; 37/2.8, Lochnagar in many places but usually in small quantity.

Easterness, v.c. 96: 27/6.7, Allt Choire Chuirn, sparingly; 27/6.8, near source of the Allt Choire Chais; 27/7.8, Gaick Forest, headwaters of burns flowing into the Allt Garbh Ghaig; 27/8.8, head of Coire Bhran; 27/8.9, Moine Mhor, abundant; 27/9.9, moorland south of Glen Einich, locally abundant; 28/6.0, Glen Banchor, headwaters of burns flowing into Loch Dubh.

Westerness, v.c. 97: 27/4.7, Coire na Coichille, 1979, A. G. Payne (not seen by R.W.D.).

(Dunbarton, v.c. 99: see under E. Lothian, v.c. 82.)

R. W. David

IRREGULAR TIMES OF FLOWERING OF *ONONIS RECLINATA* L.

From time to time during the past ten years observations have been made on a population of *Ononis reclinata* L. at Barafundle Bay on the Stackpole Estate, Pembs., v.c. 45, now owned by the National Trust. Late in 1978 D. H. D. Henshilwood was appointed warden and the site can now be regularly monitored.

On 8th April, 1969, A. J. Richards found about 70 *Ononis reclinata* plants in flower at Barafundle Bay. The record was entered in the card index of the Field Studies Council's Orielton Field Centre but was not published. On 16th June, 1971, D. S. Ranwell, L. A. Boorman and S. B. Evans, without knowledge of the earlier record, discovered the site, a bluff of eroded carboniferous limestone rock about 100m² in area with 1,000 or more plants in flower. J. W. Donovan and T. A. W. Davis visited the site on 2nd July, 1971, and on 24th July, 1973, S. B. E. and R. G. Woods again found hundreds of plants which had flowered but were desiccated because of the dry summer. Associated species noted on these visits were: *Agrostis stolonifera*, *Anagallis arvensis*, *Arenaria serpyllifolia*, *Armeria maritima*, *Bromus ferronii*, *Carlina vulgaris*, *Catapodium marinum*, *Centaurea scabiosa*, *Centaurium erythraea*, *Cerastium diffusum*, *Dactylis glomerata*, *Echium vulgare*, *Euphorbia portlandica*, *Festuca rubra*, *Lotus corniculatus*, *Plantago coronopus*, *P. lanceolata*, *Scilla verna*, *Sedum anglicum*, *Thymus drucei*, *Trifolium campestre*, *T. scabrum*.

On 18th September, 1974, T. A. W. D. collected seed for the Kew seed bank. The population was about the same size as in 1971. Most of the plants were dead with ripe seed but a considerable number were still flowering. The seed bank asked for more seed in 1976 and on 10th August the bluff was searched, but not a plant was found. Again, on 17th September, 1977, there were no plants. On 9th June, 1978, S. B. E., S. J. Leach and T. A. W. D. failed to find *Ononis reclinata* at the site and, in view of its apparent absence in three consecutive years, assumed that it was extinct. T. A. W. D. therefore asked for seed from the seed bank in order to reintroduce it. The finding by R. G. W. of two plants in flower in late July did not cause us (S. B. E. and T. A. W. D.) to change our minds on the desirability of sowing the 50 seeds received. On 9th October we sowed them along a contour line between two stakes and proceeded to search the bluff in case R. G. W.'s plants were still recognisable. To our surprise we found ten plants in flower and 130 seedlings which could be expected to flower in the spring of 1979.

On 12th June, 1979, S. B. E. and D. H. D. H. found 35 *Ononis reclinata* plants on the bluff, 30 of them probably survivors from the previous autumn, one about to flower. They assumed that five very small seedlings had germinated in 1979. On 29th June D. H. D. H. found 37 plants, of which ten were flowering. On 26th July a search by D. H. D. H. and R. G. W. revealed dry remnants only, no living plants. It is reasonable to assume that growth of the plants that survived a severe winter was retarded by a cold dry spring. On 2nd October S. J. L. and D. H. D. H. visited the site independently. Eight plants were in flower and fruit, one was already dead, and there were 127 seedlings up to 1 cm high with at

most three or four pairs of true leaves, a situation almost exactly like that of October 1978. No plants from the seed bank seed were found at any visit in 1979.

In 1976 and 1977 spring flowering may have occurred since the plants would have disintegrated by the time of T. A. W. D.'s visits in August and September respectively, but in 1978 they would have been recognizable on 9th June had any flowered in the spring. In 1974 two age groups were represented on 18th September. In 1978 seed evidently germinated at three different times to produce flowering plants in July and both flowering plants and seedlings in October; the latter, well distributed over the bluff, were unlikely to have arisen from seed of the July plants but were probably from dormant seed. It is evident that at Barafundle Bay *Ononis reclinata* flowering is not confined to June-July, the period given by Tutin (1962). Whilst our observations show that seeds germinate and plants flower erratically between spring and autumn they do not indicate whether this is the result of irregular germination of the previous year's seed or whether it is at least in part due to a second generation arising in the same year. With the prospect of regular monitoring in future the problems raised may be solved. Observations on other populations are desirable so that the biology of this national rarity may be better understood.

REFERENCE

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T. A. W. DAVIS & S. B. EVANS

FURTHER RECORDS OF *DIPSACUS STRIGOSUS* WILLD. IN CAMBRIDGESHIRE

Following an earlier note (Leslie 1976), five additional records of the alien *Dipsacus strigosus* Willd. (Fig. 1) have come to light in and around the city of Cambridge, Cambs., v.c. 29. They are as follows:

1. Refuse-tip, Duce's Lane, Cambridge, GR 52/467.589, G.M.S. Easy, June 1971. In 1972 there were 30–40 plants at this site, but it has now been built on and there are no records since then.
2. Untended garden at junction of Pemberton Terrace and Panton Street, Cambridge, GR 52/453.575, J. R. Akeroyd, October 1975. One plant, which left no progeny; the garden has since been 'tidied-up'.
3. Hedgerow, Coe Fen, Cambridge, GR 52/452.572, A. C. Leslie, July 1978. One flowering plant. In 1979 there were no flowering individuals, but 32 rosettes were counted around the site of last year's plant.
4. Laneside and field margin, Lammas Land, Coe Fen, Cambridge, GR 52/445.574, H. Marcan, 1978. In 1979 there were 15 flowering stems and many rosettes scattered in rough ground below a row of dying elms, at the edge of the field. Apparently a well established colony.
5. Trackside in woodland, Madingley Park, 2½ miles north-west of Cambridge, GR 52/394.606, A. C. Leslie, August 1978. Three plants. Still there 1979 (*fide* D. E. Coombe).

These new sites confirm that *D. strigosus* is a characteristic alien of the Cambridge region, both as a transient casual (e.g. site 2) and in apparently established colonies (e.g. sites 4 and ?5). Site 3 appears to represent a newly formed colony, but it may be that numbers fluctuate sharply from year to year, depending on local conditions affecting the establishment and persistence of plants in their first year. The recent discovery of a large flourishing population of *Inula helenium* in the same woodland at Madingley only goes to show how a much more conspicuous plant can long remain unnoticed (or at least unrecorded)!

The Coe Fen plants are of particular interest, since this species was last recorded there by N. D. Simpson in 1913. Unfortunately the exact site of Simpson's record is unknown, but it is feasible that one of the recently discovered sites on the Fen may be of longstanding.

Finally, a correction and an addition to my earlier note: receptacular bract length should have read 15–20(−30) mm in *D. strigosus* and 7–12 mm in *D. pilosus*; a further differential character lies in flower colour, pure or greenish-white in *D. strigosus*, creamy-white in *D. pilosus*.

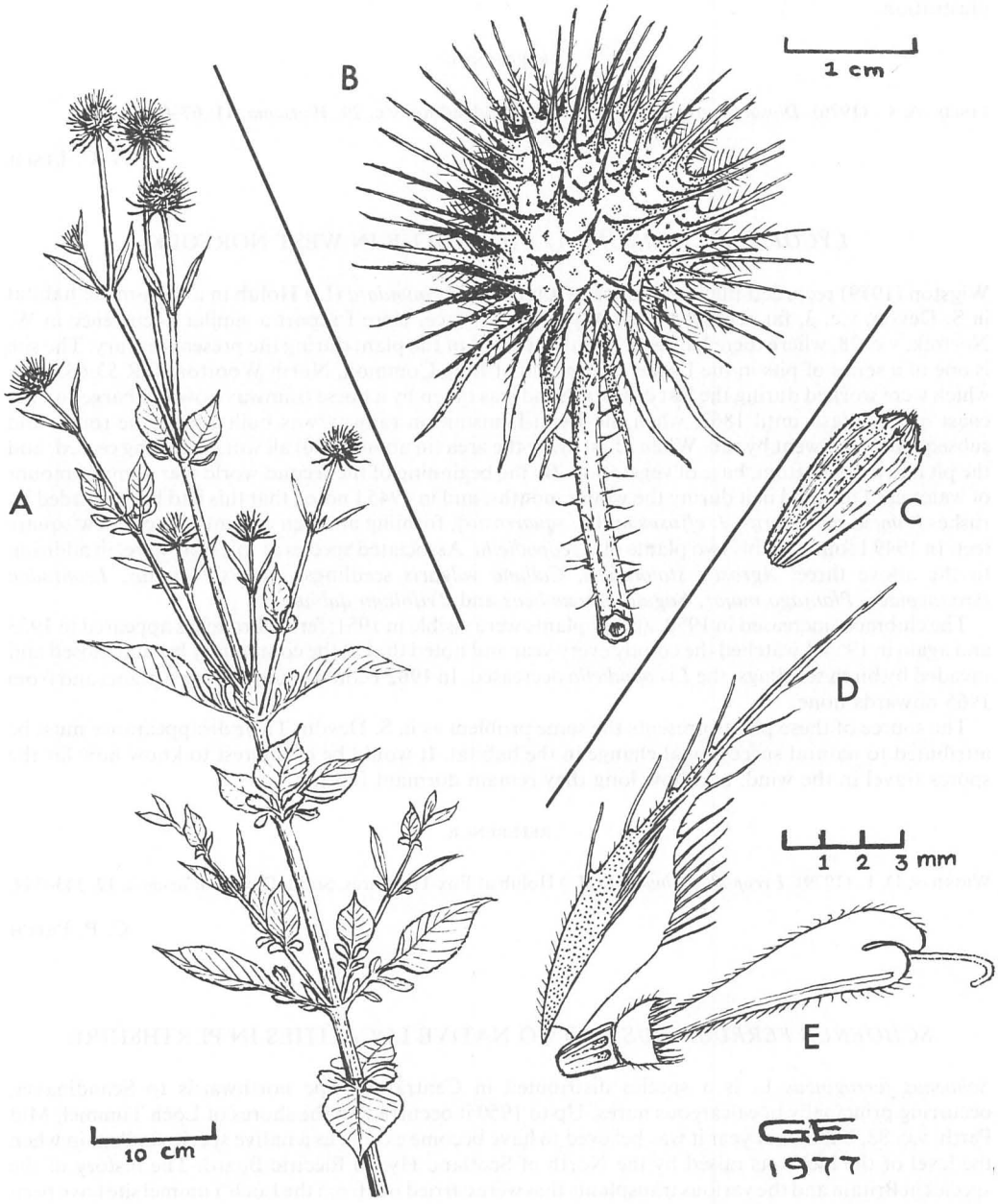

Figure 1. *Dipsacus strigosus* Willd., drawn from material from site 1: A, Upper part of plant; B, Capitulum; C, Achene; D, Receptacular bract; E, Flower.

ACKNOWLEDGMENTS

I should like to thank the recorders noted above for their records and G. M. S. Easy for providing the illustration.

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A. C. LESLIE

LYCOPODIELLA INUNDATA (L.) HOLUB IN WEST NORFOLK

Wigston (1979) recorded the appearance of *Lycopodiella inundata* (L.) Holub in a man-made habitat in S. Devon, v.c. 3, far removed from any known source. Here I report a similar occurrence in W. Norfolk, v.c. 28, where there has been no other record of the plant during the present century. The site is one of a series of pits in the Lower Greensand at Ling Common, North Wootton, GR 53/653.242, which were worked during the last century. Sand was taken by a horse tramway down to barges on the coast of the Wash until 1862, when the Lynn-Hunstanton railway was built across the route, and subsequent loads went by rail. When I first knew the area (in about 1920) all work had long ceased, and the pit had a dry bottom, bare of vegetation. By the beginning of the second world war a small amount of water used to stand in it during the winter months, and in 1945 I noted that this had been invaded by rushes (*Juncus acutiflorus*, *J. effusus* and *J. squarrosus*), forming an open community of a few square feet. In 1949 I found in this two plants of *Lycopodiella*. Associated species at this time were, in addition to the above three, *Agrostis stolonifera*, *Calluna vulgaris* seedlings, *Juncus bulbosus*, *Leontodon taraxacoides*, *Plantago major*, *Sagina procumbens* and *Trifolium dubium*.

The clubmoss increased in 1950, and 17 plants were visible in 1951; fertile branches appeared in 1953 and again in 1954. I watched the colony every year and noted that as the community became closed and invaded by birch seedlings, the *Lycopodiella* decreased. In 1962 I could count only two plants and from 1965 onwards none.

The source of these plants presents the same problem as in S. Devon. Their disappearance must be attributed to natural successional change in the habitat. It would be of interest to know how far the spores travel in the wind, and how long they remain dormant in sand.

REFERENCE

WIGSTON, D. L. (1979). *Lycopodiella inundata* (L.) Holub at Fox Tor Mires, South Devon. *Watsonia*, **12**: 343–344.

C. P. PETCH

SCHOENUS FERRUGINEUS L.–TWO NATIVE LOCALITIES IN PERTHSHIRE

Schoenus ferrugineus L. is a species distributed in Central Europe northwards to Scandinavia, occurring principally in calcareous mires. Up to 1950 it occurred on the shores of Loch Tummel, Mid Perth, v.c. 88, but in that year it was believed to have become extinct as a native species in Britain when the level of the loch was raised by the North of Scotland Hydro Electric Board. The history of the species in Britain and the various transplants that were carried out from the Loch Tummel site have been fully documented by Brookes (in prep.).

Two new, apparently native localities for *S. ferrugineus* were discovered in July and August, 1979, in other parts of Perthshire outside the catchment of Loch Tummel. Well over 1,000 plants were seen in five separate areas totalling several hectares in extent at the first site, and *c.*100 plants in a further, much smaller area on the second site. The species was growing in base-rich, wet flushes either as isolated tussocks in the more open areas or within a more continuous adjacent sward where the principal

associated species included *Erica tetralix*, *Molinia caerulea* and *Carex flacca*. The sites do not coincide with any documented transplant sites and the number of plants and extent of the populations strongly suggest that they are native sites.

R. A. H. SMITH