

Edited by R. Gwynn Ellis

No. 61

Dept. of Botany, National Museum of Wales
Cardiff CF1 3NP



C. succulenta

C. submollis

C. pedicellata

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There is one change to Secretaries of Permanent Working Committees as given in
BSBI Year Book 1992.

CONSERVATION COMMITTEE

HON SECRETARY Ms Vicky M. Morgan,
18 Main Road, Fyfield, ABINGDON OX12 5LN

CONTRIBUTIONS INTENDED FOR

BSBI NEWS 62

should reach the Editor before

5th NOVEMBER 1992

DIARY

N.B. These dates are supplementary to those in the 1992 Calendar.

1992

SEPT. 26-27 4th Natural History Book Fair, RBG, Kew (see page 50)
30 Deadline for bookings for Plants and Medicine Conference (see page 3)
Deadline for grant applications from Species Recovery Programme (see page 48)
NOVEMBER 5 Deadline for contributions to *BSBI News* and *BSBI Yearbook 1993* (see page 6)

1993

FEBRUARY 28 Deadline for bookings for Recorders Conference York (see page 3)
MARCH Translocation Conference (see page 50)
SEPT. 3-5 Recorders Conference York (see page 3)

IMPORTANT NOTICES

ADVANCE NOTICE OF 1993 RECORDERS' CONFERENCE

The 1993 Conference for v.c. recorders and for members interested in recording, will be held in YORK on **Friday 3rd - Sunday 5th September 1993**.

All v.c. recorders will be invited and other interested members should send a 16 x 23cm SAE, marked 'York Conference' in the top left corner to : Mr D.A. Pearman, The Old Rectory, Frome St. Quinton, Dorchester, Dorset DT2 0HF.

As this meeting will be held in the University of York there is a booking requirement for these to be sent, with fee of £6.00 **by February 28th 1993**. Those hoping to join this meeting please make a note now in your diaries to send your bookings as soon as possible after you have received the details from David Pearman, and **before February 28th 1993**.

MARY BRIGGS, Hon General Secretary

KENT CHECK LIST

Unfortunately we have experienced some unexpected delays in the production of the new check list which we had anticipated would be published in July. The revised schedule would seem to indicate that publication will now be towards the end of September and we must apologise to members who have ordered copies for the delay. All orders have been recorded and copies will be despatched immediately they are available.

MICHAEL WALPOLE, Hon. Treasurer

REMINDER - PLANTS AND MEDICINE CONFERENCE

If you have not already done so, there is still time to book for this one-day meeting to be held on Saturday 24 October 1992 at the Chelsea Physic Garden. See leaflet distributed with the April *News*.

EDITOR

GET WELL SOON

All good wishes for a speedy recovery are sent to **Frank Brightman**, recovering after having part of his foot amputated. He is, however, continuing to organize the translocation conference jointly with Vicky Morgan (see page 50).

Also to my cousin **Gordon Hanson**, who is making a steady recovery after a second triple by-pass operation.

The inclusion of names in this new section is, of course, dependant on them being forwarded to the editor. Please do keep me informed.

EDITOR

NEW HONORARY MEMBERS

ERIC EDEES

Eric Edees has been a member of the BSBI (and its predecessor the BEC) for 60 years. During that period he has contributed critical plants to the Exchange, was recorder for Staffordshire for 35 years and referee for the intractable genus of *Rubus* for more than 30 years. He has led field meetings (at which his outsize *Rubus* Vasculum was a well-remembered feature), contributed papers to BSBI conferences, *Proceedings* and *Watsonia*, and compiled a *Flora of Staffordshire* (1972), the first to be published on a tetrad basis. In conjunction with A. Newton he was co-author of the Ray Society's Monograph on *Brambles of the British Isles* (1988).

He has been an assiduous researcher in field and herbarium giving firm and balanced judgements after cautiously sifting all the available evidence. He has corresponded with many of the botanical pundits over half a century or met them in the field, passing on his views and experiences with a dry and robust humour.

His nomination was strongly supported by members in Staffordshire, and the society does well to honour this fine botanist.

ALAN NEWTON

JOHN FRANCIS MICHAEL CANNON

I have known John Cannon and worked with him for thirty years; but his interest in British plants goes back far further than that - in fact to his school days in Croydon, when he was lucky enough to be a pupil of Cecil Prime, whom many members will remember. This early contact with an inspirational teacher of young botanists triggered off an interest in field botany that John has pursued with vigour, in ever-widening circles, extending as far as the south-western United States.

A high point of his work on British botany was the British Museum's Mull Project, in the late 1960s. John organised the fieldwork and, together with Ted Bangerter, wrote the section on vascular plants for the resulting *Flora of Mull*.

John joined the BSBI forty-one years ago in 1951 - as did Margaret (now his wife) - and it was not long before he was serving on various committees - the Meetings Committee (1959-63), the Development and Rules Committee (1965-69) and the Publications Committee (1977 to date). He was, in fact, secretary of the D & R Committee from 1968-69 when it was transformed into the Co-ordinating Committee, and he continued in office for more than twenty years, until 1991, when it became the Executive Committee.

During his career at the British Museum (Natural History) John was always active in the interests of the Society - not least when acting as its postman. His specialist knowledge of the Umbelliferae resulted in his becoming the General Referee for that family, which he still is. When he was Keeper of Botany at the Museum he was an enthusiastic host to the Annual Exhibition Meeting, frequently helping to solve problems that arose with its organisation. Along with Margaret, he has also given yeoman service with more mundane tasks - such as serving tea and coffee, and washing up.

John's numerous BSBI activities were formally recognised in 1983, when he became President of the Society; and I am sure that all members will agree that his service to the BSBI merits further recognition as an Honorary Member.

NORMAN K.B. ROBSON

CORRIGENDA CORNER

My apologies to Gwen Elwell and those who tried to phone her re spare copies of *BSBI News*, for giving her phone number incorrectly in the last issue. It should have read 0582 669158.

My thanks to Arthur Chater for pointing out that in *BSBI News* 58, p.54, in the report of the Ynys-las field meeting, the *Listera* mentioned should have been *L. ovata* (not *L. cordata*).

EDITOR

EDITORIAL

Condolences

I am sure all members will join with me in sending condolences to Richard Pryce, recorder for v.c. 44, Carms. and Treasurer of the BSBI's Committee for Wales, on the tragic death, through cancer, of his fourteen year old daughter Rachel. May she rest in peace.

English names

I must apologise for being unable to fulfil my promise in the last issue, to give English names of plants whenever possible. I just have not had the time to add them to the text for this issue. I will do my best to do so for *BSBI News* 62.

New nomenclature

In common with 'Plant Records' and papers in *Watsonia*, Field Meeting Reports in *BSBI News* (see page 48) and other BSBI publications, from the next issue, I will be following Clive Stace's *New Flora of the British Isles* for both Latin and English names. I would be grateful if authors could bear this in mind when writing their notes.

EDITOR

ANNUAL EXHIBITION MEETING

With this mailing you will find your Exhibition Meeting Notice and Application Form with directions and a free entry ticket to the Museum on that day (if you bring that ticket with you). The Exhibition Meeting this year will be held in the Conversazione Room (as for a few years prior to 1990) on the ground floor of the Natural History Museum. The more spacious Gallery in the Geology Museum, which we were able to use in 1990 and 1991, is unfortunately not available for us as it is in use for a long-term Exhibition this autumn. We are unable to book a Lecture Theatre as the Natural History Theatre is closed for a refit, and the Flett Theatre is in use the week of our Exhibition for the Wildlife Photographer of the Year Awards. So this year there will be no slide show - although we do plan for some to be shown through an automatic viewer in the Conversazione Room extension.

For the Conversazione we plan a different type of buffet meal this year. It will be a simpler but adequately substantial buffet based on fresh breads with a large selection of cheeses and fruits, followed by a sweet, and has been arranged at considerably less cost than in the past few years.

There will be a cash bar, in the Museum, from 6.15 - 8.45 and we hope that many members will be present to come.

MARY BRIGGS, Hon General Secretary.

HON. GENERAL SECRETARY'S NOTES

Hon. Assistant Secretary

We are pleased to announce that Mr Peter Fry of 52 Lindisfame Avenue, LEIGH-ON-SEA, Essex SS9 3NR. has agreed to become our new Hon. Assistant Secretary. He is currently looking after our post at the Natural History Museum.

Decline in Taxonomy

The decline of 'Rare Species Experts' was highlighted by a House of Lords Committee study which showed that systematic biology is given such a low priority in this country that it may soon die out as a sustainable discipline. *Habitat* reported that scientists who study endangered species in the UK are themselves now in danger of extinction, and that regrettably research into the naming and classification of flora and fauna, the heart of international conservation, is being run down in British Universities and the Natural History Museum, London. This Society sent support for increasing taxonomic research to the Committee.

Science and Plants for Schools

Science and Plants for Schools - SAPS - aims to promote and support exciting teaching of plant science in schools and a leaflet explains that it hopes 'thereby to dispel the view, widely held among young people, that plants are boring'. Using rapid-cycling Brassicas as 'fast plants' grown in light-boxes in school, these can flower 14 days after sowing and seed can be harvested three weeks later. The flowers are pollinated by dead bees on cocktail sticks (or cotton wool buds or small paint brushes if preferred - although these are not as efficient as pollinators).

The programme publishes a regular Newsletter with ideas for interesting practical work in plant science; any members involved with teaching or interested in further information can contact SAPS at Homerton College, Hills Road Cambridge CB2 2PH.

John Fraser (1820-1909)

A well-used Vasculum donated by Nigel Hepper - one that he inherited when he was eleven from his father (who was a founder of the Wrekin NHS) - will soon be on display as part of an exhibit on a local Victorian botanist at the Wolverhampton Art Gallery. John Fraser of Wolverhampton (1820-1909) is described by Eric Edees in his *Flora of Staffordshire* as one of the most active botanists of his time in the south of the County. Born in Glasgow, by 1864 John Fraser was in Staffordshire and his collection of 530 species of Staffs plants was awarded the silver medal of the South Kensington Horticultural Society for the best collector of that year. These with the rest of Fraser's extensive herbarium, which includes more than a thousand sheets from Staffordshire (many of great local value) now belong to the University of Hull.

Local Botanical Societies, Associations and Field Clubs

It occurs to me that the addresses of Local Botanical Societies could be a useful addition for members in the *BSBI Year Book*.

If Secretaries would send the name of their Society, when founded, the contact address - and possibly several words describing the main activities (e.g., lectures, field meetings, recording etc.) to me **before Monday November 2nd**. I will compile a section on these local societies.

Please note November 2nd 1992 as the copydate for amendments to, or other suggested additional entries in *BSBI Year Book 1993*.

Tailpiece

Two queries on leaves in the Secretary's postbag recently - one from British Rail asking for help with their autumnal leaf problem (any ideas?) - and the other from a herbal cigarette firm wanting a leaf for use as a tobacco substitute with a 'more pleasant aroma than Colt's-foot'. Have we a member experienced in smoking herbal leaves who could comment? By the same post, a television research request for our opinion on whether households that row a lot could have an effect on plant life in the house? One of our colleagues in Dept. of Botany, NHM, suggests that rowing families possibly forget to water the plants? Other members have since suggested that husbands of rowing families could well retreat to the greenhouse and the plants would flourish, and commented that you can't row and study plants at the same time?!

MARY BRIGGS, Hon. General Secretary

RECORDERS AND RECORDING

Supplement no. 2 to List of Recorders in 1992 Year Book

Ro FitzGerald writes that the joint Recorder for H13 Co. Carlow is her sister, Lady Nesta Tirard. With apologies we regret the publication of Lady Nesta as 'Mr' in *BSBI News* 60, (but gather that we provided amusement for her children!)

Supplement No. 2 to Panel of Referees and Specialists in 1992 Year Book

CHENOPODIACEAE

Salicornia: Dr D.H. Dalby has decided reluctantly to resign as Referee. We record a very sincere vote of thanks to Kery who has been a referee for *Salicornia* for more than 30 years; his balanced opinions in his replies to enquiries have been very much appreciated. Kery tells us that he has found it hard and to some extent unrewarding, as he feels that many members don't appreciate that there really are no 'God-given answers'. Different taxonomists have different opinions - and each is entitled to his own. He says that his great regret is that he cannot claim to have solved the taxonomy of *Salicornia* (adding that refereeing would be much easier had he done so!).

ROSACEAE

Rosa: Tony Primavesi informs us that the post office has changed his Post Code to LE7 4SG.

MARY BRIGGS, Hon General Secretary

HELP! INFORMAL ASSISTANCE WITH IDENTIFICATION

This exhibit has been at every Annual Exhibition Meeting since 1980. It seems to be offering a service which some members welcome, and a point of interest to many. I hope to continue with it for many more years. I suspect there will always be 'awkward' specimens which don't seem to merit an all-out effort such as sending them to a referee, but just won't give themselves up! Also sometimes it is embarrassing having to ask someone who may well be very busy to spend time on an 'un-important' scrap of a plant. This exhibit allows you to ask your question, and others to make helpful suggestions, without a lot of fuss, and anonymously if either of you wishes.

However, if it is to continue, it is up to you to keep me supplied with your BUG-BEARS!

IF YOU WISH TO USE THIS SERVICE, PLEASE

EITHER Bring your specimens to the next Exhibition Meeting,

OR Send them to me in advance, and I will display them for you.

It helps to have some idea in advance how many to expect, but do not hesitate to bring them without warning. I would sooner be swamped than left lonely!

Don't forget, this is a confidential service. Both ways.

SEAN L.M. KARLEY, 30 Harrowden Road, WELLINGBOROUGH, Northants NN8 3BH

ALDERNEY FLORA

With reference to the Guernsey 1991 report by B. Ozanne, in *BSBI News* 60 p.66, Alderney entry. *Cynara scolymus* is not 'new to the Channel Islands'. It was first reported as three plants found near

the Watermill at Platte Saline in Alderney by Dr. P.H.A. Sneath in July 1970. This was recorded in *Transactions of La Société Guernesiaise* in 1974, p.367.

In July 1987 there were approximately 200 plants in the same spot, with a second small colony about 500 yards away on the walls of a derelict Victorian Fort, and this was duly noted in my *Flora of Alderney*, a *Checklist with Notes* published in November 1987. The plants were a relic of a horticultural crop in the 1950s, and have now spread to two adjacent pastures down a small stream bed.

A further site was noted at the side of a derelict garden on the edge of woodland in Essex Valley, at the other end of the island in 1988, with two plants over 8ft high. These have also now spread somewhat. In 1989 it was noted in a hedge along Les Rochers in the centre of the island. These last records are presumably relics of nearby domestic cultivation.

BRIAN BONNARD, The Twins, Le Petit Val, ALDERNEY, Channel Islands

ABERRANT GYNOECIA IN *OROBANCHE MINOR* Sm. var. *MINOR*

On June 17th 1992, Mr. A.M.G. Darby of Kemerton, Worcestershire drew my attention to a robust inflorescence of *Orobancha minor* Sm. var. *minor* growing on sand just inside the parish boundary of Kemerton, Worcestershire (SO 93). The host plant was *Carduus crispus* L.

Later the same day I found a more depauperate inflorescence nearby using *Senecio jacobaea* L. as host, in young plantation grassland. Two of the flowers on this plant were aberrant. One had two styles bearing respectively one and two purple stigma-lobes, the other a single style (as is normal) bearing three, rather than two, conjoined stigma lobes. I have a photographic record.

P.F. WHITEHEAD, Moor Leys, Little Comberton, PERSHORE, Worcestershire WR10 3EH

THOMAS WILLISEL - THE EARLIEST FIELD BOTANIST?

One of the earliest field botanist's must surely have been Thomas Willisel (died 1675?). He worked with John Ray, who said of him:

'a soldier (sometimes belonging to Lambert) who having taken a great affection to the botanical studies hath arrived to a great knowledge in plants; & is sent by Mr. Morison into several parts beyond sea to make a collection for that garden.'

Thomas Willisel was a native of Northamptonshire, according to John Aubrey, or, according to John Ray, of Lancashire. He served as a foot soldier under Cromwell.

'Lying at St. Jamee's (a garrison then I thinke), he happened,' writes Aubrey, 'to go along with some simplers. He liked it so well that he desired to goe with them as often as they went, & tooke such a fancy to it that in a short time he became a good botanist. He was a lusty fellow, & had an admirable sight, which is of a great use for a simpler; was as hardy as a highlander; all his cloathes on his back not worth ten groates, an excellent marksman, & would maintain himself with his dog & gun, & his fishing line. The botanists of London did much encourage him, & employed him all over England, Scotland, & a good part of Ireland, it not all; where he made brave discoveries, for which his name will ever be remembered in herballs. If he saw a strange fowle or bird, or a fish, he would have it & case it.' (Aubrey, Natural History of Wiltshire).

He was employed by Merret for five summers to make collections for his 'Pinex', although Merret does not appear to give Willisel credit. Weld records that in October 1669 Willisel, who had been engaged by the society to collect zoological and botanical specimens in England and Scotland, returned to London with a large collection of rare Scottish birds and fishes and dried plants. He also prints the sealed commission given by the Society to Willisel. On June 10, 1669, the certificate for THOMAS WILLISEL, drawn up by MR. HOSKYNS, was read and approved, as follows:

'These are to certify all, whom it may concern, that the bearer hereof, THOMAS WILLISEL, is at present employed by the president, council & fellows of the Royal Society of London for the improving natural knowledge, to go into several parts of his Majesty's dominions, for purposes suitable to their institution, according to authority unto them on his behalf given by his sacred Majesty that now is: And they earnestly recommend him to all generous & ingenious spirits, desiring, that as occasion shall require, they will assist him in promoting a work so generally

beneficial to all mankind. In witness wherof the said president, council & fellows of the Royal Society have hereunto caused their common seal to be affixed this day of . . .'

Later on in October the treasurer paid Thomas Willisel £10, as part of the £30 yearly fee.

On March 3, 1670 the society recorded that:

'THOMAS WILLISEL being returned from his journey, produced before the society several minerals, fishes and birds, which he had collected. Among the birds, which he had met in Ireland, there were some with three beaks, having two passages, one of which was thought by DR. GLISSON to serve for breathing, the other for swallowing. It was ordered, that DR. POPE, MR. JEFFREYS, & MR. HOOKE do inform the said THOMAS WILLISEL of such natural things, as may be had in England, & were yet wanting in the society's repository, & that the said WILLISEL take order & directions from them what to inquire after & bring home for the future.

March 24, 1670. THOMAS WILLISEL brought in a small collection of sea-plants lately gathered by him on the sea-shore in Kent.

April 21, 1670. THOMAS WILLISEL brought in some plants gathered by him in Norfolk & Suffolk, which were recommended to the care of MR. CHARLES HOWARD.'

Thomas Willisel is credited with many first county records, among them being Field Southernwood, *Artemisia campestris* L. subsp. *campestris* and Fingered Speedwell, *Veronica triphyllos* L., both being Breckland specialities. John Ray writes in *Synopsis Methodica Stirpium Britannicarum*, 1724, of Willisel's discovery:

'Upright Speedwell with divided leaves. At Rowton in Norfolk betwixt the Town & the Highway, twelve miles before you come to Norwich; & at Melw in Suffolk, between the two Wind-Mills & the Warren Lodge; & in Gravel-pits two miles beyond Barton Mills, on the ridge of the hill, where a small Cart-way croseth the road to Lynne, & in the grass thereabout plentifully: T. Willisel.'

How well I remembered the excitement of finding Fingered Speedwell in 1988 with a couple of friends on a field edge, at Weeting. Just as we realised that it was an introduction, a warden came bounding over the fence, hurling abuse at us. It turned out that he was afraid that we might disturb the habitat of Stone Curlews. After calming him down we explained that we were amateur botanists and bird-watchers and not lager-louts! We had in fact surveyed the field first with binoculars because it looked ideal for Stone Curlews, and when we realised that indeed there were none, we trespassed. I wonder if Thomas Willisel had such encounters, they would have been much more severe, chased off with guns & swords!

'When,' wrote Aubrey, 'ye Lord John Vaughn, now Earle of Carbery was made govenour of Jamaica [in 1674], I did recommend him to his excellency, who made him his gardiner there. He dyed within a yeare after his being there, but had made a fine collection of plants & shells, which the Earle of Carbery hath by him; & had he lived he would have given the world an account of plants, animals, & fishes of that island. He could write a hand indifferent legible, & had made himself master of all the Latine names: he pourtrayed but outwardly.'

Some plants collected by Willisel are preserved in Sir Hans Sloane's herbarium.

John Ray writing to Edward Lhwyd, 22 March 1692, said:

'T. Willisel, who was indefatigable, & could endure any hardship, & live as well upon oatcake & whig as another man upon flesh and wine, & ramble over hills & mountains & woods & plains.'

Ray obviously held him in great esteem for some 17 years after his death, Ray wrote of him in 1692:

'... & poor Tom Willisel's lose, I cannot remember without some trouble.'

Thomas Willisel has long been a source of encouragement to many of our leading field botanists, and I for one have found him to be a great inspiration. Should any BSBI readers like to share any of Tom Willisel's finds or any other information with me, I would be glad to hear from them.

References:

- Birch, Thomas, D.D. (1756). *The History of the Royal Society of London*.
 Trist, P.J.O. (ed.). 1979. *An Ecological Flora of Breckland*.
 Britten & Boulger. (1931). *A Biological Index of Deceased British & Irish Botanists*, 2nd edn.
Dictionary of National Biography.

BILL WYATT, 8 Princes Close, S. CROYDON, Surrey CR2 9BP

CYNTHIA E. LONGFIELD (1896-1991) - A FURTHER NOTE

In my tribute to Cynthia Longfield in *BSBI News*, **60**, April 1992: 25-26, I omitted to mention her work towards the *Atlas of the British Flora* (1962). With visiting botanists she gridded several grid squares in East Cork H5, in the area Cloyne, Midleton, Youghal. She is listed amongst Individual Contributors on page 423 of the Atlas. The records were communicated to D.A. Webb who co-ordinated the Irish records.

MAURA J.P. SCANNELL, Dublin 4

RECORDING ISLANDS - A VIEW FROM MULL

I was interested to see the note by Elaine Bullard entitled 'Recording Islands' in *BSBI News* **60**: 12 (1992). In it she draws attention to the practical difficulty of record handling for much divided areas like groups of small islands - in her case Orkney. In such places, the operation of the well-known natural law always seems to ensure that the lines of the National Grid break up natural, logical and convenient groupings. Having experienced a similar difficulty in planning the *Natural History Museum Mull Project* and the subsequent publication, a brief account of our experiences may be of interest to members.

For Mull, we found that the Treshnish Isles (plus Staffa), a very interesting assemblage of small islands and islets, were spread between no fewer than four 10km squares. Likewise, Ulva - a medium-sized island - was inconveniently linked to the mainland Mull in three squares and to the open sea by a fourth. However, in our case the presence of long, narrow peninsulas separated by sea lochs presented an even greater quandary. Since for the purposes of local distribution studies, areas which included part widths of two peninsulas with an area of sea in between made little sense, we adopted 'modified grid squares' which generally retained the north/south lines of the grid but used arbitrary lines down the middle of the sea lochs to provide the east/west separations.

The point I really want to stress in this note is that two quite separate issues are involved. I have already outlined the first, i.e. the practical consideration and presentation of distributional records for local *Floras* and similar publications. The second, I believe is equally important and this is the permanent storage of records for long-term archival purposes. For such purposes, I believe records both individual and in the bulk form of field record cards, should be maintained on a strictly national grid basis. This was the solution we adopted for Mull. It means that the detailed records are available as a resource for broader scale projects such as national and international mapping schemes, in a form that can be immediately assimilated into generally accepted data handling systems. As we inexorably move further into our computerised future, such considerations will become more and more significant.

I stressed in an earlier contribution to *News* the importance of the permanent archival preservation in, for example, a national or local museum, of the raw field data resulting from county *Floras* and similar projects. Inevitably much detailed information is generated beyond that actually published in the *Floras*, and the importance of its preservation and accessibility to later workers is specially clear in cases like Mull and Orkney, which do not fit conveniently into the standard pattern of grid squares.

Reference

Jerry, A.C. & Crabbe, J.A. editors (1978). *The Island of Mull, a survey of its flora and environment*. British Museum (Natural History), London.

JOHN F.M. CANNON, Barn Croft, Rodmell, nr LEWES, E. Sussex, BN7 3HF

LATHYRUS HIRSUTUS RE-INTRODUCED TO A SITE IN ESSEX.

English Heritage have sown seeds of *Lathyrus hirsutus* at Hadleigh Castle, Essex, in an attempt to re-establish it there, where Christopher Merrit first recorded it in 1666. Many well known botanists have visited the site since but the plant died out 20 or 30 years ago due to a combination of

grass-cutting and scrub invasion. Although it still occurs nearby in the Benfleet and Southend Marshes SSSI it was felt that it would be nice to return it to its classic locality. For further information on this and other botanical initiatives contact me at the address below.

JOHN THOMPSON, Room 621, English Heritage, Kensington House, 429 Oxford Street, LONDON W1R 2HD).

THE FARMER'S CURSE : *SCANDIX PECTEN-VENERIS*

The check list (for Southern England) that we used for the BSBI's Monitoring Scheme in 1987-8 did not mention *Scandix pecten-veneris* (Shepherd's-needle). But it was one of the 25 Arable Weeds that we were asked to look for at the same period. In the square I monitored in West Suffolk (v.c. 26) I found a widespread population on one farm and marginal colonies on two others. Other people found it in other parts of the county, and I have come to regard *Scandix* as a fairly common weed here.

On June 8th 1992 at G.R. TM/202.511 (Tuddenham St Martin parish, East Suffolk, v.c 25) I found a heavily infested field of barley. Half an hour later I met the farmer. He was interested in what I was doing and invited me to walk round his land. Then he commented, 'One thing I have got that I don't want, that needle-weed.' He told me that he had known it on his farm for fifty years, but only as occasional plants until he stopped burning eight years ago. Since then it has spread rapidly. The normal herbicide programme does not touch it and the 'commercial boys' have not been able to help. He will shortly be spraying all his fields specifically to tackle this weed. Apparently it damages the crop twice over. Firstly the weeds choke the barley, causing drastically reduced yields. Then it is impossible to separate the needles from the corn. Last year he threw away a ton of grain after repeated dressing had failed to clean it.

It seems that this conservation-minded farmer abandoned straw-burning earlier than most of his colleagues. Perhaps he is one of the first to suffer from a problem that is likely to become widespread?

Rev. RICHARD ADDINGTON, Charsfield Vicarage, WOODBRIDGE, Suffolk

NATIVE OR INTRODUCED? DOES IT MATTER - OR CAN YOU TELL?

Guy Messenger's note in *BSBI News*, 60 (April 1992) on both **native** and **introduced** species being **intrusive** in man-made environments leads on to speculation that individual plants or colonies of native species might be introduced not native!

The interesting comparison is between the first two of his examples, Eye Brook Reservoir, where *Rumex maritimus* (Golden Dock) has rarely occurred, and Rutland Water, where it has been abundant. There could be many reasons for the difference, but it may be significant that Eye Brook was constructed before the Second World War and Rutland Water in the 1970s.

If there was any landscaping or 'grassing down' at Eye Brook then grass seed used at that time is likely to have been of UK or European origin - or the earthworks might have been allowed to grass over naturally. I am fairly certain that landscaping was carried out at Rutland Water and grass seed mixtures sown. Much of the seed used in these mixtures is likely to have been imported, but trading patterns have changed since the 1930s. If the mixtures contained seed of red fescue (*Festuca rubra*) or timothy (*Phleum pratense*) - as they may well have done - then this was probably of North American origin. Now a typical impurity of North American timothy seed (but not seed from other origins) is seed of *Rumex maritimus*!

This leaves the interesting possibility that the plants of *Rumex maritimus*, a native species, at Rutland Water originated from introduced Canadian seed - are they native or are they introduced? And in most cases where plants of native species come from imported seed stocks or develop from seed impurities in imported seed, will you ever know?

On a different note, painful memories enable me to record that *Alopecurus pratensis* (meadow foxtail) was used for 'Chinese haircuts', obviously a widespread common name, in southern Hertfordshire and east Essex in the mid '50s.

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SENECIO x ALBESCENS (S. CINERARIA x S. JACOBAEA)

From the records given in Stace's *Hybridization and the Flora of the British Isles*, the conclusion could be drawn that *Senecio x albescens* Burbridge & Colgan, is a very uncommon hybrid. Of the parents, *Senecio cineraria* D.C. is a fairly common garden plant whilst *S. jacobaea* L. (Ragwort) is very common on wasteland, roadsides, etc., etc.

Over the past four years a watch has been kept for this hybrid in North Lancashire (most north-erly 45% of v.c. 60). This has resulted in 8 records:

(a) 1987. Coastal near Cockerham, two plants growing in with *S. jacobaea*, both hybrids were flowering and there were basal sterile shoots indicating that it was probably going to grow as a perennial. However in 1988 all of the plants, both hybrids and *S. jacobaea* disappeared.

(b) 1988. Single flowering plant with barren shoots on the Canal bank, later destroyed when the Canal vegetation was cut.

(c) 1989. Coastal plant at flowering stage. Nothing there in 1991.

(d) 1990. In a built up area in Lancaster, rooted in a crack between the pavement and a wall. A first year plant which later disappeared.

(e) 1990. Edge of a grassy area in a Cemetery, first year plant, later disappeared probably weeded out.

(f) 1990. Edge of bridge, first year plant. Gone before Nov. 1991.

(g) 1991. In an open space between shrubs, a first year plant which did not reach maturity - weeded out.

(h) 1991(Oct.). On waste ground near Heysham, first year plant.

The identification of first year plants was based solely on the indumentum of the basal leaves.

We believe that in this area *S. x albescens* is not uncommon, it is probably under-recorded due to its closeness to habitations and its being destroyed before reaching maturity.

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GAZETTEER FOR THE BRITISH ISLES

I have for some time been gathering data for a computerised database of localities. Each record includes just the place name, the grid reference and the Watsonian vice-county number. The whole of the United Kingdom and Ireland is covered. The database system is Advanced Revelation, but data can easily be imported or exported in various common formats. I would like to hear from recorders and flora-writers and other enthusiasts who already have such data in computerised form, with a view to a) giving out data to people and projects that need it, and b) receiving more such data to add to the database, on a non-commercial basis.

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OSMUNDA REGALIS - AN UNUSUAL SITE

To our knowledge, there are six sites for *Osmunda regalis* L. in North Lancashire.

Two of these are probably introductions, two others are in suitable habitats where this fern might reasonably be expected. The fifth site is a cliff top facing the sea where the plants occur in a wet flush.

The sixth site is much more unusual. First noted in 1990, and still flourishing a year later, the fern grows from a crack about seven feet up a high retaining wall in central Lancaster. The plant consists of about six sterile fronds, each frond being only 6-7 inches long and, as yet, no fertile fronds have been produced.

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STATUS OF NON-NATIVES

Stace's *New Flora of the British Isles* (1991) gives us a 9 out of 10 chance of identifying escaped non-native plant species, as opposed to the 3 in 10 chance from the best of the other *Floras*. Earlier availability of this *New Flora* to those involved with the 'Wiltshire Flora Mapping Project' would have resulted in a fairer representation of prevalence of Wiltshire non-natives.

Four other problems remain. Firstly there is the human tendency to tick off any checklisted species and overlook the others. Non-natives are under-represented on the checklists. Next there is the adverse 'psychological set' ingrained in some botanical recorders against **recent** immigrants. One scruffy Corn Buttercup at the edge of a field is a 'Good Find' because this species arrived with the Romans, and was a common cornfield weed in Wiltshire in the golden age of nostalgia (any time more than two generations ago). North American Asters and Solidagos spreading in ditches, nettle-beds and roadsides around the same field are puritanically dismissed as garden throw-outs or just ignored, even if they cover ¼ acre, or were there during the 2nd World War. Romano-British farmers were part of nature: modern man is not. Species associated with the latter are therefore ignored. Plants that **once were** there, or **should be** there became more important than those actually in evidence!

The 3rd issue involves the chaotic state of the classifications of non-natives using terms which may be missing from botanical glossaries and from English dictionaries. These include 'ruderals - casuals - denizens - escapes - introductions - adventives - relics - colonists - naturalised species - aliens (widely used in both of 2 mutually antagonistic ways) etc. Grose (1957) takes 50 lines, and a diagram with 6 main categories plus 10 associated groupings to simplify schemes used by Druce and Watson. Even so, such unwieldy systems all ultimately depend on plant survival in 'Natural' or 'Semi-natural' habitats, ruling out 90% of heavily farmed Wiltshire, and all village, suburban, urban and transport habitats, from consideration.

The key issue appears to be intentionality. I tentatively suggest a flexible 3 point system for recording the status of non-natives.

- (0): For a prepared crop or garden plant; or a recently planted tree or shrub.
- (1): Herb or crop-plant which seeds or persists over 2 seasons, or spreads locally, all without man's conscious help; or persists as a local throw-out. A tree or shrub suckering locally (eg. Poplar hybrids, lilac) or producing viable seed with a chance of surviving seedlings.
- (2): Herbs or crop plants which spread vigorously locally or further afield for 3 or more years. Shrubs & trees with surviving seedlings & saplings, or with satellites further afield from vegetative spread.

Fired with the enthusiasm of Wurzell and armed with Stace's *New Flora*, amateur recorders should in future be better able to acknowledge some of the 626 non-native higher plants which have become persistent in Britain (Crawley 1989). The 3 point scale outlined above would remove the current 'all-or-nothing' decision when faced with one or two Lawson's Cypress or Norway Maple seedlings, 2-rowed Barleys, Honesties, or Opium poppies on a village pavement.

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STEFANOFFIA DAUCOIDES - MORE ELUSIVE THAN MOST

Having described several successful forays in search of obscure European umbellifers, it may well be time to place a failure on record. Only a temporary failure, one hopes - a postponement, perhaps, of the first conscious sighting of *Stefanoffia* for a very long time.

Stefanoffia daucooides (Boiss.) Wolff is a modest, somewhat stiff umbellifer, 20-30cm in height, close to *Carum* but distinctly tuberous in the manner of *Bunium*. In texts subsequent to *Flora Europaea*, of course, *Bunium* and *Carum* are juxtapositioned¹. *Stefanoffia*'s most distinctive character lies in the bracts, which are quite prominent and bluntly 3-fid. This is fine until you come to look for the plant in country awash with *Daucus carota* and *Ammi majus*, both occurring in numerous forms and both extremely variable in size.

The species was first described by Boissier in 1844, from westernmost Turkey, as *Carum daucooides*. In *Flora Orientalis*² he cited this location and an occurrence on Mt Korthiatis near Thessalonika in 1862, which was reported by Orphanides. The sheet of three specimens collected there by Orphanides is at Edinburgh and is the basis of Chris Hogg's illustration. (Numerous botanists have admired Chris' work but virtually none have given him a commission).

There are three other long-determined sheets in the UK, all from Bulgaria with the difficulties regarding place-names that this origin entails. However, in February 1992 I looked at some Indet. folders in **BM** and, in *Ammi* Indet., found a fine sheet of *Stefanoffia* from near Lake Doiran in northernmost Greece, collected in 1918 by British Army personnel stationed there in connection with the Serbian War. I have been unable to find the basis of Professor Tutin's inclusion of 'Cyclades' in the distribution data³.

Armed with the foregoing intelligence (more than is available in UK for some obscure spp.), I set out for Mt Korthiatis on 27 June, 1992. Should any other umbellifer-seeker pass this way by car I advise him/her to (a) take courage in the apparent total absence of anything but *Daucus*, (b) avoid driving into Thessalonika at all costs. At the height given by Orphanides, which is well below the village of Korthiatis, there remain substantial areas of uncultivated grassland with numerous, but not dense, bushes. I believe this is the required habitat and it is visibly distinct from the hard phrygana to the south, being slightly reminiscent of some of the remnants of bushy grassland in Hampshire or Surrey.

An exhaustive search of the area, taking in those parts of the mountain remote from the road, would be a week's work for a party of botanists. I attempted to look at a variety of heights and aspects but to no avail. However, I did see *Bupleurum flavum*, *B. fontanesii* and *Himantoglossum hircinum*, and I took the latter to be a sign of stability in the habitat. Although *Stefanoffia* eluded me on this occasion, I remain confident that it is still alive and well, and living quietly somewhere in the vicinity.

The term 'Cyclades' in *Flora Europaea*, mentioned above, had led me to speculate that the plant might be found on the Halkidiki peninsula, around Polygiros, or even on the way to the Thessaly plain and Meteora. Having looked at these places as extensively as time permitted, I now doubt their suitability, and will concentrate any future searches in the lower foothills of mountains from Korthiatis north to Lake Doiran.

Overall, the gross lack of umbellifer species in Halkidiki was a surprise. En route to Meteora the coach passed Mt Olympus and I was keenly aware of the value of the near-comprehensive assemblage of umbellifers collected for me there in 1982 by the late A.L. Grenfell. Thanks for that, Adrian. I must not arrogantly assume that no other botanist has ever sought *Stefanoffia*, but any predecessors have well covered their tracks. Help with such a species is hardly to be looked for and, up to the moment of success, the search could be described as a self-inflicted 'Labour of Hercules'. But, who can tell, it is just possible that this piece will be read by a man who knows a Balkan man who knows a man who might just drop me a line!

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Stefanoffia daucooides (Boiss.) Wolff, Mt Korhatis, Macedonia, 1862. Del. C. Hogg, © 1992

ULMUS NOMENCLATURE AND THE NEW FLORA

There is so much about Clive Stace's *New Flora* that is praiseworthy that I hope most British botanists will accept it as the standard field guide to identification.

As far as my own hobby-horse, the genus *Ulmus* is concerned, I am quite happy to use Clive's taxonomy for practical purposes for the time being, and I hope my Elm correspondents will do the same. It is true that the last word on this vexed topic has not yet been said, but those currently working on Elms are by no means ready to unburden themselves as yet. My only reservation is that I regard *Ulmus minor* Miller more in the light of an aggregate comparable to *Rubus fruticosus* L. than as a definable but greatly polymorphic species like *Capsella bursa-pastoris* L. This point of view has still to be developed, but if it becomes generally acceptable and accepted, it will lead to a total reappraisal of the taxonomy of *Ulmus* hybrids as outlined in the new Stace.

We can afford to wait though, and see whether the present phase of regeneration among British Elms is going to lead directly to a repopulation of the countryside with mature and maturing trees requiring taxonomic definition, or whether we are still due to suffer from further new outbreaks of Dutch elm disease before true recovery can take place. In the meantime we can hope that the valuable work of collecting and defining surviving taxa in progress at CGE will continue, and that it will not be too long before we begin to see some published results. In the meantime, congratulations and thanks to Clive Stace.

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ALYSSUM ALYSSOIDES - A RED DATA BOOK PLANT

During 1990 we found an unusual seedling in our garden, which we later identified as *Alyssum alyssoides* (L.) L. (conf. Tim Rich). Late in the year it set seed and was allowed to self-sow into the same flower border, this plant died late March 1991.

By July 1991 there were no signs of any seedlings, so the top one inch of soil was raked and in late September 1991 a single seedling appeared, followed by two more seedlings in March 1992. All three plants have now flowered and are setting seed.

The origin of this plant is a mystery. When we acquired this house in 1984 there was a large bed of *Campanula glomerata* in one of the borders. This plant is invasive and needs to be controlled, therefore in the spring of 1990 a 12" strip of *C. glomerata* along the edge of the border was removed. It was in this newly cleared strip that the *Alyssum* appeared.

Prior to 1932 our garden was part of a Plant Nursery and the seed may have been dormant in the soil. In 1989 and 1990 respectively we holidayed in S.W. Turkey and on the island of Rhodes, and it is possible that we may have unwittingly carried the seeds home on our clothing, footwear, rucksacks etc.

Our garden is in North Lancashire, the more northern part of VC60. Has anyone else been finding this plant in their garden?

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BSBI MONITORING SCHEME 1987 - 88

Change at a local level - v.c. 81, Berwickshire

In August 1991, as a v.c. recorder, I finally received T.C.G. Rich's report to NCC on the Monitoring Scheme (MS), a volume of text detailing the methods used and analysing the completeness and integrity of the data and a volume of maps with three symbols to record respectively presence in the *Atlas* survey only, MS only and both schemes together with supporting statistics. There is also a table of probable increasing and declining species for each country based on relatively simple statistical analysis. I dived for the Scottish table and gasped.

The table of 53 species declining in Scotland included 8 species only which I was readily able to agree had declined in my v.c., like *Chrysanthemum segetum* and *Sherardia arvensis*, the rest being evenly divided between those that didn't occur in my v.c. anyway and those for which I could not be sure about any decline, mainly for lack of information.

The table of 89 species increasing in Scotland was little better. I recognised 15 species which had clearly increased in v.c. 81, some obvious like *Allium paradoxum* and *Sambucus racemosa* and some more obscure like *Agrostis gigantea* and *Barbarea intermedia*, others one could well believe had increased elsewhere in the country but 26 species left one more or less incredulous. It was difficult to imagine that the distribution of species like *Anthoxanthum odoratum*, *Juncus articulatus* and *Sagina procumbens* could have changed significantly in Scotland, though one could readily believe that the MS scheme might have generated more records of these species than the less intensive *Atlas* work.

Leafing through the maps I was rapidly reminded of the limitations of the 10km square dot map. Change only shows up where a species is present at very low density indeed. Thus *Ulmus glabra* actually records a small increase due to recording effort despite the massive decline due to Dutch elm disease. The best chance of recording a meaningful decline is often where a species has a distribution where it is reasonably frequent in certain areas and thins out to a boundary beyond which it is absent or almost so. Along the boundary line, change can be picked up efficiently from the maps by the human eye with an accuracy that probably requires quite sophisticated statistics to match it. This helped me to overcome some of my dismay at the tables of increasing and declining species in Scotland. One would expect only a minority of species subject to change to register change in a particular area, mainly those just at the limit of their range. One would also expect change to be difficult to discern locally as the occurrences would be so infrequent as to appear random and subject to recorder bias.

But I had found I could extract more from the maps by eye than had been done on the computer by statistics so I went through the maps and drew what conclusions I could for change in my own particular area by focusing on the pattern of change in Northern England and Southern Scotland. As a control I also went through my recently completed v.c. check list and made a subjective list of species I would expect to register change within the scope of the MS. As the results proved interesting I went on to analyse the species into some broad habitat types which I had used for an analysis of historical introductions and extinctions in my recent v.c. check list. In the process I discarded entirely 34 species shown as increasing in the MS statistics that I cannot accept as increasing in my v.c. together with species not occurring in my area. The following table summarises my findings.

Habitat	Declining Species v.c. 81				Increasing Species v.c. 81			
	MS Statistics Scotland	MS maps by eye, Borders - extra	subjective assessment, v.c. 81 - extra	total	MS Statistics Scotland - extra	MS maps by eye, Borders - extra	subjective assessment, v.c. 81	Total
The Coast	1	1	-	2	-	-	-	-
Woodland	1	3	3	7	4	6	1	11
Riverside	1	-	1	2	2	6	1	9
Grassland	12	33	12	57	2	1	-	3
Wetland	-	11	6	17	1	1	-	2
Moorland	-	5	3	8	-	-	-	-
Arable Land	7	5	2	14	1	3	-	4
Ruderal Land	1	2	-	3	5	8	5	18
	23	60	27	110	15	25	7	47

The correlation between the three methods is satisfactory, The MS data does indeed record the expected changes in the flora and indeed has picked up change that I could not detect by subjective assessment mainly because so few records had been made for the relevant species in my area that the data was inconclusive. My subjective assessment is best thought of as adding additional species for which the degree of change is not sufficient to show up on a 10km square dot map. In relation to change the MS is essentially a scarce species survey in any particular area. The MS statistics alone have picked up less of the changes than one might expect but there is a good reason for this which is peculiar to Berwickshire. V.c. 81 just is not typical of Scotland, it is drier and more intensively

cultivated and wetland species have declined to a greater extent than nationally. Examples of the changes picked up by eye from the MS maps and confirmed subjectively are:

Declining species, *Botrychium lunaria*, *Apium inundatum*, *Dactylorhiza incarnata*, *Genista anglica*, *Hydrocotyle vulgaris*, *Knautia arvensis*, *Papaver dubium* and *Senecio aquatilis*.
 Increasing species, *Butomus umbellatus*, *Cicerbita macrophylla*, *Galium mollugo*, *Matricaria recutita* and *Sedum album*.

Finally I compared the above table of changes in the flora with the historical data of introductions and extinctions taken from *The Botanist in Berwickshire*, 1990 (after discarding species only subject to change on my subjective assessment), as follows:

Declining Species v.c. 81			Increasing Species v.c. 81		
	MS declining	Extinctions 1820-1990	MS increasing	Introductions (all non-natives)	Comment
The Coast	2	7	-	7	Little change deliberate introductions
Woodland	4	4	10	26	
Riverside	1	2	8	20	dynamic communities
Grassland	45	21	3	8	loss of habitat degradation of habitat
Wetland	11	28	2	2	
Moorland	5	6	-	1	muirburn and drainage
Arable Land	12	16	4	3	clean seed, sprays, winter crops
Ruderal Land	3	4	13	36	dynamic communities
	83	88	40	103	

Most of the MS increasing species are introductions to v.c. 81, though not necessarily to Britain, so it is appropriate to think of them as a proportion of these species. It is thus highly reassuring to note the consistency with which the proportion of increasing species follows down the different habitat types. The increases are believable.

The MS declining species may be thought of as the local extinctions of the not-too-distant future and as their numbers are similar to those of extinctions over the previous 170 years, this may be taken as evidence of an increasing rate of change. For most of the habitats the rate of loss of species is consistent but it appears that a high loss of wetland species in the past has been overtaken by a high loss of grassland species at present. The reason in Berwickshire may be the number of prime wetlands that were lost in their entirety at an early stage in the agricultural revolution while it is only the more recent use of heavy machinery and reseeded that has eliminated the last vestiges of old grassland, formerly such a widespread habitat.

As I have consistently ignored the finer taxonomic levels in the above analysis I can arrive at an absolute measure of change in relation to 722 'full' species currently recognised in Berwickshire.

Declining species 83 out of 722 = 11½%
 Increasing species 40 out of 722 = 5½%

always recognising that these are in relation to what can be measured on a 10km square dot map and ignore the massive changes in abundance of some commoner species.

I have tried to think what an observable change is likely to mean in relation to habitat loss. The sort of changes being met are from presence in 3 out of 4 squares at the limit of a species range to 2 out of 4 squares. I would guess this means a reduction in the total number of sites in 4 squares from 6 to 3 or a 50% habitat loss. The percentage change that this might represent in the MS statistics for Britain and Ireland depends on the actual distribution of the species, but, taking *Senecio aquatilis* as an example, may be only 5%. The apparently modest changes revealed by the MS may well therefore be consistent with loss or damage to 50% of the more specialised semi-natural habitats in Britain and Ireland in the last 25 years.

Despite my initial scepticism on reading the Rich report I conclude with satisfaction that the MS really has shown a most significant change in the British and Irish floras in the last 25 years. I am happy to have taken part, even if my personal satisfaction comes from rewarding days in the field rather than these dry statistics and their sad tale of the decline of our flora.

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SOCIETY FOR THE ORIGINAL BULRUSH AND REEDMACE (SOBAR)

I failed to 'get' the first botanical joke of Tim Rich (BSBI T-shirts, *BSBI News* 40: 21), until I realised that *Typha latifolia* was being translated as **Bulrush**. This prompted me to do a quick literature search to establish what had happened to **Reedmaces**. The results were:-

Source	<i>Typha (latifolia)</i>	<i>Schoenoplectus lacustris</i>
Clapham, Tutin & Warburg (2nd ed, 1962)	Reedmace (Bulrush)	Bulrush
McClintock & Fitter (6th ed, 1967)	False Bulrush (Greater Reedmace)	Bulrush
Fitter, Fitter & Blamey (3rd ed, 1978)	Bulrush (but Reedmace family)	Club-rush or Bulrush
Rose (1st ed, 1981)	Reedmace	Bulrush
Keble Martin (3rd ed, 1982)	Bulrush	Club-rush
Hayward (1st ed, 1987)	Bulrush (Reedmace)	Club-rush
Stace (1st ed, 1991)	Bulrush	Club-rush

Older Floras appeared to favour **Reedmace** and **Bulrush** respectively, and Rose states that **Reedmace** (i.e. *Typha*) is 'often wrongly called Bullrush (*sic*). I tend to agree with this view. McClintock & Fitter explain that the confusion arose when Alma-Tadema painted *Typha* instead of *Schoenoplectus* (or is it *Scirpus*?) surrounding the infant Moses. To complicate matters further, I believe that the Bible originally spoke of the plant being Papyrus (*Cyperus papyrus*), a sedge also called **Paper-Reed!** I hope that *Typha* will therefore be left out of the joke, and *Schoenoplectus* put in, so that SOBAR members can join in the fun.

P.S. On a slightly more serious note, why does Stace omit flowering periods?

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HYBRIDIZATION OF *OENOTHERA* L. subgenus *OENOTHERA* IN BRITAIN

[Despite its length, this paper is considered to be of sufficient interest and importance to British Field Botany to be included in *BSBI News*. It was, at one time, accepted for publication in *Watsonia* but circumstances have prevented its publication in that journal. Ed.]

ABSTRACT

This paper presents accounts of natural hybridization in *Oenothera* L. subgenus *Oenothera* based on observations between 1977 and 1990 of three species in two colonies (one of South Wales origin) at Emscote, Warwick; and of the discovery of hybrids between *O. biennis* L. and *O. cambri-ca* Rostanski in South Wales. Notes on the identification of hybrids are also given.

It describes aggressive introgression by *O. glazioviana* Micheli (*O. lamarckiana* De Vries, non Ser.; *O. erythrosepala* Borbás) and a corresponding rapid decline as a species of *O. biennis* and relates them to similar hybrid swarms in Britain.

It concludes that plants previously determined as *O. cambrica* var. *impunctata* Rostanski were in fact hybrids with *O. biennis*; that well demonstrated lack of persistence raises doubts whether the ovules or seeds of *O. biennis* are fully viable; and that this feature has contributed to the creation of uncharacteristic hybrid swarms.

It suggests the need for a new British taxonomy for *Oenothera*.

INTRODUCTION

With one or two possible exceptions, *Oenothera* L. is a New World genus of considerable size and complexity, and one which "has played a distinctive role in the areas of cytogenetics, cytotaxonomy and evolution" (Cleland 1972).

This paper describes examples of natural hybridization, and attempts to explore the reasons for the resulting evolution, among the three closely related phenotypes of subgenus *Oenothera* which have British recognition as species and which are relatively widespread if decreasingly common in the southern half of Britain: *O. biennis*, *O. cambrica* and *O. glazioviana*.

Rostanski (1982) provided an account of the genus in Britain and detailed descriptions of all six reciprocal hybrids and several triple-hybrids and backcrosses. Stace (1975) described extensive hybrid swarms between *O. biennis* and *O. glazioviana* on dunes in north-western England; apparently at that time no experimental work aimed at investigating such natural hybridization had been undertaken. Cleland (1972), in an excellent monograph (Stace 1975 p.16), gives a full historical account of the genetic peculiarities and describes the genus in North America with a chapter on the *Oenothera Flora of Europe*.

O. fallax Renner originated as a hybrid, being constant in its characters, but other plants of the same parentage but different mixture of characters are rightly determined *O. erythrosepala* x *O. biennis* (e.g. Notts., v.c. 56, Nottingham, October 1963, *McClintock* (BM), named thus by Rostanski in 1977). Because of this, and the extensive back-crossing in a hybrid swarm, any plants of the description of *O. fallax* have been treated as hybrids in this paper (see observation 11, below).

O. stricta Ledeb. ex Link from subgenus *Raimannia* (Rose) Munz. also occurs in Britain but no hybrids are known.

It has been established by many authorities (e.g. Cleland 1972) that the genetic behaviour of *Oenothera* is different from all other known genera and that hybrids have an added complication in that 'any new combination of chromosomes produces, in effect, a new "species". Each is then characterized by a particular complex of chromosomes transmitted only through the pollen and another transmitted only through the egg' (Raven 1968).

Due to the peculiar genetic behaviour, when hybrids are self-pollinated they breed true and each of the progeny, if it becomes isolated from other kinds of hybrids or species, has the potential to give rise to many similar individuals. Moreover, as plants are very fruitful, if conditions are right, a considerable population increase of a new 'species' can be achieved with comparative rapidity. Thus it is quite possible that *O. cambrica* originated as a single capsule brought in with ballast at one of the ports of what at the time was comparatively remote South Wales, where it found a series of ideal habitats.

However, in the vast majority of cases, as Cleland (1972) asserts, 'the individual true-breeding lines so characteristic of *Oenothera* are not worthy of being called species' (p. 316); and he continues (pp. 317-318) 'Only if it (the material) proves to be distinctly different from all known races or species, phenotypically and cytogenetically, suggesting an independent origin, is one justified in giving it specific rank'. According to North American opinion, therefore, the name *O. cambrica* represents a phenotype of the North American species *O. biennis*. Thus in Britain, there are two discrete phenotypes of *O. biennis*, one without and one with red pustulate hairs. This opinion is also held by some European authorities (Dietrich 1991) which led in 1984 to the re-classification as *O. biennis* by Dr. W. Dietrich, Dusseldorf, of all *O. cambrica* material in BM.

THE SPECIES

All three British Evening Primroses are well described by Rostanski (1982), Clapham (1987), Bowra (1988) and Stace (1991). This section gives historical details and describes characters most useful for the identification of hybrids. Characters shown in italics are diagnostic.

I. *O. biennis*, probably introduced from continental Europe in the 17th century, is widespread and said to be the second most common species of *Oenothera* in Britain.

Plant variable in size, strongly glandular with variable leaf stance and shape and *no hairs with red bulbous bases; stems mainly green; rhachis green-tipped*. Flowers small with green sepals; petals broader than long, usually less than 30mm; stigma-lobes spreading more or less among the

anthers, both variable in length. Capsules green and very glandular, usually less than 30mm; teeth c.1mm, broader than long.

2. *O. cambrica*, probably introduced from Canada into South Wales in the 18th century, was named as a new species by Rostanski (1977). It was previously misidentified, usually as *O. parviflora* L. It is most plentiful in South Wales and S.W. England but also well distributed in other parts of England, often in railway sidings.

Plant often small, *sparsely glandular, with distinctive narrow lanceolate flat spreading leaves* and many hairs with red bulbous bases; *stem strongly red punctulated; rhachis green-tipped, with sparse or no glandular hairs below*. Flowers small with green sepals; *petals* (measured to top of either lobe) usually less than 30mm, *longer than broad*; stigma-lobes often spreading much below the usually shorter anthers. *Capsules green except for hairs with red bulbous bases, usually exceeding 30mm, the lowest with none or very few glandular hairs; teeth c.2mm, narrower than broad*. Usually finishes flowering by early August.

3. *O. glazioviana*, the most common species of the subgenus in Britain, is said to have been introduced from North America in the mid-19th century as a garden flower.

Plant usually large and glandular, with broad elliptic leaves and many hairs with red bulbous bases; stem with some red punctulation; *rhachis usually red-tipped*. *Flowers large with long hypanthia (to 40mm); sepals red-striped* (but see note below) *with long tips (to 8mm); petals usually exceeding 40mm, often pilose on the bases without; stigma-lobes spreading well above the usually longer anthers*. *Capsules often striped red, glandular, usually less than 30mm; teeth c.1mm, broader than long*. (Note: sepals may be green at the end of the season when low light intensity prevents development of anthocyanin.)

There are other minor differences of limited value. Besides variations according to climate, environment etc., plants may bear flowers with parts as little as half their normal size, especially late in the season.

IDENTIFICATION OF HYBRIDS

It is rightly said that "our determinations of hybrids will sometimes be accurate, sometimes an underestimate, and sometimes an overestimate. The only certainty is that we can never be 100% sure" (Stace, BSBI Conference, Liverpool 1985).

This is certainly true for British subgenus *Oenothera* which can create hybrid complexes 'which defy precise identification' (Meikle 1975, p. 305); and in which the advantage of having to deal with only three parental species is offset by the fact that each reciprocal hybridization produces two kinds of fully fertile progeny. And as plants are biennial or occasionally annual, hybrid complexes can develop comparatively rapidly.

Notwithstanding, except for back-crossing, the identification of hybrids between two species usually presents no particular problems. But in populations with all three species, as most of the characters of *O. biennis* are similar to one or other of the other two species, there are difficulties.

However, the diagnostic characters of both *O. glazioviana* and *O. cambrica* are easy to recognise, and in practice, more than one usually appears in each hybrid of which they form a part. Thus, if all such characters of either species are absent, and particularly from a group of plants, it is a strong indication that the species is not there; which enables relevant shared characters to be attributed to *O. biennis*.

The descriptions of hybrids set out by Rostanski (1982) have, in my opinion, limited application due to the many variations between inherited complexes, and this is especially so in populations with all three species. However, two basic rules for determining male and female parents have emerged:

1. When *O. glazioviana* is the female parent, the progeny have the ability to produce anthocyanin which is manifested in reddened sepals, capsules and tips of rhachis;

2. When *O. cambrica* is the female parent in crosses between that species and *O. biennis*, the hybrid has stems strongly punctulated with red splotches while, conversely, when *O. biennis* is the female parent, the stems are mainly green like those of the 'true' species (pers. comm. Rostanski, 1981).

Although Raven (1968) says that dried specimens are often nearly impossible to determine, the position in Britain is probably easier because there are fewer species.

As always, good specimens are needed for good determinations; and because of fading, it is important to take colour notes from fresh specimens. Petal dimensions are also important, in practice difficult to measure and almost impossible if the flower is wet or drooping. Measurements are

best taken in the field and individual petals (more than one in case of variation) put into press at that time. Petal and capsule measurements reduce when dried.

OENOTHERA AT EMSCOTE

Far from coast and natural dunes, at the side of the River Avon at Emscote, Warwick (v.c. 38), are two extensive hybrid colonies. The larger is on a 4.7 hectare (11.6 acre) site of a dismantled power station. The other, on adjacent higher ground separated by a band of trees and scrub but connected by a railway siding, consists of a c.300 x 10m. strip of railway verge.

O. cambrica was introduced in the early 1950s when large quantities of sea sand from the Margam area of South Wales were used to extinguish a long-burning fire in a coal dump. The power station and siding were dismantled in the mid-1970s and much of the cleared area spread with a layer of ash and clinker. The sand 'dune' was discovered in the early 1960s when botanists travelling from London to Birmingham by train noticed Marram Grass. Included in a list of 15 dune species is *Oenothera* sp. (aff. *O. biennis* L.) (Clark 1964).

In 1977, there was 'a fine mixture of *Oenothera* spp., possibly three species and hybrids, but up by the line on the sand, more or less isolated, the plants appeared to be all of one kind with smallish flowers, green sepals, and stems with many red bulbous-based hairs' (Bowra 1977).

Five specimens reached Professor (then Dr) K. Rostanski of the Silesian University at Katowice, Poland, an authority on the typical subgenus of *Oenothera* who, by coincidence, came to Britain in 1977 and visited the area of South Wales whence the Emscote sand originated.

He identified the specimen from the sand as his newly-named *O. cambrica* and those from the main area as one each of *O. biennis* and *O. erythrosepala* (*O. glazioviana*), and two uncertain hybrids.

A census of all 2421 plants in 1979 and 3687 in 1980 produced the results shown in Table 1 (see map for distribution). All plants were scrutinised and most with apparent conflicting characters examined in detail.

About 30 specimens each year were sent with tables of colour notes, measurements etc., to Rostanski with good agreement. Inevitably, 1980 results were more reliable than 1979; and detailed examination of all plants would have produced more hybrids.

Nonetheless, the numbers for plants with red-striped sepals, mainly from a compact central area (199 (16%) in 1979; 271 (12%) in 1980), were in both years a reliable indicator of the numbers of *O. glazioviana* and its female hybrids. Similarly, the many plants listed as *O. biennis* (847 (67%) in 1979; 1665 (73%) in 1980) had mainly green stems, suitable leaf arrangements, no hairs with red bulbous bases, and small flowers.

As the map shows, *O. biennis* was spread widely over the main area while most *O. glazioviana* were central. *O. cambrica* had crept down the siding to the corner nearest the railway with occasional species and hybrids beyond.

O. glazioviana was absent from the railway area and, due to difficulties in recognising *O. biennis* in hybrids, both years' figures are unreliable. Out of c.1300 plants, most (c.800 in 1979; c.950 in 1980) grew at the far north-western end of the site in an isolated tightly packed group of seemingly identical plants on c.15 x 17m. of disturbed sand at the side of the embankment. In 1981 the plot had grown over and there were no plants at all until 1989 when it was redisturbed and 43 plants were seen in 1990 (of which one had also flowered the year before). They were determined as: *O. cambrica* 6 (14%)

O. cambrica x *O. biennis* 23 (53%)

O. biennis x *O. cambrica* 14 (33%)

O. biennis was the major parent of two hybrids (5%) and *O. cambrica* of 14 (52%).

There were no rosettes.

SURVEY AT EMSCOTE IN 1988

Table 2 shows the results of the 1988 survey. Hybrids between two species are named in accordance with the usual rules but in most cases, as with hybrids between three species (triple-hybrids), back-crossing will usually have occurred (see also observation 3, below). The predominant species in each hybrid (major parent), if apparent, is named.

Table 3 shows the results for each significant character. Items 1-4 show the few *O. biennis* characters which are not common to either of the other two species. Items 4a-4i show shared characters which were of use in the railway area where *O. glazioviana* was absent.

1. The main area

After seven years of mainly damp summers, some motor cycle activity and gradual consolidation, conditions on most of the site remained relatively unchanged.

A total of 4297 plants were counted and despite outward appearances it soon became apparent that hybridization affected virtually all individuals.

253 plants from three well separated groups (Map T-U, V & W), plus 15 casuals in attempts to find 'pure' species, were selected for detailed observations through the summer of up to 27 characters (table 2A).

Only three plants (one casual) fitted the description of *O. biennis* and only four (two casuals) were 'pure' *O. glazioviana*. Including these plants: *O. biennis* occurred in 250 (93%) (compared to 83% in 1980) being major parent of 24 (10%) of which 18 (six casuals) grew on the fringes of the site, more or less segregated from the main hybridizing population; *O. cambrica* occurred in 130 (49%) (14% in 1980) being major parent of 7 (5%); and *O. glazioviana* occurred in 229 (85%) (13% in 1980) being major parent of 97 (42%).

Fifty of the selected plants (Map V) came from the 1979/80 ash- and clinker-spread central patch 'G' which had the greatest concentration of *O. biennis*, virtually unchanged in 1988 with little intrusive vegetation and no motor cycle tracks or other excavations. A further group of 651 plants from this patch (map Z: table 2, note (c)) were field scrutinized to detect presence of *O. glazioviana*: only 50 of the 701 plants lacked red colour in either sepals, capsules or tips of rhachis. A significant part of the adjacent *O. glazioviana* concentration had become overgrown between 1980 and 1988. Thus the spread of *O. glazioviana* was achieved from a relatively small number of plants.

2. The railway area

Besides the loss of the tightly packed group at the NW end, the sand surface generally had become more overgrown than the ash and clinker of the main area; the siding had closed up entirely, thus increasing isolation.

A total of 812 plants were counted which in general had the appearance of *O. cambrica*.

52 plants from two groups (map X & Y: table 2B) were examined in detail: eleven (21%) were considered 'pure' *O. cambrica* which was also major parent of 36 (80%) of its 41 hybrids with *O. biennis* which was major parent of one. (See also 1990 survey results above).

OBSERVATIONS

1. Leaves

Leaf characters tended to be inherited as a group and gave a false impression of the numbers of 'pure' species. Only 3% of examined plants had mixed leaf characters.

O. biennis plants in 1979/80 were of three types. As noted at the time, some were very tall (to 150cm.), branched above and below, with large twisted but not very upswept leaves. The great majority had a single stem and a narrow outline with very upswept and twisted leaves (a character used to identify many hybrids in 1988). In the railway area (table 3:4), *O. biennis* leaves in hybrids were not markedly upswept and twisted but resembled those in South Wales (see below).

The characteristic flat, spread, narrow lanceolate leaves of *O. cambrica* were seen and easily recognised in many hybrids.

Many plants suffered considerable leaf crumpling diagnosed by the Institute of Horticultural Research at Wellesbourne as aphid infestation (but see below comments on South Wales plants).

2. Indumentum

Like its near relative *Epilobium* (Stace 1975), the quantity and quality of the indumentum are important in *Oenothera* and deserve more attention by some botanists. The preponderance of *O. cambrica* hybrids near the railway is clearly indicated by the lack of glandular hairs (Table 3:6-7 and 13-14).

3. Redness of *O. glazioviana*

The redness of tip of rhachis, sepals and capsules (as distinct from red punctulation) varied in presence and intensity. The three parts can function independently and variable colour appeared, disappeared and reappeared during the season with sideshoots sometimes differing from main stems.

As variations occurred throughout the season and in all kinds of locations, it seems evident that hybridization as well as low light intensity inhibits the production of anthocyanin.

See Table 3:18-20: all such plants have been included as female hybrids of *O. glazioviana*.

4. Flowering season

The flowering season of *O. cambrica* and its hybrids finished earlier than that of the other two species.

By early August, 24 (33%) of plants near the railway had already finished flowering and, of 48 plants with flowers in mid-August, only two produced September flowers for re-sampling. Four flowerless plants were examined: all were hybrids.

In comparison, only ten of 268 main area plants were flowerless and at least 113 (44%) produced late August or September flowers.

5. Hypanthium

Rostanski (1982) illustrated the transitional part between ovary and base of hypanthium. The small differences were found to be variable: 13 out of 15 apparently 'pure' *O. glazioviana* examined in 1988/9 from Warwickshire and Devon had hypanthia with swollen or slightly swollen bases as illustrated for *O. biennis*. The character was more useful in *O. cambrica* but should be observed within narrow time limits: as flowers go over, hypanthia shrink prior to separation and can give false impressions.

6. Sepal tips

Except for *O. glazioviana*, sepal tips were too variable to be of use.

7. Petals

Narrow petals were not confined to small-flowered hybrids. Length exceeded width in 37 (42%) plants with petals 40mm or more of which 20 also had wider than long petals at other times; there were occasional variations in the same flower. Moreover, this character occurred in 18 plants with no other reliable indication of *O. cambrica*. Table 3:9-10 for the main area may not, therefore, be a reliable indicator of this species' involvement.

8. Stigma-lobes/anthers

The position of stigma-lobes in relation to anthers was a useful character. Results for the railway area (Table 3:11) support my experience elsewhere that the exerted portion of the style of *O. cambrica* is often shorter, sometimes much shorter, than the filaments; and that stigma lobes are often longer than the anthers and tend to be less spread (table 3:12).

Anthers of *O. glazioviana* often much exceeded the spreading stigma lobes. Those of *O. biennis* were variable.

In hybrids the features were often very variable, e.g. plant W52, (close to *O. fallax*), from which three flowers were taken on 25 August 1988: the exerted portion of the style equalled the filaments, exceeded them moderately, and much exceeded them.

9. Pollination

Many pollen beetles, *Meligethes aeneus*, were seen in flowers.

10. Capsules

Predictably, most examined plants with long capsules were in the railway area, where 45(94%) exceeded 30mm of which 21 (44%) exceeded 35mm. (Table 3:15).

Often associated were the narrow teeth of *O. cambrica* which in immature capsules were often indicated by abruptly narrowed c.3mm capsule ends with tips bent inwards forming very small apertures. This, and shrivelling in mature or dried specimens, made both length and shape of teeth often difficult to assess. Teeth shape was not generally useful.

11. *O. fallax*

Of 123 hybrids with red-striped sepals determined as *O. glazioviana* x *O. biennis* (Table 2A(a)), only six (5%) fit the description of *O. fallax* with a further nine (7%) very close.

Of the remaining 108, 93 (86%) had stems without red punctulation, 85 (79%) had no or sparse hairs with red bulbous bases, 71 (66%) had petals exceeding 35mm, and 62 (57%) had stigma-lobes spreading well above anthers. None of these characters fits *O. fallax*.

O. BIENNIS IN SOUTH WALES

1. Introduction

O. biennis was recorded from the Swansea area for the *Atlas of the British Flora* but more recently the species 'appears to be rare in Wales and is known to occur only in the north' (Rostanski & Ellis 1979).

However, from the Swansea area in the 1970s, there were two records for *O. fallax*, and three for *O. cambrica* var. *impunctata*, a form from which red punctulation and the redness of bulbous-based hairs is absent (Rostanski 1982).

2. Survey in 1989

Because four specimens with possible *O. biennis* characters were collected in early July from Oxwich and Port Eynon in Gower, these and two other areas of dunes at Crymlyn Burrows and Kenfig Burrows were visited on 22-24 August 1989.

3. Oxwich and Port Eynon

Characters of *O. glazioviana* were much in evidence and both dunes had large expanses of yellow, visible from a distance and reflecting the long and intensive flowering season of this

species. Plants having the appearance of *O. cambrica* were also widespread but mostly no longer flowering.

Details of 25 specimens, mainly small-flowered and therefore not representative, are on Tables 4 and 5. Of the 25, 16 have no or sparse hairs with red bulbous bases (Table 5:1-2). This is a character of *O. cambrica* var. *impunctata* but, as shown at Emscote, it is also an important character of *O. biennis* hybrids.

4. Crymlyn Burrows

South of Jersey Marine just inside the entrance to the dunes were c.50 tall *O. biennis*-type plants mostly with elliptic leaves. Beyond were scattered small groups of *O. cambrica*-type plants. The only traces of *O. glazioviana* were the red-striped sepals of an isolated group of six very small-flowered plants.

Table 5:4a-i shows the *O. biennis* characters of 14 specimens: all were hybrids with *O. cambrica*; one was very close to 'pure' *O. biennis* which was the major parent of one other; *O. cambrica* was the major parent of two.

5. Kenfig Burrows (near Margam whence the Emscote sand originated).

In the time available only part of the extensive dunes were visited. There were no distant signs of any large colony of *O. glazioviana* but one isolated very small-flowered plant had red-striped sepals. Plants were generally sparse on the consolidated dunes and few were flowering. Most had the appearance of *O. cambrica* but, as the Tables show, *O. biennis* is present in all specimens and regarded as major parent of three (33%). Thus, despite appearances, *O. cambrica* achieves minimal predominance in what is regarded as its own territory.

6. Leaves

The leaves of *O. biennis* hybrids were nowhere markedly twisted and upswept as in the main area at Emscote.

7. Deformed plants

On all dunes, but mostly at Oxwich and Port Eynon, many plants had badly deformed rhachis, bent over halfway, some with new growth from the apex. This, and leaf-crumpling at Warwick, may indicate that *Oenothera* like *Epilobium* can be subject to chromosomal-cytoplasmic incompatibility (Stace 1975).

8. Containment of *O. glazioviana*

It is evident that minor colonizations of *O. glazioviana* at Crymlyn and Kenfig Burrows have been contained by the resident population which was close enough and/or in sufficient numbers to overwhelm them; and that the remaining traces of the species no longer have aggressive power.

This decline is now irreversible: only re-colonization, from outside or by dormant seeds, either in more strength or into areas with fewer resident plants, or both, can produce similar situations to Oxwich or Port Eynon.

CONCLUSIONS

1. Confirmation of South Wales determinations

Ten specimens were sent to Rostanski who confirmed the identity of eight which included at least one *O. biennis* hybrid from each site (pers. comm. March 1990).

But while he agreed that *O. biennis* characters are present and cited examples from Poland, Germany and France where various species including *O. biennis* and *O. glazioviana* have been hybridized out of existence, he raised the possibility that in South Wales such characters may have been produced by the involvement of *O. glazioviana* whose genetic make-up is very similar to *O. biennis*: 'The *rubens* (complex) of *biennis* and the *gaudens* of *lamarckiana* (*glazioviana*) are very similar, even having the same zygotic lethal. In such cases the two essentially identical complexes have identical segmental arrangements and give identical configurations in combination with a third complex' (Renner as quoted by Cleland 1972:p.232-233).

Probably because of the genetic complications, there seems to be reluctance in accepting the presence of *O. biennis* hybrids in the absence of the 'pure' species; but Emscote has demonstrated how rapidly they can disappear. Thus, as in for example, *Salix*, any recognisable progenitor is surely most likely to be one of the hybrid parents. The South Wales specimens, in general, are very similar to those from elsewhere in Britain: it is also quite feasible that 'pure' *O. biennis* once grew nearby. I remain confident, therefore, that plants previously determined as *O. cambrica* var. *impunctata* were in fact hybrids with *O. biennis*.

2. Emscote - railway area

The dominant species is *O. cambrica* and there has been no colonization by *O. glazioviana*. As evidenced by their leaves, hybrids with *O. biennis* derive from South Wales and not Emscote, and, as in South Wales, no 'pure' species has been found.

As evidenced by the 1989/90 plants from dormant seed, the colony is relatively stable, thus indicating stability in similar colonies in South Wales.

The transplanted South Wales colony provides a good example of the differences between the two species: *O. cambrica* is the more persistent, its 'pure' species remain, and, mainly because of its leaves and stance, it remains apparent; *O. biennis* is the less persistent, its 'pure' species disappear, and it becomes hidden.

3. Emscote - main area

In eight years, on a site with little obvious ecological change, the colony evolved out of all recognition from one consisting mainly of species into a hybrid swarm with 'pure' species virtually eliminated. Moreover, while there were group similarities, with rare exceptions, all examined plants were more or less different from their neighbours.

The large increase in female hybrids of *O. glazioviana* can be attributed to its generally out-crossing habit, but the behaviour of *O. biennis* is remarkable. Such small-flowered species with stigmas and anthers at the same relative level are usually self-pollinated as evidenced by years of observation in the field as well as in experimental cultivation. Often much pollination has already occurred by the time buds open but some out-crossing still occurs. Authorities stress, however, that it is occasional, even abnormal (e.g. Cleland p.229).

Notwithstanding, the fact remains (tables 1 & 2) that large numbers of 'pure' *O. biennis* have disappeared into a hybrid swarm of many potential new true-breeding lines of which very few originated through its ovules (a fact which may explain why so few hybrids had *O. glazioviana* as male parent). (In West Germany in 1980, there were large populations of *O. fallax*, mainly without the parents (pers. comm. Rostanski, March 1990). There, too, female hybrids of *O. biennis* had mostly failed). *O. biennis* pollen was much more successful with the ovules of other species and must therefore have been viable; seeds have always appeared normal, and in 1979/80, many germinated to produce 'pure' presumably mostly self-pollinated progeny; both Emscote colonies are bearing increasing resemblance to those in South Wales, which is some indication, at least, that ecology is not involved; which all goes to suggest that the ovules or seeds of *O. biennis* are not fully viable and, perhaps, spasmodically so.

Cleland (p.230), referring to the subgenus in North America (which includes the indigenous range of *O. cambrica*), says that 'there is little doubt that the enormous number of isolated lines in nature is to a considerable extent the result of occasional or rare outcrossing between pre-existing lines'. Nowhere in his monograph, however, does he mention hybrid swarms as such; yet they occur in Europe and certainly in Britain.

In fact, colonies at Emscote, Oxwich, Port Eynon, Braunton Burrows, NW England, and various places in Europe, are all, in effect, acting in accordance with the footnote on page 1064 of Gray's Manual of Botany, 8th edition (1950) which described subgenus *Oenothera* as 'a hopelessly confused and freely hybridizing group'. This footnote is cited by Cleland (p.228) as an instance of confusion among taxonomists and he goes on to stress, again, that the genus is mostly self-pollinating and rarely hybridizes.

This is a considerable difference of opinion: but the substance of the footnote is often too close to reality to be dismissed as confusion. More likely it indicates that the European scene is different from the North American, yet it is very unlikely that Cleland, after two summers and a winter in Europe, was not aware, for example, of the introgressing ability of out-crossing European *O. glazioviana* which is absent from the wild in America (p.225).

Less apparent are the differences between *O. biennis* and *O. cambrica* (the presumed North American *O. biennis*): the latter retains its identity and, in the absence of *O. glazioviana*, behaves more or less according to Cleland's descriptions; the former can become rapidly hybridized out and submerged without obvious trace.

The cause of the untypical behaviour appears most likely to lie in the ovules or seeds, but, as Rostanski says, our taxonomic conclusions are not always right; all assumptions about hybrids in *Oenothera* should be confirmed by artificial crosses (pers. comm. November 1990).

4. General

Emscote is not unique: its two patterns are repeated from Silloth in Cumbria probably to Jersey (Le Sueur 1984): there is a general and continuing decline of *O. biennis* and, to a lesser extent, *O. cambrica* and *O. glazioviana* into an anonymity of back-crossing hybrids, most if not all unique phenotypes, each a potential new European species, differing one from another 'often in rather minor details of structure or behaviour' (Cleland p.229). If isolated they breed true (i.e. unlike *Epilobium* they do not exhibit plasticity in the taxonomic characters): for example, a colony near Solihull of about 50 plants of a form of *O. cambrica* x *O. biennis*. All specimens since 1985 have

been 'about as invariant as it is possible for strains to be' (Cleland p.228); the similar quality and quantity of indumentum is striking. Rostanski (1982) seems to agree: European species have a 'constant phenotype' - which should surely preclude varieties such as *impunctata*.

Accordingly, on the evidence of the leaves, there seems little doubt that at least three different phenotypes resembling *O. biennis* are represented at Emscote. *O. fallax*, too, is questionable: whereas *O. cambrica* can derive from one phenotype, the former 'appears spontaneously' from hybrid parents (Rostanski 1982) and will presumably, like hybrids of subgenus *Oenothera* in America, consist of 'an almost endless array of phenotypic variations' which 'often grade into one another so gradually. . . that it is difficult or impossible to find clear-cut lines of separation, and so to be able to distinguish one taxon from another' (Cleland p.227).

Classification of *Oenothera* concerns both geneticists and taxonomists. Opinions are divided: in Britain we follow that of Rostanski ('the concept of Linnaeus' (Rostanski, 1982)) who, by his visit in 1977, his British publications and help with specimens, has done much to assist our understanding of a unique genus. But given the premise that, to be determined as a species of the subgenus, a plant must conform strictly to the phenotype (type-specimen) (and if not, where to draw the line?), there are apparent anomalies and inconsistencies which increase as the population becomes more intermingled. Regretfully, therefore, it now seems to me that in Britain more botanical accuracy would be achieved by:

a. stressing in our Floras the clonalish invariability of subgenus *Oenothera*;

b. adopting the American taxonomy which recognises relatively few species each 'comprised of a few to numerous true-breeding phenotypes that share common genetic and certain related phenotypic characteristics' (Deitrich, 1991).

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Table 1

Emscote surveys: 1979 and 1980

Taxon	Main area		Railway area	
	1979	1980	1979	1980
<i>O. biennis</i>	847	1665	10+	0
<i>O. cambrica</i>	131	134	1150*	1103*
<i>O. glazioviana</i>	142	205	0	0
<i>O. biennis</i> x <i>O. cambrica</i>	25	65	1	0
<i>O. biennis</i> x <i>O. glazioviana</i>	50	11	0	0
<i>O. cambrica</i> x <i>O. biennis</i>	2	68	3	300*
<i>O. cambrica</i> x <i>O. glazioviana</i>	1	5	0	0
<i>O. glazioviana</i> x <i>O. biennis</i>	46	38	0	0
<i>O. glazioviana</i> x <i>O. cambrica</i>	7	16	0	0
Triple hybrids	6	18	0	0
Immature vandalized hybrids	0	59	0	0
Totals	1257	2284	1164*	1403*

* estimated

+ from lower end of siding near main area

Notes: (a) plants identified by field scrutiny and test checking: hybrids are likely to be underestimated (see text).
 (b) See map for 1979 distribution.

Table 2
Emscote Survey: 1988

A. **Main area:** 4297 plants.

Plants examined: 268, mainly from three well-separated vicinities, one consisting of a c.28m. strip at the side of a track (map T-U), and two compact groups (map V & W). Each produced significantly different character patterns.

Taxon:	b.	c.	g.	b.x c.	b.x g.	c.x b.	c.x g.	g.x b.	g.x c.	triple	totals
Major parent: <i>O. biennis</i>	3			4	3	9		4		1	24
<i>O. cambrica</i>				1		2				4	7
<i>O. glazioviana</i>			4					50	9	34	97
uncertain				6	5	14		69	5	41	140
Totals	3	0	4	11	8	25	0	123	14	80	268

B. **Railway area:** 812 plants.

Plants examined: 52, in two compact groups (map X & Y), one at each end of a c.150m. strip of railway verge.

Major parent: <i>O. biennis</i>				1							1
<i>O. cambica</i>		11		10		26					47
uncertain				1		3					4
Totals	0	11	0	12	0	29	0	0	0	0	52

Notes:

- (a) hybrids from the main area involving *O. biennis* are likely to be understated;
- (b) indeterminate back-crossing has occurred; and
- (c) **Field scrutiny:** 651 plants in a large group in the centre of the main area (map Z) were scrutinised: 601 (92%) were found to have red colour of *O. glazioviana* in either sepals, capsules or tip of rhachis.

Table 3

Emscote 1988 Survey: Significant Characters

Results of Survey	Main area 268 plants (10 no fls.: 7 no caps.)	Rly. area 52 plants (4 no fls.: 4 no caps.)
<i>O. biennis</i> characters		
1. Hairs with red bulbous bases: none (1979-67%:1980-73%)	40(15%)	1(2%)
2. very sparse	123(46%)	19(37%)
3. Red punctulation on stem: none or very sparse	146(54%)	6(12%)
4. Very upswept and twisted leaves:	91(34%)	0
4a Many glandular hairs on lower rhachis		3(6%)
4b Wide elliptic leaves		5(10%)
4c Petals wider than long		8(17%)
4d Stigma lobes: spread more or less among anthers		6(12%)
4e shorter in length than anthers		2(4%)
4f Glandular hairs on lower capsules: many		3(6%)
4g sparse		30(62%)
4h Capsule length 0-30mm		3(6%)
4i Capsule teeth wider than long, c.1mm		14(29%)
<i>O. cambrica</i> characters		
5. Marked red punctulation on stem	11(4%)	16(31%)
6. Glandular hairs on lower rhachis: none	14(5%)	:44(84%)
7. sparse	52(19%)	4(8%)
8. Lanceolate leaves, flat and spread	36(13%)	33(63%)
*9. Petal length: equal to or exceeds width	37(14%)	28(58%)
10. mixed	39(15%)	: 8(17%)
11. Visible portion of style shorter than filaments	41(16%)	42(87%)
12. Stigma lobes longer than anthers	26(10%)	29(60%)
13. Glandular hairs on lower capsules: none	5(2%)	17(35%)
14. sparse	20(8%)	30(62%)
15. Capsule length 31mm or more	49(19%)	45(94%)
16. Capsule teeth: longer than wide, c.2mm	47(18%)	17(35%)
17. mixed, some wider than long	29(11%)	17(35%)
*see Comments, item 11		
<i>O. glazioviana</i> characters		
18. Sepals: red-striped	134(52%)	
19. pale red-striped	46(18%)	
20. green with some reddened capsules or tips of rhachis, or variable	23(9%)	
21. Hypanthium: 36-40mm	52(20%)	
22. exceeding 40mm	114(44%)	
23. Sepal tips exceeding 5mm	32(12%)	
24. Petal length: 30-39mm	97(38%)	
25. 40-49mm	72(28%)	
26. 50mm or more	17(7%)	
27. Stigma lobes spreading well above anthers	101(39%)	
28. Hairs on petal bases without: many	73(28%)	
29. sparse:	82(32%)	
Scrutinized plants		
30. Red in either sepals, capsules or tips of rhachis	601(92%)	
31. No such redness	50(8%)	

Table 4
South Wales surveys: 1989

	*Oxwich Burrows				*Port Eynon Dunes				Crymlyn Burrows				Kenfig Burrows							
	Major parent				Major Parent				Major Parent				Major Parent							
	b.	c.	g.	?	b.	c.	g.	?	b.	c.	g.	?	b.	c.	g.	?				
b.	0				0				0				0							
c.	1	1			0				0				0							
b.x.c.	0				2			2	5	2		3	5	2		3				
c.x.b.	10	2		8	5			5	9	2		7	3	1		2				
c.x.g.	0				0				0				0							
g.x.c.	3	1	1	1	0				1			1	1			1				
triple	2	1		1	1		1		0				0							
?	0				1			1	0				0							
Totals	16	0	5	1	10	9	0	0	1	8	15	2	2	0	11	9	3	0	0	6

* hybrids involving *O. biennis* are likely to be understated.
Note: indeterminate back-crossing has occurred.

Emscote Road

Emscote, Warwick. Power Station Survey of *Oenothera*.

Grand Union Canal

River Avon

Former Siding

Main Railway Line

Levelled Ashes




Levelled Ashes

100 metres

1988 Survey:

T-U	143 plants examined
V	55 plants examined
W	55 plants examined
X	21 plants examined
Y	31 plants examined
Z	15 miscellaneous
	<u>320</u>
Z	651 field scrutiny

1979 Survey:

	<i>Oenothera biennis</i> = B
	<i>Oe. erythrosepala</i> = E
	<i>Oe. cambrica</i> = C
B x E	<i>Oe. biennis</i> x <i>Oe. erythrosepala</i>
E x C	<i>Oe. erythrosepala</i> x <i>Oe. cambrica</i>
F	<i>Oe. x fallax</i>



Map
Recorders and Recording

1991, THE YEAR OF SURPRISES - AGAIN

I was interested in the article '1991, The Year of Surprises' in *BSBI News* 59, referring to the abundance of flowers in 1989 and 1990. I had noticed this myself in 1991. All three years followed a long hot summer. It made little difference if the plants were trees, shrubs or herbs, annuals or perennials, cultivated or wild, they all seemed to react in the same way - by producing a profusion of flowers.

From my understanding of the way plants behave, in a hot summer everything has a chance to ripen, branches, the following year's flower buds, *Iris* rhizomes, etc. Could this be caused by an abundance of sugar flowing in the sap? This may need warmth to make it flow continuously, rather than our normal summers of alternating hot and cold, dry and wet spells, when it is stop - start, stop - start for several months.

It will be interesting to see what sort of flowering we have in 1992 after last year's hot summer, although this was not as long lasting as in previous years. With most plants setting abundant seed, seed eating birds and mammals have more food, so a greater number of young survive and more seed will be distributed in droppings, attached to fur or feather, etc.

Will 1992 follow the pattern of the previous years, or will the plants behave differently?

PEGGIE PITTKEN, Nafford Lodge, ECKINGTON, Pershore, Worcs WR10 3DJ

SCARCE PLANTS PROJECT

THE FINAL COUNTDOWN

As the year's botanical activity begins to wind down, many of you will be beginning to write up your summer records. Hopefully we are already seeing the fruits of your labours as large envelopes full of records for Scarce Plants find their way to BRC.

As the project is drawing towards a close, this issue seems a good opportunity to let you know how the project has progressed at BRC. The first phase of inputting was of the records already held at BRC, a task which took over a year to complete. At the end of this phase the database held approximately 80,000 records. This data allows us to produce the draft maps for each species, such as those that have appeared in the series '*Focus on Scarce Plants*'. As you will have seen, these maps often reveal a severe lack of recent records. This is now being rectified as the records that have come in over the past year from the vice-county recorders have become the priority for inputting. These are being processed at a rate of over 1000 a week. Often these are of very recent records, dated 1990, 1991 or even 1992, which should put a lot more black dots on future maps produced.

This does not allow room for complacency. The coverage we have for particular species or parts of the country can be very variable, and we are aware of many gaps in the data. The field work undertaken by those members who have adopted a particular species will fill many of these gaps, as well as increasing our knowledge of the ecology of the species.

The Scarce Plants Project as it is at the moment finishes at the end of October. By that time a report and provisional maps have to be produced. It is therefore important that any records you have from the summer's fieldwork are sent in **NOW**, i.e. by the end of September, if they are to contribute to this. This is a very tight deadline, but so much work has been done already that it is worth keeping up the momentum to finish the job properly.

This will not be the last that is heard of Scarce Plants. A follow-up JNCC Contract will see the project through to publication of an *Atlas of Scarce Plants*. For this to be an authoritative reference for the future, it needs to be based upon as much data as it is possible to gather.

So please, send in all your records. Now - not tomorrow or next week or soon, but **NOW!**

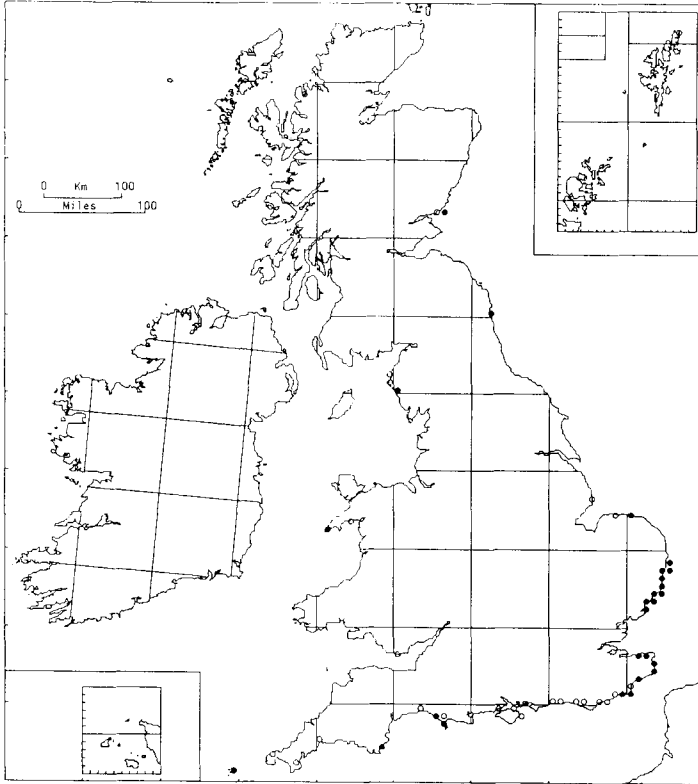
ALISON STEWART, BRC, ITE Monks Wood, Abbots Ripton, HUNTINGDON, Cambs PE1 7LS.
Telephone: (04873) 381

DAVID PEARMAN, The Old Rectory, Frome St Quinton, DORCHESTER, Dorset DT2 0HF.
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FOCUS ON SCARCE PLANTS

Three species are considered in this issue. The data already available on computer file are used for each of the maps, and these are therefore not definitive.

Lathyrus japonicus (Sea Pea)



Lathyrus japonicus is a primary colonist of shingle beaches, and can occur less frequently on fore-dunes and dune-covered shingle ridges. Associated species can include *Festuca rubra*, *Senecio vulgaris* and *Sonchus oleraceus*. In dune conditions *Lathyrus japonicus* is susceptible to invasion by *Elytrigia juncea* and/or *Ammophila arenaria*, and flowering is often reduced. Viable seed is dispersed by sea. Plants root deeply in shingle; after violent storms isolated plants can originate from short lengths of old rhizome.

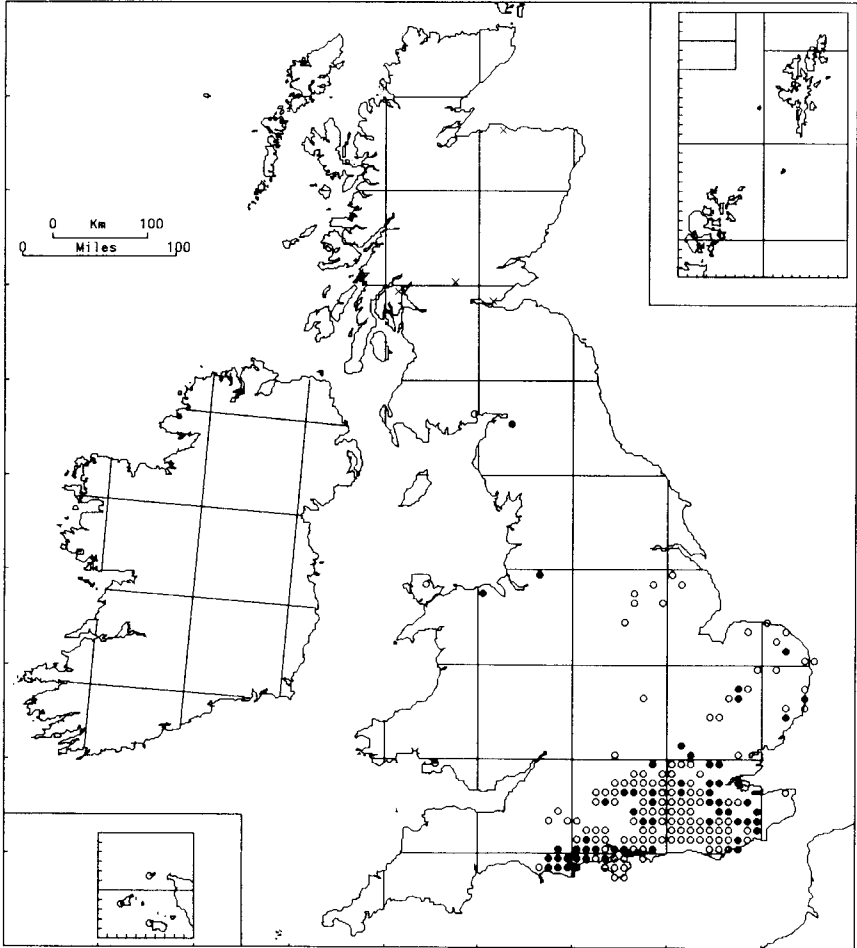
A circumpolar seashore plant, *Lathyrus japonicus* is found in NW Europe, temperate Asia, Pacific N. America and the Great Lakes.

This account is based on Brightmore and White (1963).

Reference

Brightmore, D. and White, P.H.F. (1963) *Lathyrus japonicus* Willd. *Biological Flora of the British Isles* no. 207. *Journal of Ecology* **51**: 795-801.

Ulex minor (Dwarf Gorse)



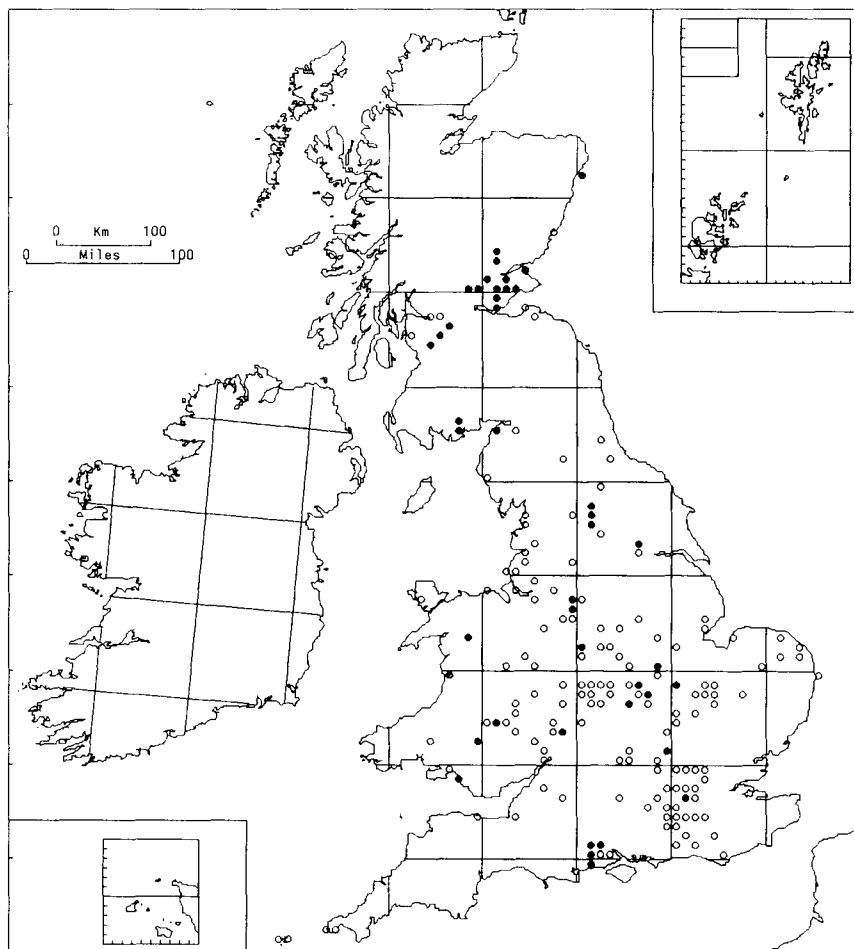
Ulex minor is a major constituent of lowland heath communities on impoverished acid soils which are predominantly free-draining in south-east and central south England. Associate species in such communities are *Calluna vulgaris*, *Erica cinerea*, *E. tetralix*, *Agrostis curtisii*, *Molinia caerulea* and *Deschampsia flexuosa*. Plants are relatively shade tolerant, but rarely flower in dense shade.

Ulex minor is a geographically restricted species, occurring in western France, western Spain and Portugal.

This account is extracted from Rodwell (1991).

Reference

Rodwell J.S. (ed) (1991) *British Plant Communities Vol 2, Mires and Heaths*. Cambridge.

Limosella aquatica (Mudwort)

During periods of low water levels, *Limosella aquatica* can become abundant on mud at the margins of any water body; lakes, ponds and ditches to cart ruts. Dense mats are often formed. Associated species can include *Callitriche hamulata*, *Eleocharis* spp., *Polygonum* spp., *Apium inundatum*, *Juncus bufonius* and other species of bare mud.

An annual plant, the seeds can remain dormant for considerable periods. The plant sometimes perennates by stolons.

The species has been long extinct at many of its former sites in the south of Britain, but there is currently an increase in records from Scotland.

Occurs throughout much of Europe though often rare and local, except for the Mediterranean. Also throughout Asia and North America.

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NOTES AND ARTICLES

SLIPPER ORCHID: A VICIOUS ATTACK?

For those lucky enough to be on Council the encouraging item in *BSBI News* 60, April 1992, page 45) was dramatically amplified. The onslaught by voles became a 'vicious attack' taking place when the warden was 'called away to surrounding bushes'. The time has come for COY (Committee for Orch-Yawns) to come clean - yes, specially trained voles have been stationed at key sites on the Cotswolds, the Chilterns, in North Hants and on Kent Trust Reserves to eliminate once and for all these farcically pampered relics. They only await nature's call.

Whilst on the subject the recent European conference of RAM (Rodents against Monycots) was greatly cheered by a paper from Dr H. Presto from Monks Wood, which reduced the entire European *Ophrys* charade to a single species and promised the same treatment for Dactylorchids in 1993. A large bonfire was lit with the recent Watsonian papers on the subject and all future resources were dedicated to a true understanding of the *Medicago* group.

Finally your chairman visited E. Turkey this May. Apart from the obvious leguminous highlights, the outstanding memory is of many helpings of Orchid ice-cream in Maras. Apparently in excess of 60 million orchids a year are disposed of in this way; all species are of use, except, for perhaps obvious reasons, the Dactylorchid group. In winter they turn to orchids in hot milk. One man's meat. . . But even I, as a non-orchyawn, am aghast! Where do they find them all?



DAVID PEARMAN, The Old Rectory, Frome St Quinton, DORCHESTER, Dorset DT2 0HF

A FAVOURITE ENGLISH DRINK

James Townsend Mackay (1775-1862) a native of Scotland, who wrote *Flora Hibernica* in 1836, provides the following information on *Borago officinalis* L. - It forms an ingredient with wine, water, lemon and sugar in a favourite English drink called a *cool tankard*. Richard Mabey in *Food for Free* (1975) refers to the borage as helpful as a 'hangover cure' and as a pleasant summer drink [especially in a glass of Pimm's. Ed.].

MAURA J.P. SCANNELL, Dublin 4

BOTANICAL PUBS REVISITED

In contrast to the botanical pubs from earlier centuries reported recently in *BSBI News*, a modern pub in Sussex which can be visited today for its botanical interest, is the White Hart Hotel at Rottingdean. This is now significant for the ground-cover of *Limonium* spp., *Frankenia* sp., and *Armeria maritima* which has spread from the hotel garden to the cliff-top and along a length of cliff extending into 3 tetrads - from Brighton Marina to Telscombe Cliffs, and down the chalk cliff-face in some places also.

Soon after the *Conservation of Wild Creatures and Wild Plants Act* (1975) was through Parliament, there was a request in *BSBI News* for specimens of *Limonium binervosum*. At that time we had named the *Limonium* on the cliffs as this, but I had only seen it in skeleton form from the undercliff walk in winter months. So, taking long-handled pruners, in case out of reach, we went on a summer evening to collect a few specimens. From the undercliff below, the plants were beyond reach, but not wishing to attract local headlines (eg. BSBI Secretary illegally collects wild Sea-lavender?) we prudently waited for dusk before wielding the pruners. A memorable wait as the setting sun on the horizon dazzled over the surface of a sea which was clear green from the reflection of the white cliffs. At this point my non-botanical husband queried the plants fringing the cliff-top edge above, and not only did we then find a sward of *Limonium* at ground level on the cliff-top, but on our way up a profusion of *Limonium* was growing from every crevice and crack in steps and paving; it was also abundant in the pub garden!

The *Limonium*, thought then to be *L. binervosum*, has now been named *L. procerum* (Salmon) Ingrouille subsp. *procerum*; and with it a smaller species with neat small rosettes, unnamed for some years, is now known to be *L. hyblaenum* Brullo (*L. campanyonis* auct. non (Gren. & Billot) Kuntze); Clive Stace in his *New Flora of the British Isles*, gives this the English name 'Rottingdean Sea-lavender'.

Attempting to establish the origins of these plants I spoke to the then longest-serving member of the White Hart Hotel Staff, who remembered the plants as growing in the garden when she first worked there as a barmaid in 1963. We have not yet found an earlier memory locally. The *Limonium* ssp, as also the vigorous growth of *Frankenia* - in places over-hanging the cliff-top in curtain-like growth, suggest garden origin. David Coombe tells me that he has grown this *Frankenia* from the N. Norfolk Coast, and from garden centres, under the name of *F. thymifolia*, and agrees that the Rottingdean plant is most probably *ex hort*. The *Limonium hyblaenum* is known to have been planted in a municipal rock garden at Preston Park, near Brighton - not now surviving, but seen in 1991 at Seaford, where it has been known for some time as an escape from gardens on the sea front.

MARY BRIGGS, Hon. General Secretary

DISTILLERIES AND ALL THAT

The editor in a recent *BSBI News* referred to distilleries. John Ruty (1698-1775), a native of Wiltshire, who spent most of his professional life (medical doctor) in Dublin wrote a *Spiritual Diary* which amused Samuel Johnson. He is best known in Ireland for *An essay towards a natural history of the county Dublin*, accommodated to the noble designs of the Dublin Society, which was published in 1772. In this work he reported on the Winter of 1756-1757 as follows:

'There was a great scarcity of corn both here and in England, not owing entirely to a failure in the crop, but more to a consumption of the grain in the distilleries.'

Ruty, a strong member of the Society of Friends gives further advice:

Brandy, Rum and Whiskey are *spiritus vinous* . . . as vegetable productions. . . denominated by Dr. Hales Man-bane, being a slow poyson to infinite numbers, and a sudden one to divers others. . .'

John Ruty wrote also on the *History of the Mineral waters of Ireland* (1757). This last work gained him a place in James Joyce's *Finnegan's Wake*.

MAURA J.P. SCANNELL, Dublin 4

ROCKING THE BOAT

Tim Rich's letter in the last *BSBI News* on the subject of the *Crucifer Handbook* prompts me to make some additional comments, particularly on the subject of convention (or 'rocking the boat?'). Genera or groups of species known to be 'critical' offer no easy solutions to authors (or to editors). Whilst it is obvious that we must have checklists and the like for indexing, distribution records etc., there must still be vehicles for differences of opinion to be made public. Otherwise our subject becomes fossilised, decade on decade, providing easy support to our critics who regard botanists as no more than stamp collectors of a greener hue. I am delighted that John Akeroyd sees a European influence in the treatment of *Cochlearia*, though in truth there was never any deliberate policy to expand from the merely parochial. It was instead the direct consequence of a truly independent re-assessment of the evidence, so I'm surprised that this should be regarded as 'controversial', any more than it would be to judge Wilmott's 40 or so rather whimsical names for *Salicornia* 'species' as being controversial. Necessary differences of opinion in applying man-made concepts to elusive nature certainly, but controversy - never.

Incidentally, in the interests of editorial rectitude, it was I (and not 'K.H. Dalby' - whom I have never had the pleasure of meeting) who wrote the account of *Cochlearia* for the *Handbook*. So three cheers for taxonomic emancipation, three for *Cochlearia*, and two - maybe - for the 'opposition'.

KERY DALBY (syn. *D.H. Dalby*, A. & F.D. Dalby, *Register of Births and Deaths*, Paddington South. London, 1930) 132 Gordon Road, CAMBERLEY GU15 2JQ

FLOWERS OF NORTH CYPRUS

Anyone receiving a letter from Kibris, Turkish Cyprus, may be delighted that the envelope is decorated with stamps showing endemic wild flowers found only in the limestone mountains of the Kyrenia range. They may be even more fascinated to learn that the originals were painted by BSBI member Dr Deryck Viney who lives at Karaman on the northern slopes of the mountains. He has been working on a fully illustrated book, *Flowers of North Cyprus*, for some years and is now looking for a publisher. Any ideas to Dr. D. Viney, Karaman, Girne, Messin 10, Turkey or, until November 1992, to 95 Crofton Road, Orpington, Kent BR6 8HV. Tel. 0689-853809.

FRANKLYN PERRING, 24 Glaphorn Road, OUNDLE, Peterborough PE8 4JQ

FROST RESISTANCE

Frost hardiness can be variable within subspecies, and nursery men will sometimes emphasize that the parent seed of a potentially vulnerable young tree was gathered from a mountain specimen. This variability concerning vulnerability to frost also occurs across species, genera, families, orders, classes and divisions, and these are dozens of different families and 100s of genera with both frost-hardy and frost-sensitive trees.

Does not this imply an ancient evolutionary flexibility with a key to frost-resistance in molecular biology?

In a quarter mile walk in a Queensland rainforest in 1991, we were told that we had passed more species of tree than exist naturally in the entire N. American and European continents together (continents recently mostly covered by glaciers) - and none of the very many 100s of Australian *Eucalyptus* or *Metaleuca* trees were included! Some trees were not yet assigned to a genus. This forest was 9 times as old as the Brazilian rainforest with many ancient families, presumably all the rainforest species being highly frost sensitive. However the more recently evolved Eucalypts already have some species, such as *E. gunnii* (Snow gum) which can be frost-resistant according to the strain.

What mechanisms develop in frost-resistance species? Do they vary between families and orders? Do frost-resistance genes exist? Does the immense diversity in a tropical rainforest at the base of mountains lead to the evolution of frost resistance across many families or only in representatives of a few? The Isles of Scilly have large numbers of successfully naturalized species of frost-sensitive herbs, shrubs and trees. Do the Scillies have (m)any **native** frost-sensitive genera, species, subspecies or variants unshared by the British mainland? Horticulturalists in Scilly have bred frost-sensitive early Narcissi (Soleil-d'Or): is it possible to reverse the process and breed for frost-resistance, and could this be done for some of the many threatened rainforest tree-species? What percentage of all plant genera contain both frost-sensitive and frost-resistant species?

JACK OLIVER, High View, Rhyls Lane, LOCKERIDGE, Nr Marlborough, Wilts SN8 4ED

QUEEN VICTORIA'S WEDDING BOUQUET - FINALE

The myrtle of the Bible (*Myrtus communis*) is a shrub 2-3m high. It is an early symbol for love, a symbol of the Gentiles who became followers of Christ and a symbol of divine generosity. In a vision Zechariah saw a grove of myrtle trees symbolising peace.

Still on a scriptural theme, Grigson states 'that it was an unlucky plant not to be used for cattle switches because Jesus was scourged with it by Pilate before he was delivered to crucifixion'. Grigson also says that the Irish believe 'that Gale had dwindled to a low shrub because the Cross had been made of it'. Oak and Olive are also said to have provided the wood from which the Cross was made.

M. JILL LUCAS, 8 Camborne Drive, Fixby, HUDDERSFIELD, West Yorkshire HD2 2NF

[I think we can now close the correspondence on this subject. Ed.]

NEWS FROM THE NATURAL HISTORY MUSEUM

Following Clive Jermy's retirement early in July, Rob Huxley, formerly curator of lichens, has been appointed Head of Curation Section in the Department of Botany. Clive will be long remembered for the energy and enthusiasm which he brought to all his work at the Museum and elsewhere. Happily he will continue to have a base in the British Herbarium, and any correspondence to him should be addressed to the Museum.

Two workshops have been arranged for the autumn:

Saturday 17 October: David McCosh - *Hieracium*

Saturday 12 December: Jeanette Fryer - *Cotoneaster*

These will be open to all who are interested, but advance booking is required. Bookings, together with a fee of £3.50 per workshop, should be sent to Roy Vickery, to whom any cheques should be made payable.

The herbaria will be open on the day of the BSBI Exhibition Meeting, and anyone wishing to use them on this day should contact Megan Dowlen, telling her of their requirements, in advance.

The flowering plant herbaria remain open from 8.30am until c.5.30pm, Mondays to Fridays, and it is usually possible to open them on Saturdays, providing three weeks advance notice is given. Ideally all appointments should be made in writing, but failing this, potential visitors should contact one of the following: Roy Vickery (flowering plants in general) on 071 938 8897 (or 081 677 0123 evenings), Mary Chorley (non-European flowering plants) on 071 938 8814, Alison Paul or Megan Dowlen (pteridophytes and British flowering plants) on 071 938 9497.

ROY VICKERY, Department of Botany, The Natural History Museum, Cromwell Road, LONDON SW7 5BD.

ALIENS AND ADVENTIVES

FOREIGN *CRATAEGUS* IN BRITAIN: A THORNY PROBLEM

Hawthorns are widely distributed throughout temperate regions of the northern hemisphere. Clapham *et al.* (1987), estimate around 200 species of *Crataegus* altogether, c.90 of them in the Old World. Tutin *et al.* (1968), describe 22 of these species in Europe, but I possess no Asian work accounting for the remaining 68. The New World's modern *Floras* also provide inconclusive statistics, Sargent (1961) giving 153 species for the whole of North America excluding Canada, and Britton and Brown (1970) giving 73 species for the Northern States including Canada. In addition, Standley (1920-3), describes 8 separate ones from the tablelands of Central America. Despite inconsistencies and overlaps in treatment, these above works remain basic to a broad taxonomic survey of *Crataegus* in the U.K.

Indeed Hawthorns can be notoriously hard to name with precision and many authors fight shy of them, especially when aiming for the more popular market. In the Old World, species may be similar or obscured by fertile hybridisation (Tutin *et al.*, 1968). In the New World, they may be critical and even more often obscured by fertile hybridisation; enormously exaggerated splitting formerly prevailed with over 1,100 names published (Palmer, 1924). Bean 1970, describes *C. x mordenensis* as a cross between 'Paul's Scarlet' and *C. succulenta*, but otherwise sexual hybrids between Old and New World trees appear not to be mentioned in the literature. However, North American scions are commonly grafted on *C. monogyna* in London parks, and where both parts of such a chimaera flower and fruit simultaneously, any self-sown progeny nearby should be examined with care. Certainly I have seen cotyledon-stage seedlings in Tottenham which appear intermediate between *C. monogyna* and *C. submollis*, and these need closer investigation. In this context it is interesting to add that *Quercus* species, again abundantly represented in both Worlds, may also seldom if ever introgress transatlantically in mixed arboreta. *Populus*, on the other hand, contains dozens of Euro-American crosses (most of them grown at the National Populetum, Alice Holt Lodge, near Farnham, Surrey); thus the genetic barrier of the ocean may be great or small.

Four further generalisations are useful in *Crataegus*. Firstly, in the Old World, most leaf morphologies comprise variations on the abruptly-incised *C. monogyna* theme together with short straight thorns; in the New World, most leaves range through *Sorbus ariatifolia*-type silhouettes together with long straight or curved thorns. Secondly, some reasonable correlation is evident between the southern-ness of a Hawthorn's latitude of provenance and the tardiness of its leaf fall in cultivation; London's specimens of half-Mexican and warmer European origins usually remain green until January. Thirdly, invertebrate crataegivores native in Europe are reluctant to accept North American Hawthorns as alternative hosts (is the converse true?); aphids apart, I have detected only a few larvae of the Dunbar moth (*Cosmia trapezina*) and the Winter moth (*Operophtera brumata*) feeding on *Crataegus submollis* around London. Fourthly, our European avifauna practise no such patriotic discrimination; any foreign *Crataegus* maturing on British soil is likely, sooner or later, to have ripe seeds dropped in wild places by British birds.

The Hawthorns most often found regenerating spontaneously in Great Britain are summarised by Stace, 1991. The present paper refers to them all, gives additional information and discusses other related taxa.

From the Old World, certain alien forms of our native Hawthorns deserve brief mention. One of the commonest urban street and park trees is double-flowered 'Paul's Scarlet', but its traditional horticultural label *C. oxycantha* 'Coccinea' is misleading. Firstly, '*C. oxycantha*' (*C. laevigata*) is imprecise because the stronger leaf lobes and mixed mono- and distylous flowers clearly point to *C. x macrantha* (formerly *C. x media*, and denoting *C. monogyna* x *C. laevigata*). Secondly, 'coccinea' as a specific epithet has already been misapplied to three different North American Hawthorns (Polunin, 1977), so we can happily dispense with that one as well. An even brighter crimson single-flowered form of the same hybrid is called 'Punicea' (Wright, 1984); this, too, is a familiar ornamental. Both fruit in abundance and give rise to seedlings which could inherit any combination of attributes within the *C. x macrantha* swarm.

Native *C. monogyna* subsp. *nordica* is joined by the South European submontane subsp. *azarala* in at least five London parks. This much overlooked introduction differs in its densely pubescent twigs and leaves, and its blades divided into narrow, deeply-cut lobes (Tutin *et al.*, 1968). In secondary woodland in Nunhead Cemetery, L.B. Southwark, both subspecies grow wild together with a complete range of fertile intermediates.

Crataegus heterophylla is a remarkable Albanian Hawthorn (possibly of hybrid origin involving *C. monogyna* and/or *C. azarolus*?). It was first noted ten years ago in Abney Park Cemetery, L.B. Hackney, by David Solman and myself. In 1986, possibly as a first British record, we submitted named material to Professor Clive Stace for his *New Flora*. Its various-leaved character is extreme. Developed foliage on vigorous flowering shoots could almost be taken as large lustrous forms of *C. x macrantha*, but they have subcoriaceous texture, paler undersides, long cuneate bases and robust falcate stipules. By contrast, lower foliage on sterile shoots regresses to apically dentate or entirely oblong to sub-orbicular. *C. heterophylla* flowers flamboyantly in the first half of May, and both its leaves and its rather sparsely produced fruits usually persist until December or January. The Abney Park colony comprises venerable Victorian relic trees with more than 20 maturing progeny bird-sown throughout 30 acres of dense urban woodland. In May, 1990, we revealed another well-established colony of identical wild status in similar habitat in Nunhead Cemetery where they were apparently introgressing with *C. monogyna* subsp. *nordica*, a phenomenon not noted elsewhere. At St Ann's Hospital grounds, South Tottenham, again in 1990, several more old trees were found planted, with naturalised saplings occurring amidst Sycamore scrub on the adjacent railway bank.

Crataegus laciniata should be identified and recorded with caution. Stace, 1991, gives *C. orientalis* in synonymy and we encounter the names equally regularly in arboricultural literature. In south-east Europe at least, this 'frequently forms hybrids with less well-known Crimean shrubby endemics and other... species, especially *C. monogyna* and *C. pentagyna*' (Humphries *et al.*, 1985), so we should be alerted to the possibility of some planted trees not being thoroughbred in the first place, and then to the likelihood of crosses with *C. monogyna* self-sowing spontaneously anywhere on British soil. Bean, 1970, claims that *C. laciniata* is 'common in some London parks,' but my own observations suggest it is rather less so. Handsome examples flourish in Battersea Park, Regent's Park and St Ann's Hospital grounds, and I have seen scattered ephemeral seedlings, but one does not encounter these trees in large numbers anywhere. Rarer still in cultivation is a related species, *C. tanacetifolia*, from Asia Minor and Syria, which differs both in its glandular-toothed leaves and its glandular-laciniate bracts attached to the base of the fruit (again Bean, 1970); these characters also need checking for on specimens presumed to be *C. laciniata*.

Discussion now turns to the New World Hawthorns or 'Haws', taxonomically our most complex assemblage of all. If we assume, for argument's sake, that Sargent, 1961 and Standley, 1920-3, now give acceptable totals for their respective territories (see opening paragraph), the entire American *Crataegus* flora, excluding Canada, comprises not over a thousand but just 161 species; thus from that basic resource must we attempt to key out examples planted and naturalised in Great Britain. In fact our task is both easier and harder. It is easier because less than 10% of those species appear to be in popular cultivation over here (excluding specialist collections). It is harder because three other New World taxa which do occur in popular cultivation (and may naturalise) are either North American or North American x Mexican hybrids of presumed artificial origin, and we can seek descriptions of those only in arboricultural literature such as Rehder, 1967 and Bean, 1970. Hopefully this paper will help to clarify things.

The distinctive *Crataegus punctata* may conveniently be dealt with before all else. Both Sargent, 1961, and Britton and Brown, 1970, describe and illustrate it well. Stace, 1991, mentions that it was formerly naturalised in this country. I personally know of two single ancient broad-canopied trees (without seedlings arising?), one each in St Ann's Hospital grounds and in Abney Park Cemetery. Like *C. heterophylla*, it was presumably a more fashionable parkland choice in the Victorian era than it is today.

I am now placing the other eight New World taxa most relevant to British botanists into two groups based on leaf characters. Firstly, four 'Red/Scarlet Haw' species bear rather pale matt or shiny leaves whose broadly ovate, apically lobed outline resemble members of the *Sorbus latifolia* agg.; these are *C. coccinioides*, *C. succulenta*, *C. pedicellata* and *C. submollis*. Secondly, four 'Cockspur Thorn' taxa (species and hybrids) bear rather dark glossy leaves whose ovate-lanceolate, scarcely-lobed outline may more closely resemble members of the *Sorbus aria* agg.; these are *C. crus-galli*, *C. x persimilis* 'Prunifolia', *C. x lavalleyi* and *C. x grignoniensis*. Each will now be dealt with in turn.

Crataegus coccinioides alone is described as having twenty stamens on flowers as large as 2cm across or more. I know of no such tree, and would be grateful for guidance to one, especially in London.

Crataegus succulenta (rarely grown in London) has around twenty stamens with pale purple-salmon anthers on small white flowers which fade dirty pinkish in senescence **by late April** (at least six weeks earlier than *C. monogyna*). Its leaf blades are sombre dull green, regularly lobed and with a relatively thick, firm but not truly succulent texture (sensitive finger-tips). No seedlings have yet been found locally.

Crataegus pedicellata (frequently grown in London) has around ten stamens with creamy anthers on slightly larger white flowers which fade off-white in senescence **by mid-May**. Its leaf blades are almost glabrous, bright shiny green, more acutely lobed, with subtly and gracefully divergent marginal teeth, and a delicately thin, rigid finger-tip texture which renders them prone to buckling and pouching as the season advances. Hundreds of self-sown plants, from new cotyledons to three-year-old saplings 2m tall, grow as weeds beneath two mature trees on a raised bed mulched with shredded bark in the forecourt of an apparently abandoned welfare care centre near Stamford Hill station (L.B. Hackney).

Crataegus submollis (commonly grown in London) has around ten stamens with creamy anthers on white flowers which are slightly larger still, and fade dull white in senescence **by early May**. Its leaves are finely pubescent, mid-green, matt rather than shiny, have a straight or only slightly cuneate base, and offer a softly relaxed finger-tip texture which seldom leads to buckling or pouching except in times of prolonged drought. Ephemeral cotyledons sprout locally each spring, and the occasional wild sapling may flourish healthily for a number of years even remote from its parent tree; one such was found by David Bevan in Coppetts Wood (L.B. Barnet) in the mid-eighties, and it survives still.

Once again in the grounds of St Ann's Hospital, I was delighted, last year, to find mature examples of these three 'Haws' planted in close proximity. At last I was able to familiarise myself with their salient features by comparing fresh material. To convey this unusual experience to readers, I escorted Laura Andrew back on May 4th, 1992, and she has beautifully illustrated the relevant parts of each for our front cover. As fully-grown standards, they make densely compact, wind-resistant crowns, composed of innumerable tough, intricately divaricate twiglets. This characteristically American growth form is particularly extreme in *C. pedicellata* and makes specimens of it hard to press! Yet another U.S. species planted (and not self-sowing) at St Ann's is *C. straminea*. Its stature, habit and leaf characters are similar to *C. pedicellata*, but it differs markedly in its slenderer, quite glabrous peduncles and its narrower, glandular-bordered and rapidly fugacious stipules. Perhaps it is more widely grown than we realise.

Concerning the 'Cockspur' group, *C. crus-galli* and *C. x persimilis* 'Prunifolia' (the *C. prunifolia* of all botanical and horticultural literature hitherto) are both variable, but sufficiently separated by Stace and other authors to render morphological descriptions unnecessary at this time. 'Prunifolia' is much the commonest of all North American Hawthorns both planted and naturalised in urban areas. In London, many mature trees, often of formal pyramidal shape, line residential streets and grace public gardens. Their fruit is so abundant that birds can never consume more than a tiny proportion; the remainder squash and decay to render pavements dangerously slippery in November. Such copious harvest belies the fact that 'Prunifolia' is actually of hybrid origin, probably *C. crus-galli* x *C. macracantha* (Rehder, 1967 and Bean, 1970); its seedlings also are frequently encountered, typically in concrete crevices and at wall bases where stored solar warmth expedites germination. Occasional self-sown examples may attain 2 - 3m on neglected sites, but their growth is then shrubby, not arborescent, and they may flower sparingly if at all.

Less frequently recognised although every bit as ornamental, our remaining two 'Cockspur' hybrids more tentatively claim *C. crus-galli* as one parent, but quite confidently indicate *C. pubescens* as the other (again see Rehder and Bean). This latter is a Mexican species also known as *C. stipulacea*, *C. mexicana* and *C. loddigesiana*; it gives both its hybrids their subtropical propensity for delayed (midwinter) leaf fall, yet they are in other respects strikingly different trees. *C. x lavalleyi* produces the largest, darkest and glossiest leaves of any Hawthorn so far discussed (5 - 10cm long); the presence of some juvenile and underside pubescence is further diagnostic. Masses of flowers abound in May. Fertile fruits are large, sparsely produced and long held, but many trees show a high degree of sterility, especially as they age. In Tottenham Cemetery, a unique avenue of magnificent Victorian trees fully 10m tall drop tens of thousands of shrivelled grey 'duds' each autumn. *C. x grignonensis*, on the other hand, typically grows to 6m, and bears much smaller, more regularly crenately lobed leaves (3 - 6cm long) which are entirely glabrous. Its canopy is widely

spreading with outer branches somewhat pendulous and with fairly intricately divaricate twigs. Its white petals fade pale grey-violet in senescence by late May, but its heavy burden of fruit from the previous autumn may still remain attached to the tree, thus providing a spectacularly bright red addition to its springtime spectacle of shining white and lustrous green. The best examples known to me locally are in Springfield Park and at Hugh Gaitskell housing estate, Stoke Newington, both in L.B. Hackney. Aesthetically, it is one of the loveliest of the genus. *C. pubescens* itself has downy, light green leaves which more resemble shallowly-lobed *Quercus cerris* in outline than any other Hawthorn (they are 4 - 8cm long). It is above all unmistakable by producing yellowish-olive fruits. Rehder, 1967, opines that it is probably not in cultivation but a wild-origin tree in Harry Hay's private collection at Tadworth, Surrey, is undoubtedly right. One intriguing question still concerns me, hence the inclusion of these taxa in my analysis. Why, when *C. x lavellei* produces some fertile seed and when *C. x grignonensis* produces profuse quantities of it - why have I not yet found any natural regeneration of either in the many disturbed urban habitats which appear entirely suitable?

Regarding *Crataegus* fruits in general, yes my text does omit detailed descriptions. This is not because they lack taxonomic importance; indeed that importance is so great that I feel driven instead to protest how inadequate are mere adjectives. Thus I decided to use almost none at all. For with this genus as with other difficult woody Rosaceae like *Cotoneaster*, *Pyracantha*, *Sorbus*, *Malus* and *Rosa*, the different sizes, shapes and colours of fruits we may observe are far too numerous and subtle ever to be communicated through words alone. Only professionally painted colour charts could systematically convey the unique attributes of each taxon in a way that has real diagnostic value to the investigator. Our well-known, commercially profitable fruits enjoy ample artistic celebration already. Our little-known, scientifically interesting fruits have hitherto attracted too narrow a readership to justify the investment of similar creative endeavour. This may not always be so.

May I finally express appreciation to whoever had enough foresight to plant the tranquil lawns and shrubberies of a South Tottenham hospital with special trees, and to whoever continues to manage those grounds in a way which permits exciting regenerations to recur each year; *Crataegus* apart, St Ann's boasts treasures like *Sorbus domestica*, *Prunus mahaleb* and *Koelreuteria paniculata*, all with wild progeny. May I thank Laura Andrew for her sympathy and humour in our botanical quests together. May I, in particular, thank our editor Gwynn Ellis for publishing this unusually long discourse on a daunting genus which it has taken me many years to comprehend even to the present degree. And may I invite your feedback?

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BRIAN WURZELL, 47 Rostrevor Avenue, Tottenham, LONDON N15 6LA.

CONSERVATION NEWS

CONSERVATION AND THE BSBI

[Kery Dalby, Hon Secretary of the BSBI Conservation Committee 1961-1963, has sent the following comments on Conservation and the BSBI. I was interested to read again a notice sent by Kery when Conservation Secretary in 1962, to all BSBI members : This was on the 'Toxic Sprays' - inviting records of damage caused by spraying, and on 'Transplant and Introduction Experiments' - requesting the recording of the results of those experiments. This latter topic was again on the Agenda of the Conservation Committee meeting held in June this year. Mary Briggs].

In *BSBI News* for December 1991, Mary Briggs asked for opinions on how far the BSBI should be involved with conservation campaigns in the British Isles and abroad. I now pen on my word-processor some personal comments in reply. To start off, may I say emphatically that I believe we must participate in active conservation - not the least reason being that, as we were recently reminded, Rule 2 of the Society's Rules includes '(c) To promote the conservation of the British flora'. This reason apart, there are others.

Firstly, the BSBI almost by definition occupies a pre-eminent position in the study of British 'higher' plants and it is to the BSBI that very many people will turn for help in identification, distribution and status, and ecology - to them, 'Botany' means the BSBI (it probably doesn't mean *Lamprothamnion papulosum* or *Heterodermia propagulifera*). Secondly the BSBI acts jointly with the other British botanical societies to support Plantlife in its endeavours to protect the British flora as a whole. Mary mentioned further bodies which, along with Plantlife, can powerfully influence nature conservation in a broad way. It would be an extraordinary decision if the BSBI were, alone of these groups, to decide to opt out from a powerful interacting enterprise. At a time of rapidly decreasing government and 'official' support for things green our botanical societies must hold together. Thirdly, real environmental conservation will flourish only if it has the backing of the 'man on the Clapham Omnibus'. This means the electorate and especially those who can put pressure on local councils and on Government, not just the botanical grass roots. Our strength lies in our numerically significant amateur membership - the amateur membership matters. In the eyes of some, specialists may even be suspect in their motives (how can I get more grants for my research group?). Finally, most of us see our plants as pleasing things (for very diverse reasons), and we would be emotionally sterile if we saw them only as research material to be measured and analysed. If they are threatened, then it is natural for us to seek to protect them.

Long ago (decades is near enough) I acted as secretary to the BSBI Conservation Committee, and once even argued a case for the occasional collection of rarities. A vociferous member from Kent said that I had almost convinced him. . . but not quite (I might perhaps do better in 1992, we can talk about gene banks and diversity). Now I am now Conservation Officer for the BLS, and Chairman of its Conservation Committee. In the BLS I argue that our first priority is to provide authoritative assistance to those needing it - NCC (under this week's names), Wildlife Trusts, Plantlife and other environmental charities, profit-making environmental consultancies (especially if they pay us for knowledge donated free by members), and interested individuals. We have further functions, such as supporting distribution studies and surveys which are fundamental to sound conservation practice through the protection of field sites of botanical interest (generally much more rewarding than concentrating on single species). All this applies to the BLS, but exactly the same should be true for the BSBI. All strength then to the proposed BSBI strategy on the conservation of vascular plants.

I would however not see the BLS (or the BSBI) become a 'campaigning' body, but rather that we must be known as a source of reliable information, perhaps a bit staid - a provider of speakers and articles, an adviser rather than one who gains support from oratorical or verbal persuasion. I would draw back from exercises which more campaigning groups adopt - intended deliberately to shake the complacent and to stir the conscience. The dividing line is narrow, and the campaigners must strive for scientific accuracy in the face of simplification in presentations for the general public. We also must not be simplistic or innocent about the issues involved - what of our once-extensive Wildwoods, and how much of the 'heritage' that we seek to protect is now really free from

man's influence? The historical background to our own landscapes makes me a little uncertain about dictating to third world countries on how they should manage the natural environments in which they have lived for maybe thousands of years - should our concern perhaps be directed more at 'first world' companies and governments that exploit the third world?

I am grateful to Mary Briggs for encouraging me to set out on paper these still-evolving thoughts on matters which I think should be central in the BSBI's future activities.

KERY DALBY, Chairman, BLS Conservation Committee, 132 Gordon Road, CAMBERLEY
GU15 2JQ

NOTICES (OTHERS)

FUTURE MEETINGS OF THE BRITISH BRYOLOGICAL SOCIETY

26 - 27 September. AGM and Symposium Meeting, East Sussex. Full details from the local secretary: Dr David Streeter, Sussex House, Falmer, Brighton, Sussex BN1 9RH, tel 0273 678212.

31 October - 1 November. Bryophyte Workshop, London. Full details from the local secretary: Dr Ken Adams, 63 Wroths Path, Loughton, Essex IG10 1SH, tel. 081 508 7863.

As always, BSBI members will be most welcome at these meetings.

PHILIP LIGHTOWLERS, 8 Almark Road, LONDON E5 0RL

WORKSHOP ON LICHEN CONSERVATION IN CHURCHYARDS

10 October 1992, Stoneleigh, Warwickshire

A workshop on lichen conservation in churchyards is being organised by the Conservation Committee of the British Lichen Society. It will be held at the National Agricultural Centre, Stoneleigh, Warwickshire on 10 October 1992.

Lichens contribute significantly to the mellowed and colourful appearance of church walls and tombstones, and some churchyards are extraordinarily rich in species. Lichens are however only part of the churchyard scene, and we are seeking to draw together balanced and positive recommendations for the management of these unique sites, with especial emphasis being given at this meeting to their lichen cover.

As we are keen to relate our objectives to those of other conservation groups with equivalent interests, we will welcome those who are not members of the British Lichen Society - this is a meeting aimed at getting the maximum input possible to encourage practical conservation measures.

We are inviting specialists to cover such matters as regional perspectives, environmental factors and recording techniques. We will also be including other initiatives in churchyard conservation so that lichen studies will be seen in their proper place along with other interests. We intend to give significant time to discussions between participants so that we can identify management priorities by the end of the meeting.

There will be a registration fee of £5 per head, with an optional extra £6 for a mid-day meal. Anyone interested in attending should send a stamped, self-addressed envelope for a booking form to the address below. Please do not send any money before applying for a booking form.

KERY DALBY, Chairman, BLS Conservation Committee, 132 Gordon Road, CAMBERLEY
GU15 2JQ

RESEARCH AND TRAVEL GRANTS

Members are reminded that several grants are available, from various sources, to assist amateur or professional botanists in their studies. Full details of those listed below were given in *BSBI News* 58: 47-49, Sept. 1991.

THE BOTANICAL RESEARCH FUND
WARBURG MEMORIAL FUND
BRITISH ECOLOGICAL SOCIETY SMALL GRANTS SCHEME
THE OLEG POLUNIN MEMORIAL FUND

EDITOR

SPECIES RECOVERY PROGRAMME GRANTS

English Nature have grants available for recovery work on endangered and vulnerable species in England. Grants will cover up to 50% funding of:

Survey to assess current status of species, provided this is part of a clear programme of species recovery

Preparation of a detailed species recovery plan.

Managing sites to achieve specific recovery objectives.

Monitoring of species following initiation of a recovery programme

Grants will include payment for volunteer expenses and the purchase of equipment for management and monitoring.

Grants will **not** be considered for wardening schemes.

Application forms can be obtained from English Nature Grants Section, Northminster House, Peterborough PE1 1UA. The deadline for grant applications for 1993 is **30 September 1992**.

EDITOR

BOOK NOTES

CRUCIFER HANDBOOK ERRATA PAGE

An errata page is now available for the *Crucifer* handbook. To obtain a copy please send a stamped addressed envelope (marked Crucifer) to the address below. The errata page is included in the second printing of the handbook.

MARGARET PERRING, 24 Glaphorn Road, OUNDLE, Peterborough PE8 4JQ

FIELD MEETING REPORTS

NEW FORMAT

As from issue number 61 of *BSBI News*, I will be using Clive Stace's *New Flora of the British Isles* and I would be grateful if authors of reports could use this for species names if at all possible. In addition, grid references have reverted back to a letter/number combination (e.g. GR SN/301.109) to bring them in line with the changed *Watsonia* format.

BRIAN RUSHTON, Field Meeting Reports editor.

CORRECTION TO FIELD MEETING REPORT - 1984

In June 1990, Joan Fraser, Adrian Grenfell and myself undertook a trip to Lauterbrunnen in Switzerland. Prior to our departure we read through Adrian's report of a similar visit which he made in 1984 and which appeared in *Watsonia* 16(1), 1986.

This report stated that *Saxifraga cespitosa* had been seen in the car park at Stechelberg. The species should, of course, have been *Saxifraga caesia* and it had been Adrian's intention to write and

correct this error. Unfortunately, for one reason or another, this was never done but in order to save any confusion for future travellers to this area I thought his intentions should be carried through. The error occurs on page 120 of *Watsonia* 16 and is on line 3 of the second paragraph.

MIKE TROTMAN, 12 Orchard Walk, Kingswood, WOTTON-UNDER-EDGE, Glos GL12 8SD

ADVERTISEMENTS

BOTANICAL EXPEDITION TO SOUTH-WEST TURKEY

Who would like to join my private party in a fortnight's botanising in south-west Turkey in late May 1993? Anyone interested is invited to contact me at the address below.

RODNEY BURTON, Sparepenny Cottage, Sparepenny Lane, EYNSFORD, Kent DA4 0JJ

FLORA WANTED

Pseudo-botanist (Arctic Plant-hunter) offers £60 for copy of Polunin's *Circumpolar Arctic Flora*.

HUGH A. LANG, Westwood, NEWTON STEWART, Wigtownshire DG8 6DY (tel. 0671-2930).

WATSONIA WANTED

To complete a set, I am anxious to obtain the following issues of *Watsonia*:

Vol 2, parts 5 & 6.

Vol 3, parts 2 & 3.

Offers please to the address below.

GIGI CROMPTON, 103 Commercial End, Swaffham, Bulbeck, CAMBRIDGE CB5 0ND

1993 BOTANY TOURS OVERSEAS - LED BY BSBI MEMBERS

11 to 25 March	Northern Cyprus	Tony Kemp
22 March to 5 April	Crete	Mary Briggs
1 to 8 April	Majorca	Alan Outen
21 April to 5 May	Corsica	Mary Briggs
24 April to 8 May	Gargano, Italy	Tony Kemp
24 May to 7 June	Berdun, Pyrenean foothills, Spain	Mary Briggs
16 to 30 June and 30 June to 14 July	Wengen, Switzerland	Mary Briggs
22 June to 6 July	French Pyrenees	Tony Kemp
24 June to 8 July	Dolomites	Peter Jepson
3 to 20 September	South Africa	Mary Briggs

Further details from: Cox and Kings Travel Ltd., St. James Court, Buckingham Gate London SW1E 6AF (tel. 071 834 7472).

6 to 13 April	Crete	Alan Wilmott
28 April to 5 May	Rhodes and Symi	F. & M. Perring
23 September to 14 October	Western Australia	F. & M. Perring

Further details from RSNC (WT), 72/73 Wilton Road, London SW1V 1DE (tel. 071 931 0744).

Wild Travel (WT) distributes all its profits to conservation and raised nearly £9000 in 1992.

4th NATURAL HISTORY BOOK FAIR

The 4th Natural History Book Fair will take place at the Royal Botanic Garden, Kew, on Saturday and Sunday, 26 to 27 September between 10.00am and 5.00pm.

Gardening, botany and natural history books (antiquarian and second-hand) will be displayed by 25 specialist booksellers. Enquiries to me at the address below.

MIKE PARK, 351 Sutton Common Road, SUTTON, Surrey SM3 9HZ (tel. 081-641-7796).

CATALOGUE OF FOREIGN FLORAS

A catalogue of foreign Floras, including many scarce European Floras, will be issued by Mike Park in Sept./Oct. 1992. Copies can be obtained by writing to me at the address below, a stamp would be appreciated.

MIKE PARK, 351 Sutton Common Road, SUTTON, Surrey SM3 9HZ (tel. 081-641-7796).

STOP PRESS

DO WE NEED AN ALIEN STUDY GROUP?

At the recent, very successful Conference on 'The Common Ground of Wild and Cultivated Plants' held at the National Museum of Wales, Cardiff, I put forward the propositions 'that an Alien Study Group be inaugurated and an Alien Register set up to monitor the spread of alien species in the British Isles, and hopefully to find solutions to some of the problems that this spread may create.'

The arguments and examples put forward to support these proposals will appear in the Conference proceedings due to be published at the end of this year.

There seems to be an increasing interest in the alien flora of Britain covering the identification of aliens, their distribution, and also their control within the British Isles. Clive Stace's *New Flora*, in which 40% of the taxa treated are aliens, will make their identification easier and *Atlas 2000*, which plans to include all taxa treated in Stace, will make most field botanists look at them more carefully than in the past. There is also a great upsurge in research into ways of controlling some of our more noxious alien invaders. Another factor which might have an effect on our alien flora is global warming; if this is taking place we might be in for a great influx of European aliens in the near future.

I think the time has come to try and get all botanists with an interest in aliens to pool their knowledge and skills. The success of the BSBI's *Hieracium* Study Group, leads me to suggest that one way forward might be to set up an 'Alien Study Group' along similar lines. Regular newsletters and field meetings would help to keep members in touch.

If you share these views or would like to be involved in some way please contact me at the address below. If there is sufficient interest a meeting will be arranged to work out the aims and objectives of the group.

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TRANSLOCATION CONFERENCE

The Conservation Committee is organising a Conference on the translocation of plant species in March 1993. Further details will be distributed with the December *News*.

EDITOR

Contents (continued from back cover)

FOCUS ON SCARCE PLANTS	35
<i>Lathyrus japonicus</i> (Sea Pea)	35
<i>Ulex minor</i> (Dwarf Gorse)	36
<i>Limosella aquatica</i> (Mudwort)	37
NOTES AND ARTICLES	38
Slipper orchid: A vicious attack?	38
A favourite English drink	38
Botanical Pubs revisited	39
Distilleries and all that	39
Rocking the Boat	40
Flowers of North Cyprus	40
Frost resistance	40
Queen Victoria's Wedding Bouquet - Finale	41
News from the Natural History Museum	41
ALIENS AND ADVENTIVES	42
Foreign <i>Crataegus</i> in Britain: A thorny problem	42
CONSERVATION NEWS	46
Conservation and the BSBI	46
NOTICES (OTHERS)	47
Future meetings of the British Bryological Society	47
Workshop on lichen conservation in churchyards	47
RESEARCH AND TRAVEL GRANTS	47
Species Recovery Programme Grants	48
BOOK NOTES	48
<i>Crucifer</i> Handbook errata page	48
FIELD MEETING REPORTS	48
New Format	48
Correction to Field Meeting Report - 1984	48
ADVERTISEMENTS	49
Botanical Expedition to South-west Turkey	49
Flora wanted	49
<i>Watsonia</i> wanted	49
1993 Botany tours overseas - led by BSBI members	49
4th Natural History Book Fair	50
Catalogue of foreign Floras	50
STOP PRESS	50
Do we need an Alien Study Group	50
Translocation Conference	50

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Articles can now be Fax'd to the Editor on 0222-373219 (Groups 2 & 3).

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CONTENTS

ADMINISTRATION	2
Secretary of Conservation Committee	2
Deadline for Contributions for <i>BSBI News</i> 62	2
DIARY	2
IMPORTANT NOTICES	3
Advance notice of 1993 Recorder's Conference	3
Kent Check list	3
Reminder - Plants and Medicine Conference	3
GET WELL SOON	3
NEW HONORARY MEMBERS	4
Eric Eedes	4
John Francis Michael Cannon	4
CORRIGENDA CORNER	5
EDITORIAL	5
Condolences	5
English names	5
New nomenclature	5
ANNUAL EXHIBITION MEETING	5
HON. GENERAL SECRETARY'S NOTES	6
Hon. Assistant Secretary	6
Decline in Taxonomy	6
Science and Plants for Schools	6
John Fraser (1820-1909)	6
Local Botanical Societies, Associations and Field Clubs	6
Tailpiece	6
RECORDERS AND RECORDING	7
Supplement no. 2 to List of Recorders in 1992 Year Book	7
Supplement No. 2 to Panel of Referees and Specialists in 1992 Year Book	7
Help! Informal Assistance with Identification	7
Alderney Flora	7
Aberrant Gynoecium in <i>Orobanchè minor</i> Sm. var <i>minor</i>	8
Thomas Willisel - The earliest Field Botanist?	8
Cynthia E. Longfield (1896-1991) - A further note	10
Recording Islands - A view from Mull	10
<i>Lathyrus hirsutus</i> Re-introduced to a site in Essex.	10
The Farmer's Curse : <i>Scandix pecten-veneris</i>	11
Native or introduced? Does it matter - or can you tell?	11
<i>Senecio</i> x <i>albescens</i> (<i>S. cineraria</i> x <i>S. jacobaea</i>)	12
Gazetteer for the British Isles	12
<i>Osmunda regalis</i> - An unusual site	12
Status of non-natives	13
<i>Stefanoffia daucoïdes</i> - more elusive than most	14
<i>Ulmus</i> nomenclature and the <i>New Flora</i>	16
<i>Alyssum alyssoides</i> - a Red Data Book plant	16
BSBI Monitoring Scheme 1987 - 88: Change at a local level - v.c. 81, Berwickshire	16
Society for the original Bulrush and Reedmace (SOBAR)	19
Hybridization of <i>Oenothera</i> L. subgenus <i>Oenothera</i> in Britain	19
1991, The year of surprises - again	34
SCARCE PLANTS PROJECT	34
The Final Countdown	34

Continued on inside back cover