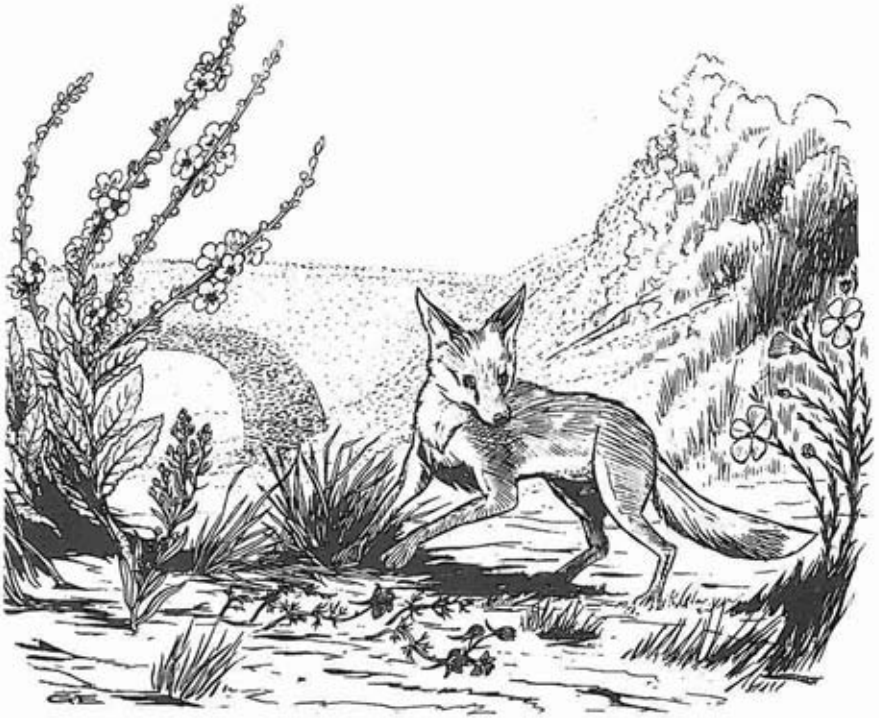


Old railway line, Trumpington

Graham Easy

Nature in Cambridgeshire

No. 24 1981

Published by the Cambridgeshire and Isle of Ely Naturalists' Trust Ltd

CAMBRIDGESHIRE AND ISLE OF ELY NATURALISTS' TRUST LIMITED

Registered Number: England 202123

Registered Office: 1 Brookside, Cambridge CB2 1JF
Telephone: 358144

PATRON: THE LORD WALSTON

Secretary/Conservation Officer:
Miss J. Greenall

Assistant Secretary:
Mrs J. Morley

Field Officer:
J. K. McNaught

Membership Secretary:
K. G. Hudson

THE COUNCIL 1980-81

President:
*Dr S. M. Walters

Vice-President:
*W. H. Palmer

Hon. Treasurer:
*B. S. Routledge

Hon. Editor:
P. H. Oswald, 33 Panton Street, Cambridge CB2 1HL

Chairman of the Executive Committee:
*Dr M. E. Smith

Secretary of the Scientific Advisory Committee:
J. K. McNaught

Hon. Secretary of the Education Committee:
*S. P. Tomkins

J. W. Clarke
A. C. Clay
*P. J. Conder
*Dr R. Connan
P. J. Evans
J. C. Faulkner
J. S. L.Gilmour
Dr H. J. Harvey
B. H. Johnson
P. I. Lake
*Mrs M. C. Moore
R. Page
R. N. Papworth
†Mrs E. W. Parsons
Dr F. H. Perring
P.G. Pilbeam
Dr O. Rackman
Dr R. E. Randall
Dr J. Smart
Mrs J. M. Thain
A. E. Vine
D. A. Wells
P. While

Auditors:
Price, Bailey and Partners

*Members of the Executive Committee

Celebrating the success of the Cambridgeshire Wildlife Appeal at Emmanuel College, Cambridge, on 16 February 1981: (left to right) Dr Max Walters, Dr Mike Smith, Mrs Kay Regan, Dr Derek Brewer, Mr Desmond January (see pp. 5 and 59-61)

Cambridge Evening News

Front cover illustration
The disused Trumpington railway line, with a fox Vulpes vulpes *and three of the interesting plants that have occurred there — twiggy mullein* Verbascum virgatum, *perennial flax* Linum anglicum *and larkspur* Consolida ambigua *(see pp. 31-37)*

CONTENTS

EDITORIAL

This year's *Nature in Cambridgeshire* runs to a record 64 pages in honour of CAMBIENT's very successful Cambridgeshire Wildlife Appeal, an account of which appears on pages 59-61 followed by a full list of contributors.

A major theme is the natural history of urban and man-made habitats and their conservation — a subject that has recently attracted much interest. Our Field Officer, Keith McNaught, spoke at the SPNC's conference in Nottingham in September 1980, "Nature conservation goes to town", about CAMBIENT's town margin nature reserves and has contributed an article based on his talk. James Cadbury and Mike Smith's long article develops the theme of urban nature conservation with special reference to the identification of sites for inclusion in the City Council's Plan for the Newnham and West Cambridge District. Graham Easy has provided a detailed account of the flora of the railways of the old county of Cambridgeshire and Isle of Ely, active and abandoned, and has illustrated this on the cover.

That it is still possible to discover species of flora and fauna new to the county (or more strictly vice-county now, v-c 29) — or even indeed new to Britain — is illustrated by articles on the wool-like galls of *Andricus quercusramuli* ("oak-branchlet gall-wasp") found near Rampton, a "northern" species of willow found in the Trust's reserve at Fordham Woods, and a moth new to Britain found at the Gog Magog chalk-pit. The plant records compiled by Gigi Crompton include a duckweed never previously reported in Britain and the rediscovery of two increasingly rare wetland plants feared extinct in Chippenham Fen National Nature Reserve — grass-of-Parnassus and "common" butterwort — perhaps proof that the Nature Conservancy Council's skilful manipulation of the reserve's water regime is paying dividends!

The Latin and English names used in the last paragraph lead me to explain my editorial policy on this matter. No completely consistent practice seems feasible. For flowering plants and ferns I have confined Latin names to strictly botanical articles and reports, other than for some members of larger genera and for rare or "obscure" species whose English names are more or less artificial or "bookish" and may be less well known than their Latin equivalents. English names used are those recommended by the Botanical Society of the British Isles and published in *English Names of Wild Flowers* by John Dony, Franklyn Perring and the late Catherine Rob (Butterworths for the BSBI, 1974), sometimes with alternatives given. For birds I have adopted English names only, but for most other animals scientific names with a popular name also if there is one given in an appropriate Collins guide.

1980 was an eventful year for nature conservation, and not just in Cambridgeshire, with the introduction into Parliament of the Wildlife and Countryside Bill in December and, on a global scale, with the launching of the World Conservation Strategy in March. Public interest has been unprecedented and has been stimulated by some thought-provoking books and television programmes and expressed in correspondence in *The Times* and elsewhere. Richard Mabey's *The Common Ground* (Hutchinson, £8.95, but going into paperback in September) and Marion Shoard's *The Theft of the Countryside* (Temple Smith, £4.95) have established themselves as "required reading" for those interested in conservation. If you have read them, try Howard Newby's *Green and Pleasant Land?* (Pelican, £2.50).

Philip Oswald
March 1981

CAMBIENT

TWENTY-FOURTH ANNUAL REPORT (1980)

Our 1979 Annual Report ended with a statement to the effect that, "with the support of all its members and a great deal of hard work", the Trust appeared "all set for a successful year in 1980". Well, we can certainly say that the support, hard work and success have all been very much in evidence! The Cambridgeshire Wildlife Appeal has of course been uppermost in our minds since its launch in November 1979, and it has gone from strength to strength thanks to the extremely hard work of its Chairman Mr Desmond January, our Appeal Director Lt. Col. Carey Fullbrook, our President Dr Max Walters, our Appeal Secretary Mrs Kay Regan, the Trust's four members of staff and an army of members who are too numerous to mention here. The generosity of CAMBIENT's supporters was greater than we could ever have hoped for, and we were able to reach our target of £100,000 at the end of November on the day that Mrs Regan left for a well-earned rest after 13 months of "voluntary" hard labour. All the donations, events and projects which helped us to achieve our aim cannot unfortunately be mentioned, but we shall be eternally grateful to all concerned, whatever their role, and the names of all donors are recorded at the end of this issue of *Nature in Cambridgeshire.*

The Appeal total rose from £27,800 in January to over £100,000 by Christmas with £41,739 coming from CAMBIENT members. Events as varied as the extremely popular "open garden" at Chippenham Park which began the season in April and the very enjoyable wine and cheese evening in September hosted by Mr January at The Maltings, Ely, with guest speaker Mr Clement Freud, MP, have helped to achieve this success. We should also mention the admirable contribution made by Cambridgeshire schools, 15 of which raised £589 through a sponsored colouring competition, Sutton School £100 with a sponsored spell-in and Meldreth school £100 with sponsored sunflower-growing. The Appeal has been one of the reasons for the Trust's appearance on television this year, with coverage of Hayley Wood, Paradise nature trail and the presentation of Cambridge lottery pledges. It also meant that we were able to welcome Mr Ted Ellis to address a public meeting in Cambridge.

Apart from our marvellous appeal success, CAMBIENT was fortunate to receive two generous legacies in 1980 — £6,490 from Mr Shirley Collett and £1,075 from Miss Winifred May Irving. Welcome aid has also come from the Countryside Commission and the World Wildlife Fund towards purchase of our three reserve sites, and essential loans were provided by the SPNC. An extra £1,500 from the County Council was also forthcoming as a result of a special working party on grant-aid to voluntary bodies. We were very touched to be made the beneficiary of two memorial funds this year for two much loved and respected members of the Trust, Mr John Raven and Mrs Winifred Parsons. Money is still being donated to these funds, but eventually we plan to establish a permanent memorial on the Ouse Washes for Mr Raven and probably educational facilities at Hayley Wood for Mrs Parsons.

Although the Appeal has dominated this year, the Trust's work has continued normally as far as possible and there have been many exciting developments. Our Ouse Washes purchase of nearly 30 acres was completed in the spring and lengthy negotiations continued throughout the year for the purchase of Overhall Grove and Soham orchid meadow. Renewed attempts to buy the Chettisham meadow were unfortunately unsuccessful. Plans to renovate the Hayley Wood cottage depended on the availability of funds, but it was finally possible to begin this work in November and fortunately the weather has been kind so far. Plans have been prepared and the building work is being supervised for us by Mr Alan Bird; we hope that the renovation will be completed by Easter. A small additional area of garden is to be purchased to go with the cottage.

Other nature reserve developments have been the finalising of a 50-year lease for Dog House Grove, Wilburton; the renewal of the Beechwood lease; tree-planting at Fulbourn, Knapwell and Papworth; coppicing in Hayley Wood, Overhall Grove and Elsworth Wood by local members' work parties; vegetation mapping at Thriplow; the annual deer count; work on the Norwood Road cottages by Fentask; the appointment of the Ouse Washes summer warden for six months for the first time and purchase of a new hide; and the offer of a bequest of a garden and woodland reserve in Meldreth.

Membership has flourished, with an increase of 400 during the year, and our Watch Club for juniors grew from 86 to 100 members, thanks mainly to the excellent CAMBIENT insertions for *Watchword* prepared by our Field Officer and to the most enjoyable "Watchwalks". The Trust's recording project was ably continued during 1980 by Peter Seccombe and Sarah Douglas, and coverage of East Cambridgeshire and the area north of Cambridge to the Ouse Washes was completed. Over two years the natural history interest of 295 sites has been recorded, thanks to our NCC "capacity grant". Other important species recording has been completed by volunteers taking part in the Tetrad Plant Recording Scheme, encouraged by the initiative of Duncan Donald and Charles Turner and their series of field meetings.

Except for our Appeal Director and Secretary, who have worked so hard for us this year, the Trust's staff position has remained the same. We were delighted that Pete and Sarah were able to stay with us, as their help has been invaluable in so many ways; Keith McNaught completed two years with us last March and his appointment was made permanent; Joy Greenall totalled four years with the Trust, in various capacities, in November; Ken Hudson completed three years as Membership Secretary, Sales Officer and Appeal Treasurer; and Joyce Morley achieved an admirable 13½ years. What would we do without her?

Other county and national developments have been the formation of a Cambridgeshire Farming and Wildlife Group, vital discussion over national wildlife legislation, and exciting developments within the SPNC with plans for a 40-page nature conservation magazine. 1980 seems to have been a literary year, as preparation of the SPNC handbook of nature reserves is also in hand, as well as a Macmillan guide to reserves, a Cambridgeshire Natural History guide and the new Wandlebury brochure produced jointly with the Cambridge Preservation Society.

It is really self-evident to say that 1980 has been a hectic but rewarding year, and one that gives us encouragement for the coming decade.

Joy Greenall
Secretary/Conservation Officer

EXECUTIVE COMMITTEE

The more important, and rewarding, work of the Executive Committee during the year is reflected in the Annual Report. Members may, however, be interested to hear about some of its less glamorous activities. The most time-consuming of these has been the updating of the Trust's Memorandum and Articles of Association (i.e. its constitution), to bring them in line with our present and likely future aims. Members have already been affected by another rather gloomy task of the Committee: the recommendation to Council of new subscription rates, approved by the 1980 A.G.M. and put into effect in January this year.

Other topics discussed, which are not described in any particular order of importance, include co-operation with the Conservation Corps and the Cambridge Natural History Society, printing arrangements for *Nature in Cambridgeshire*, sales expenditure, staff salaries and conditions, the financing of excursions, and the possibility of National Nature Reserve status for certain Trust reserves. All this, of course, represents only a small proportion of the total activities of the Trust and the work of its hard-pressed staff, but it will I hope give members a clearer idea of the role of the Executive Committee.

M. E. Smith
Chairman

SCIENTIFIC ADVISORY COMMITTEE

During the year two reports were received from Peter Seccombe and Sarah Douglas on their county recording survey. A committee excursion visited three of the highest graded sites from the 1979 season. A recommendation was made to the Executive Committee that the recording work should continue in 1981, funded by the NCC "capacity grant". Reports on the conservation value of Great Wilbraham Common (see *N. in C.*, **23** (1980): 43) and the BTO/NCC pilot survey of breeding birds of damp/wet grassland were also discussed. It was agreed that, where appropriate, management agreements should be negotiated for Melbourn Grinnel Hill, Guilden Morden Parish Pit, Litlington Pit and Wood Barn Farm Lane, Toft — the last a highly graded site in the Douglas and Seccombe survey.

Reports were received during the year of the loss of wildlife habitats owing to agricultural improvement or the clearance of woodland. Additions to the sites of interest to the Trust were also discussed, and ten sites identified during the preparation of comments for the Newnham and West Cambridge District Plan have been listed as Natural History Interest sites (see p. 22). Members of the committee visited Keys Cottage, Meldreth, to discuss possible uses for this site, and it was agreed that the Trust's input to the woodland at Thriplow Bury should be limited to advice.

The problems of management on reserves prompted wide-ranging discussion on subjects including the advisability of controlling *Ceratophyllum demersum* at Haddenham Pond by Chinese grass carp, the best way of maintaining and extending chalk grassland on the Devil's Dyke, the felling of dead elms at Fulbourn Educational Nature Reserve, and the management of Thriplow Meadows in the continued absence of grazing. The inclusion of information about Trust reserves in

the SPNC Nature Reserves Handbook and other guides was discussed, and a statement on reserve acquisition policy was prepared for a regional meeting to discuss the SPNC Nature Reserves Study.

Statements of policy on a number of other matters were also considered. It was agreed that the introduction of *Selinum carvifolia* (see p. 42) into Fordham Wood should not go ahead and that the Trust should not become involved in the sale of wild flower seeds. The issue of scientific permits is under review.

Mr Duncan Donald and Dr Peter Grubb were welcomed as new members during the year. Mrs Lesley Gray will replace Mr D. French as representative of the County Council Planning Department, but Mr French has been asked to continue to serve on the committee in a personal capacity. The membership otherwise remained the same as at the end of 1979 (see *N. in C.*, **23** (1980): 8).

Geoffrey Wood, who died on 29 January, was a member of the Scientific Advisory Committee for 22 years. For most of that time he represented the Cambridgeshire County Council and its predecessors, but he continued to serve after his retirement from local government in 1975 until the onset of illness not long before his death. His contribution to the work of this committee will be greatly missed.

J. K. McNaught
Secretary

EDUCATION COMMITTEE

This year's work by the committee has been marked by a successful and stimulating appeal to schoolchildren as a part of the Trust's Appeal year, a continuing development of our Watch Club for the young, but, sadly, the loss of one of our founder members, Winifred Parsons. In her service of the Trust and of its educational aims, Mrs Parsons brought to bear an incisiveness and dedication that marked her wider work for education in Cambridgeshire over the past 50 years. She rarely missed a meeting of this committee, of which she was a founder member and former Chairman, and we shall miss her friendliness and that enthusiasm for bringing into the lives of the young that joy which she gained herself from natural history. We hope in the coming year to see part of her memorial fund contributed to the Trust's education work.

Hundreds of children throughout the Trust area became involved in the Appeal. Colouring-in of a wildlife poster and the growing of sunflowers not only raised over £750 but contributed to children's awareness of the need to conserve their natural environment. The committee reinforced this by allowing 20% of the money raised to go back to the schools for the purchase of natural history books for their libraries. Keith McNaught has put much time and effort into the development of our junior Watch Club. By keeping in touch with teachers and encouraging them to involve themselves in more natural history teaching, the Newsletters to schools continue with their role.

Mr John Wilkinson, Headmaster of St. Luke's School, retired from the committee during the year, whilst Mr Alan Revill, an advisory teacher in environmental studies, has joined.

S. P. Tomkins
Hon. Secretary

CAMBIENT WATCH CLUB

Watch is a national club for young conservationists, and those joining it who live within the old county of Cambridgeshire and the Isle of Ely are considered to be the junior wing of the Trust.

The invitation from the SPNC to the Trust to affiliate to Watch and so create a new category of junior membership unfortunately came at a time when CAMBIENT's resources were stretched and priorities lay in other directions. However, I act as County Watch Organiser and am responsible for the CAMBIENT Watch newsletter, which is prepared three times a year and included in *Watchword,* the club's national magazine published to coincide with the school holidays.

Membership of CAMBIENT Watch has risen to 130, and many members have taken advantage of the programme of monthly "Watchwalks" throughout the year. These walks have included guided tours and practical activities on Trust reserves at the Ouse Washes, Coe Fen and Paradise, Soham Meadows, Bourn Brook, the Roman Road (where CAMBIENT Watch played host to a local young ornithologists' club), Fulbourn Fen, Hayley Wood, the Whipple Museum of Science and Upware Field Centre by boat. The last excursion was extended to parents and Trust members, and as on other "Watchwalks" as much pleasure was gained by the grown-ups as by the children (see p. 13).

To complement the national activities and projects arranged by Watch, CAMBIENT Watch members have been asked to help during the year to report rticularly good response came from the request to report cowslip sites, as CAMBIENT Watch members have been asked to help during the year to report sightings of butterflies and to act as Watchdogs for roadside verge nature reserves. A particularly good response came from the request to report cowslip sites, as possible indicators of old meadows.

In conjunction with Watch, the Wild Flower Society organised a survey of wild flowers and a colouring competition. Two CAMBIENT Watch members, Carol Thacker and Duncan Boud, received certificates of merit, and as a class winner Duncan also received a hand lens as a prize.

The organisation of an increasing membership spread throughout the county would be much more effective if done in the form of local groups. Volunteers are needed to act as leaders for groups of up to 15 members. A detailed or specialised knowledge of natural history is not essential; what is more important is the ability to get on well with children and motivate them. Despite a meeting called at the Brunswick Teachers' Centre to explain about Watch in Cambridgeshire, no local Watch Groups have yet been formed.Further details of what is involved can be obtained from me at 1 Brookside, Cambridge CB2 1JF.

Keith McNaught

FIELD MEETINGS IN 1980

Saturday, 23 February: Ouse Washes

About 50 members and friends enjoyed the first good weather for many years on the annual excursion to the Ouse Washes. The sunshine had brought many other visitors to the hides at Welches Dam, so it was not possible for Mr Cliff Carson, the RSPB and Honorary CAMBIENT Warden, to take the whole of our group on the usual guided walk; instead, after Mr Carson had indicated what we were likely to see, our members had the opportunity to wander from hide to hide at their leisure experiencing the sight and sounds of the Washes.

Typical wetland species — heron, coot, lapwing and reed bunting — were seen, but even these "common" species are threatened as the area of Britain's wetlands declines, and the need to conserve such habitats becomes ever more important. Even with our eyes closed, the whistling of the large flocks of wigeon and the noise of the Bewick's swans told us we were at the Ouse Washes, and their presence in such large numbers, with flocks of tufted duck, mallard, pochard, shoveler and pintail, indicated how important this reserve is.

Members who walked to the south-western hides overlooked the Common Wash, where CAMBIENT had recently added to the area in Trust ownership by the purchase of a further 28½ acres. Where the water level was low the outline of ditches could be seen; these and the gates and fences that were visible are evidence that in summer the area is grazed or cut for hay. Indeed this traditional agricultural practice is a prime reason for the attraction of such a variety of birds to the area. In summer, with the wintering birds gone, their place is taken by birds which come to breed, including the black-tailed godwit, a small group of which were seen at the time of this visit. A female marsh harrier and a short-eared owl were also seen by some members of our party. The sunshine, the flowering coltsfoot and the sound of lambs on the west of the old Bedford River gave a spring-like quality to the day.

Keith McNaught

Sunday, 20 April: Papworth Wood and Overhall Grove

About 30 members and friends braved the cold wind and overcast skies for a tour of two of the west Cambridgeshire woods in Trust management — Papworth Wood and Overhall Grove. They were rewarded, not only by a sight of the more spectacular spring ground flora at its best, but also, through the lucid explanation and guidance of Dr Oliver Rackham, by a striking object lesson in historical ecology. For these two superficially similar elm woods, only a few miles apart and on the same heavy boulder clay, exhibit notable differences in flora that can only be accounted for by what is known of their history. Both woods would be considered ancient in terms of human experience, though only moderately so when measured by the life span of one of their senior oaks, for they are perhaps about six centuries, a mere three oaks, old. Both are associated with a moated site of the type generally attributed to a medieval manor house and exhibit evidence of human occupation into the later Middle Ages, though not beyond. The withdrawal of man and his immediately associated domestic animals from the sites, though not entirely from the area, has enabled Nature in general, and woodland in particular, to return in Horacian style. But, as Dr Rackham showed us, the wood which Nature has reconquered is never quite the same as the original wood from which she was expelled. In some other local woods, such as the relatively undisturbed Knapwell Wood, we have a useful guide to the types of flora one might assume to have been present at both Overhall and Papworth before medieval man got busy. Independent documentary evidence of what was going on, and when and where, is sadly sparse and fragmentary for both sites, in spite of considerable research. It is therefore doubly unfortunate that a third local wood connected with a moated site, Swannesley Wood, Caxton, the ghost of which our coach passed in transit between Papworth and Overhall, was finally grubbed out during the life-time of the Trust, since it had excellent continuous documentation from the twelfth century.

What the Trust has been able to achieve during the decade in which it has had the management of Papworth Wood, in the way of recording and preserving its beautiful and interesting features, was amply demonstrated to us. Dr George Peterken's guide, a "must" for all visitors, modestly summarises the aims and work here, but this did not adequately prepare us for the abundant display of wood anemones and primroses, obviously profiting from the hard work that has gone into thinning the trees. Nor could the guide anticipate the ravages of Dutch elm disease, which has created a vast new problem of labour and management. As we entered the wood, the crowns of dead elms clashed in the wind above our heads with a sound like dried bones. At one point Dr Rackham was able to demonstrate, from the fallen bark of one dead tree, where a disease-bearing beetle had entered and laid her eggs and where the young grubs had fed and flown and, from the trunk, how the net of fungus had spread. An interesting contrast between types of elm was highlighted by the bright green leaves on the suckers of the more disease-resistant varieties. Yet in the end the loss of most of the elm in the wood may not be a tragedy, since elm is in fact ruthlessly invasive and has had half a millenium to expand its domain from the place allocated to it in medieval economy, as a field boundary marker that grew a cheap hedge and provided lopping for livestock. (I suspect that most medieval cattle were a lot less fussy than our "improved" breeds.) We hope to see a revival and strengthening

of the remaining native trees — oak, ash, field maple, hazel and spindle — but will have to be careful about another successful non-native, the sycamore. Those spectacular spring plants of hedge-bank and light woodland, such as the primrose, should also benefit, but it would seem that a century of grazing by the stock of Sir Everard's deer-park has put paid to the oxlips for ever.

During our walk through Papworth Wood we recognised the songs of most of the commoner woodland birds — blackbird, great tit, blue tit, chiffchaff, dunnock and wren.

Since our visit to Overhall Grove, the appearance of the 1980 issue of *Nature in Cambridgeshire* (pp. 10-17) has provided us all with such a detailed account of this most varied and fascinating site that it would be otiose to repeat what we were told and shown here by Dr Rackham and also by Mr Parish and members of the Management Committee who joined us at this point. But no written account can provide a substitute for the great glory of the upper, drier part of the wood when the oxlips are in flower. Human occupation does not seem to have withstood the notoriously wet seasons of the mid-14th century and the attendant plagues to cattle and human beings. Once again man withdrew from immediate occupation, his former presence being attested by the very complex earthworks he left behind and the great crops of nettles which spring up every summer from his former dunghills. It is, of course, a fallacy to assume that the more complex the earthworks the greater the importance of the site. Here it would seem more reasonable to suppose that a greater struggle was needed, even at the most favourable periods of occupation, to prevent man and beast from getting completely waterlogged. The present occupants of the Overhall Manor site, the badgers, continue to provide examples of "instant archaeology". Some sherds picked up by Dr Rackham and other members await identification at the Museum of Archaeology.

In the archaeological context, we debated the original function of the small moated mound at the foot of the old village and before the entrance of the wood. It seems too far down the slope to be a reasonable site for a windmill, but the other suggestion of an adulterine castle is equally far-fetched, since it is also too far down to command the road. All in all, the site has enough puzzles of both man and nature to keep us all speculating for a long time to come.

Scilla Hall

Saturday, 3 May: Hayley Wood

Many members and their friends enjoyed a fascinating visit to Hayley Wood in the company of two of the best guides to the reserve — Dr Max Walters and Dr Oliver Rackham. A group fresh from their meeting that morning to discuss the Cambridgeshire Tetrad Plant Recording Scheme (see p. 53) joined the excursion as the first of their field recording meetings.

The history of the Trust's involvement in the wood was explained by Dr Walters for those on their first visit. The ancient hedge along Hayley Lane and the colonisation of the new hedge (see *N. in C.*, **23** (1980): 26-27) were pointed out. The importance of the lane was evident when Dr Rackham explained the old road and rail system of the area. Participants saw the state of the Railway Keeper's Cottage *before* any renovation work was carried out as part of the Cambridgeshire Wildlife Appeal (see p. 59).

A walk along the railway line allowed the railway verges, some rich with boulder clay grassland species, to be examined, and a comparison between the species composition of the ancient wood and the secondary woodland could be made from the outside. The ditch and bank surrounding the medieval wood are evidence of its ancient history. The wild pear in the north section was pointed out, a species once commonly mentioned in Anglo-Saxon charters, but this is now one of the four surviving specimens known in Eastern England.

The three-quarter mile long 15 foot high fence caused great interest, and the coppice cycle and its effect on the ground flora were explained. Once the site of the largest population of oxlips, Hayley Wood has lost this title to Warsley Wood managed by the Beds and Hunts Trust. The fence was erected to exclude deer from the coppice area. Signs were seen of deer nibbling outside the fence. Evidence has shown that high on the fallow deer's list of preferred woody shoots is ash, followed by hazel, dogwood, maple and aspen. Looking through the wood at "deer level" (by kneeling down) showed clearly the effect of deer grazing. Ray Symonds explained about the activities and numbers of fallow and muntjac deer present in the wood.

Blue tit, great tit, whitethroat, blackcap, willow warbler, garden warbler, dunnock, wren, chiffchaff, robin, greenfinch, cuckoo and blackbird were heard during the afternoon.

Keith McNaught

Saturday, 17 May: Chettisham Meadow

The Trust's 1980 A.G.M. excursion was to Chettisham Meadow, where we were very pleased to be met by Mr Martin, who farms it, as it presumably has been farmed for centuries, as a hay meadow. Its setting is delightful: it lies hidden among other small fields — from which it is separated by fine, tall, old hedges — at the end of a long green lane. It lies on the clay just beyond the southern edge of the Fenland; and this — together with its continuing use as a hay meadow, without the addition of artificial fertilisers or herbicides — has caused it to develop a rich neutral grassland. It is a botanist's delight, with its green-winged orchids (Graham Connan's count reached 448.), adder's-tongue *Ophioglossum vulgatum*, sweet vernal-grass (which gives the new-mown hay its characteristic smell), pepper-saxifrage (see p. 43), dropwort *Filipendula vulgaris* and other herbs characteristics of this once commonplace but now all too rare habitat. The tall hedges around had several warblers calling from them, including lesser whitethroats. Orange tip, holly blue, peacock and green-veined white butterflies were all seen in the meadow itself. A grass snake was seen in an adjoining field; the local three-nerved sandwort *Moehringia trinervia* was found in a nearby hedgebank; and, not satisfied with the botanical "jewels" he had already seen, Dr Mike "Mousetail" Smith had to discover about 25 plants of the extremely local mousetail *Myosurus minimus* in the gateway of a nearby field! It was altogether a most enjoyable outing.

Duncan Donald

Adder's-tongue fern Ophioglossum vulgatum *William Palmer*
(see pp. 12, 14 and 53)

Saturday, 31 May: Upware Field Centre — by boat

A group of 36 people (14 Watch members and their families) set off in pouring rain from the Victoria Road Bridge, Cambridge, on *The Duchess* for a trip down the river to Upware Field Centre, with Mr Kelly at the helm. Despite having the blinds down for most of the journey, there was still plenty to see. The trip took us through two different types of locks, and we saw parties of swans and ducks with young. As well as these, several reed buntings braved the wet to sing on the bank as we went past. When we arrived in Upware we had our picnic and walked over to the Field Centre, where Oriel Parker-Rhodes showed us round the two rooms full of cases containing displays ranging from fossils to insects and stuffed animals and birds, as well as old fenland tools and work done by school-children visiting the nearby nature reserves. After about 20 minutes of looking round and reading information sheets, we set off through mud and rain to the lime-pit and green lane, where we indulged in various activities, the most popular being bird-watching, fossil-hunting and pond-dipping. By the time we had to return to the boat everybody (including most of the adults) was caked in mud and wet through, but everybody appeared to have at least one fossil specimen and some people saw long-tailed tits and many varying types of water creatures.

Back at the boat, the weather appeared to improve and most of the blinds were raised, so we got in some useful practice at naming members of the swallow family on the wing; one sand martin obliged by flying along beside the boat. The highlight of the day for many people, however, was when two herons were seen together on the bank, often letting us get quite close in the boat before flying a bit further ahead again. Not all the birds were able to laze about like this; a pair of moorhens were engaged with a late clutch of eggs on their raft nest, seemingly precariously positioned attached to a boat's anchor-rope.

Graham Connan

Saturday, 14 June: Devil's Dyke

Threatening rain-clouds cleared to a sunny afternoon and, if the Dyke top was a trifle windswept, we had all prepared for variable weather. It was, in any case, often more rewarding to scramble along the banks to find some of the rarer chalk plants for which the Dyke is justly famous. With Mr David Jones' wide natural history interests, we were not, of course, allowed to forget the birds, though he suffered one of the inevitable disappointments of a conscientious leader when a corn bunting, whose regular use of a particular song-post he had carefully established, failed to make the rendez-vous with us.

But this was primarily a botanists' field day, made the more profitable by good planning and the kind co-operation of the coach driver. We were ferried to two road-intersections with the Dyke, picked up from the third (Here the car parties lost out because they had to turn back halfway along our transect of the Race Course to rejoin us at the far end.) and then taken to a fourth on the Dullingham Road. As a result we saw the prime sites for most of the specialities as well as a good spectrum of more familiar chalk species. I suspect that each of us has different memories of discoveries and rediscoveries. For me, as a newcomer, the lizard orchid *Himantoglossum hircinum* and the purple milk-vetch *Astragalus danicus* were very exciting. So were known but relatively uncommon species like yellow-wort *Blackstonia perfoliata* and the Trust's own pasqueflower *Pulsatilla vulgaris,* while the bloody crane's-bill *Geranium sanguineum* put on a massed display of park-planting proportions. At the opposite end of the observational scale, finding the tiny bastard-toadflax *Thesium humifusum* was a triumph of persistence and sharp eyesight for Graham Connan, one of our younger members, for Mr Jones, after telling us what to look for and pointing our noses in the right direction, let us find the plants for ourselves and the Dyke resounded with calls for confirmation of our discoveries.

Rosemary Jellis

Sunday, 22 June: Cambridge

It is often surprising to find that urban areas can hold sites of wildlife interest, but on a warm summer's afternoon 25 members and friends met at the Trust office and were guided around just such sites in Cambridge by Dr James Cadbury and Dr Mike Smith.

Although recently mown, Coe Fen provided an interesting first stop, and a particularly rich ditch contained reed sweet-grass, reed canary-grass, gipsywort, water mint and water forget-me-not. A goldcrest was heard nearby. Within less than half a mile of the city centre, Robinson Crusoe's Island has woodland shrubs including wayfaring tree, wild privet and hawthorn. Purple toothwort *Lathraea clandestina* (see pp. 22 and 28) was found in flower. Opposite the

Garden House Hotel, where cows quietly grazed, we were able to see the effect of this type of management — closely grazed areas with patches of unpalatable coarser plants. Along this stretch, elder was found growing within a willow — a common occurrence where seeds are introduced by birds. Treecreeper and chaffinch were heard.

A detour was made to Malting Lane to look at the flora of old walls and roofs. Ivy-leaved toadflax, thyme-leaved sandwort, evening-primrose and rue-leaved saxifrage were seen, and our party were keen to look more carefully at walls in other parts of Cambridge. The path by the Mill Stream led us on to Paradise, but on the way, whilst a greenfinch displayed overhead, we compared the many different grasses growing together including yellow oat-grass, cock's-foot, crested dog's-tail, red fescue and meadow barley.

Sedge warbler, willow warbler, reed bunting and blue tit greeted our party at the Paradise Nature Reserve. Crack, white, purple and osier were willows we identified, and the smell of water mint crushed by our feet accompanied our investigation of the marsh. In the wooded area fine specimens of wych elm and purging buckthorn were studied and alder festooned with traveller's-joy was admired. By permission of the owner, our party was allowed to visit the grounds of Paradise House, where very large trees of alder and hybrid black poplar grow close to the river. Discussion on the scarcity of frogs in the county, except for garden refuges, was greeted by the timely appearance of an adult frog.

Continuing our walk back to the Trust office, we stopped at the open ditch on Coe Fen where one of the best stands in the county of whorl-grass *Catabrosa aquatica* was found (see p. 28), but less interesting was the recently mown New Bit, which presented a sharp contrast to the areas we had visited. A short walk through the Botanic Garden completed the excursion, and grateful thanks were expressed to our leaders, with a request that another part of Cambridge be visited next year.

Keith McNaught

Saturday, 28 June: Chippenham Fen and Soham Meadows

An assortment of cars and a coach brought 27 members to Chippenham Fen to be met by Geoff Radley of the Nature Conservancy Council, our guide for the morning. After an informative introduction to the nature of the Fen, its history and modern management, the party set out on a wet but rewarding tour. The biannually mown reed and sedge fields yielded a rich assortment of rushes and sedges including *Schoenus nigricans* and *Carex distans,* as well as meadow thistle *Cirsium dissectum* and some rather confusing marsh-orchids! Water-violet *Hottonia palustris,* flowering in the ditches, delighted several members and columbine *Aquilegia vulgaris* obliged with a lingering flower in one meadow. Here too we were shown a fine individual marsh-orchid, *Dactylorhiza incarnata* subsp. *ochroleuca* (with very pale yellow flowers), and were able to see for ourselves how the mowing regime has increased the quantity of *Carex pulicaris* on the reserve. Snipe could be heard drumming as we compared *Silaum silaus* and *Selinum carvifolia* (see p. 43), but not everyone could detect a reputed difference in the smell of their crushed leaves! Fine stands of marsh helleborine *Epipactis palustris* and greater spearwort *Ranunculus lingua* kept shutters clicking and pencils scribbling right up to the last.

Lunch was taken "on the move" to Soham, where Robert Payne, our guide for the afternoon, awaited. He explained the unusual lack of past enclosure in this particular parish, resulting in a large area of common land, meadows and horse fen. The first piece that the party visited was a small triangular meadow to the north of the Soham Lode, one of the potential purchases to be made with the Appeal money. Its botanical worth was soon apparent, as we found bee and frog orchids and adder's-tongue *Ophioglossum vulgatum;* a few weeks earlier there was also green-winged orchid. More than this, the whole meadow is a rich assemblage of attractive meadowland plants — common meadow-rue, oxeye (or moon) daisy, milkwort and hawkbits, not such a common sight anywhere now in south-east England. Two meadows further upstream were less rich, but had points of interest, including meadow brome *Bromus commutatus,* redshank (nesting locally?) and, luckily for us, a docile bull, hidden amongst his wives and children and only noticed as we were half way across his field! Further bee orchids in the meadow already owned by CAMBIENT served to convince everyone of the conservation value of this complex of meadows and left us hoping that more of them will soon come under the Trust's protection.

Alan C. Leslie

Saturday, 12 July: Holme-next-the-Sea, Norfolk

A day of alternating sunshine and showers was not the best sort of day to go on a trip to the Norfolk Naturalists' Trust's reserve at Holme-next-the-Sea, but ten members from March joined a coach containing Cambridge members when it arrived at the Fountain in Broad Street, March. The journey to Holme encountered some rain and some sunny spells, but when we reached the reserve car park at ten minutes to twelve, after a hair-raising crawl along an approach track scarcely wide enough to accommodate the coach, the sun was shining.

The party were met by John Newton, Warden for the Norfolk Naturalists' Trust, and by Peter Clarke of the Holme Bird Observatory, who represented the Norfolk Ornithologists' Association. Peter Clarke was the first to take us in hand, conducting us to the Bird Observatory to give us an introductory talk before showing us something of the work done here. Among the many exhibits in the Ringing Laboratory was a chart showing the life-span of some of the species ringed here. It was interesting to learn that Sandwich terns have been recorded alive up to 16 years after ringing and common terns after 11 years. These seemed to be the longest-lived of the birds ringed at Holme. Mr Clarke took us to one of the Heligoland traps used for catching birds for ringing and explained the mode of operation. Each year, he said, they ringed about one thousand birds. On one occasion a bittern had been caught in one of the traps. Many of the birds returned to the area for seven or eight years after ringing, which seemed to indicate that they took no fright from the experience. Recently reintroduced here and claiming some of Mr Clarke's attention was a mercury vapour moth trap, and we were shown the moths which had been ensnared by the light overnight. They included one brilliantly coloured garden tiger moth among a varied collection of some two dozen.

After a picnic lunch, during which a heavy shower of rain drove several of the party who were eating outside to seek the shelter of the coach, we began a most interesting tour of the reserve under the capable guidance of John Newton. He outlined the history and development of the area, pointing out the clay bank, constructed in the mid-19th century by local landowners to keep the sea from flooding the low-lying land north of Holme village, and how the army, by its use of the area as a range for gunnery practice, had produced an expanse of marshland. This marshland now provides a splendid habitat for several species or orchid (including pyramidal, early marsh and bee orchids and marsh helleborine) and for many other plants.

Describing the build-up of dunes, our guide indicated the black deposits remaining from long-dead forests which serve as a foundation around which the sand collects. These deposits of sand, held in place by accumulations of marram grass, may grow in size to heights of many feet. Apart from the ubiquitous marram grass, perhaps the most prolific grower on the dune sands was sea buckthorn *Hippophae rhamnoides,* which covered a large area of the reserve.

Among a large variety of flowers seen on this walk, in addition to those referred to above, there were lady's bedstraw, common bird's-foot-trefoil, biting stonecrop, common stork's-bill, carline thistle, selfheal and common ragwort. Hound's-tongue lichen was one among a number of lichens growing on the clay bank, which is now covered by sand and grass. Six-spot burnet moths *Zygaena filipendulae* were abundant here, as too were the caterpillars of the cinnabar moth *Callimorpha jacobaeae.*

To the accompaniment of a very heavy shower of rain, the party moved eastward to the saltings on the Thornham side of the reserve, where, later in the summer, flowers of sea aster and sea-lavender transform the area into a purple-coloured plain.

At four o'clock the party rejoined the coach and began a pleasant drive back to March and Cambridge. It had been a very pleasant, if occasionally very wet day, but nevertheless the members from March would like to express once again their appreciation to Keith McNaught and the CAMBIENT office for the arrangements made to enable them to share the pleasures of this excursion.

Leonard H. Pape

Saturday, 16 August: Reach Lode — by boat

On an exceptionally lovely evening 36 CAMBIENT members and friends boarded *The Duchess,* which turned from her mooring beneath the Victoria Avenue Bridge to take us to Upware. The willows trailing on the banks encouraged a langorous feeling, but there was much to see. Mrs Kelly's refreshments, together with Mr Kelly's commentary and passengers' observations, helped keep us on the alert. Mrs Brown's beautiful flower book helped resolve some friendly disputes. Under the Queen Elizabeth Bridge we were thrilled to see *Super Shrimp* (only 18ft 6ins long!) in which Shane Acton of Cambridge sailed solo round the world

and thence straight into *The Guinness Book of Records.*

We were offended by the cans and litter that marred the early part of our trip . . . but then the sight of a barnacle goose delighted us all, and as we passed Fen Ditton *Homo sapiens* was sporting himself on "The Plough" lawn. The banks glowed pink with great willowherb, and here and there yellow water-lilies stretched their heads to greet us.

Soon we were under the A45 at Bait's Bite, and at the gun sheds post where "The Bumps" start. Beyond Bottisham Lock we caught a glimpse of the new hotel which is being built at Clayhythe and then we passed Bottisham Lode and Swaffham Lode, reputed to date since Roman times. At Reach Lode we enjoyed a short walk before our return journey.

The gradual silting-up of the Cam (last dredged in 1928) has some compensation, for at Cole's Marina kingfishers nest alongside the shallow water. Some of us were lucky enough to catch their flash of blue as they streaked to feed.

It was dark when we got back. Everyone had enjoyed the trip and was eager to start earlier next year to allow for more time at Reach Lode — once an important trade route between Reach and the continent, and now full of wildlife interest. We thank Mrs Joyce Morley for organising our excursion, and Sarah Douglas, Pete Seccombe and David Jones, who led our walking parties.

Eluned Chaloner

Thursday, 18 September: Bourn Brook Reserve

Some 34 members met in the evening at Fox's Bridge and walked along the old railway track to the reserve. In summer the approach is bright with flowers, and, although these had faded, the contrast between its numerous species of uncut plants and the Flymo-shorn banks towards Lord's Bridge was sadly apparent. It is hoped that these mown banks will next year, with University co-operation, be left uncut to allow regeneration of the natural flora.

Members were met by the owner of the reserve, Mr David Ellis, (managing to walk in spite of a plaster-encased ankle) and told of the problems caused by the rapidly changing levels of the Bourn Brook after rain: he showed a large eroded area of bank caused by the Anglian Water Authority's attempts to change the course of the brook to reduce flooding. A kingfisher was seen and some lapwing, though the peak time for the latter is midwinter when counts of over 1,000 are common.

The group inspected the recently deepened oxbows dug out by the Conservation Corps. It is hoped that these will attract and shelter wildfowl during the winter and provide flood-free nesting sites for moorhen and other riparian birds during the breeding season. A new bridge over the brook was under construction by the Anglian Water Authority to replace the one washed away by last year's floods. When it is completed members will once again be able to walk from the reserve across the fields to Toft. Fading light hastened the return journey to Fox's Bridge.

Members should make a point of revisiting the reserve in midsummer when the approach track borders are brilliant with flowers and butterflies.

Jean Benfield

Sunday, 12 October: Fungus foray at The Lodge, Sandy, Bedfordshire

On a golden autumn afternoon 35 members were taken round the grounds of the Royal Society for the Protection of Birds by Dr James Cadbury and me. The Lodge, on the site of Sandy Warren, is a small Victorian park surrounded by grassland, conifer plantations, natural secondary woodland and remains of heath; its acid sandy soils are very unlike most of Cambridgeshire.

Although this was a poor season compared to my previous visits in 1962-4 (or to Breckland in 1980), most of the main groups of fungi were represented. We began with a magnificent clump of *Grifola gigantea* sprouting from a buried stump. Other unusual fungi included *Tricholoma inodermeum, Cortinarius (Hydrocybe) hemitrichus* and the curious *Helvella crispa* and *Clavariadelphus junceus.* There were several opportunities of identifying species of *Lactarius* and *Russula,* although the taste-buds of some of us did not quickly recover from tasting *R. betularum.* About a third of the species found at Sandy are not common on the similar terrain of the Breckland.

Oliver Rackham

CAMBRIDGE NATURAL HISTORY SOCIETY

President: Dr D. W. T. Crompton

At the General Meetings held in the Lent and Michaelmas Terms 1980 the following lecutres were given:

25 January	Prof. W. H. Thorpe, FRS (Jesus College, Cambridge)	The Seychelle Islands and their birds
15 February	Dr D. Chivers (Dept of Anatomy, Cambridge)	Gibbons – their ecology, behaviour and conservation
7 March	Dr S. Conway Morris (Dept of Earth Sciences, The Open University)	Extraordinary soft-bodied animals from the Cambrian Burgess Shale
24 October	Prof. N. P. L. Wildy (Dept of Pathology, Cambridge)	The natural history of viruses
14 November	Joint meeting with Preservation Society Dr R. M. Laws, FRS (British Antarctic Survey) Film: The Fig Tree	Conservation in the Antarctic
28 November	Dr G. Halliday (University of Lancaster)	The flora and vegetation of East Greenland

The several sections of the Society held their usual meetings, and the Annual General Meeting followed the traditional conversazione held on 16 May from 11 a.m. to 6 p.m. in the main Zoology Laboratory.

Subscriptions (1981/82): Life Membership, £15; Annual, £2; Undergraduates (3 years), £5.

Applications to: Mr E. J. Wiseman, The White House, Barley, Royston, Herts, SG8 8HT. (City Secretary)
Miss I. Gelder, Sidney Sussex College, Cambridge. (University Secretary)

THE NEW AGRICULTURAL LANDSCAPES PROJECT IN CAMBRIDGESHIRE

Chris Brown
Project Officer

Till recently conservationists have rightly directed their efforts towards the most important biological sites and the more dramatic landscapes. The intensively farmed lowlands have received less attention, though their value as wildlife habitat and as attractive countryside is still considerable, even if under continuing threat.

The New Agricultural Landscapes Project, which started in April 1979, aims to tackle the visual and ecological impoverishment of this "ordinary" countryside, through the medium of a Project Officer working in a defined area. His role is to encourage farmers and landowners to change detrimental farming practices, to conserve the existing qualities of our landscape and to develop new landscape features. The Cambridgeshire project is jointly sponsored by the Countryside Commission and Cambridgeshire County Council and will run until April 1982, with a possible extension thereafter. Similar projects are running in Suffolk, Hereford and Worcester, Leicestershire and Bedfordshire.

Two project areas have been established — the fen parishes of Sutton, Haddenham and Mepal, and five parishes on the boulder clay to the west of Cambridge — Croxton, Eltisley, Yelling, Great Gransden and part of Eynesbury Hardwicke. Together they cover nearly 11,400 hectares. The key to success lies in changing the attitude of farmers and gaining their interest and sympathy towards landscape conservation. The approach therefore has to be realistic, discussing with the landowner his farm and pattern of farming and his current attitudes to conservation and making suggestions which will satisfy the needs both of conservation and of efficient farming.

The aims of the project can be summarised as follows:–

- to identify the existing characteristic features of each landscape type and encourage their conservation;
- to encourage the creation of new features, primarily through tree-planting;
- to promote a wide appreciation of the need for action in landscape conservation, amongst farmers, public landowning bodies and local communities;
- to give advice on planting, management and grant-aid, and to put farmers in touch with other sources of advice (the NCC, local naturalists, Forestry Commission etc.);
- to involve voluntary and youth groups, schools and Parish Councils in the work of the project.

In this context, the "conservation" of existing features invariably means their management; just "leaving alone" is often the first stage of a process that ends in disappearance. A neglected hedge may for a time harbour a high bird population, but without some attention it will become gappy, is doubly liable to stubble fire damage and eventually will be seen by the farmer as untidy, serving no useful purpose and a candidate for removal. Management by cutting, flailing or periodic coppicing (allowing several years' bush growth before cutting back to ground level) is much more likely to ensure the continuity of that hedge. Similarly, the future of a small wood is more secure if it receives some positive management for timber, game, shelter or amenity, rather than if it is neglected, especially if it has been the victim of Dutch elm disease.

In the first few months a management brief was produced, defining the characteristics of each landscape type and the priorities for action. For example, on the boulder clay management is needed to conserve the remaining hedges, woods and ponds. New planting would be most effective if concentrated in blocks rather than lines, adjacent to buildings or on a skyline, and in awkward field corners. In the Fens a management regime for ditches is required, enabling them to serve their drainage function while supporting wildlife and retaining the distinctive lines of reed heads. Various rotations of mowing and slubbing alternate sides at one-, two- or

three-year intervals need to be tried out. New tree-planting should perpetuate the traditional patterns of tree cover along catchwater drains and adjacent to buildings and should take the opportunities to provide shelter and variety along droves and roadsides.

The project's main concern is that of landscape conservation, which in many cases is synonymous with wildlife conservation. Information already available to CAMBIENT has been very valuable as background on the project areas, and both the Trust and the NCC are represented on the project's advisory committee. But there are potential conflicts between wildlife and landscape. There could be competition for land (Should one, for example, leave field corners as rough grass or plant trees on them?), but the main conflicts are probably over methods. For the establishment of young trees, a clean weed-free site, treated with herbicides, is desirable; careful survey would be needed to ensure that valuable plant communities were not destroyed in the process. Indeed, the replanting of heavily diseased elm spinneys which carry a ground flora including oxlips *Primula elatior* is a problem that has arisen, and a solution in which herbicides play no part is being sought. In a wider context, any use of herbicide is detrimental to flora and to the fauna which feeds on it; against this should be weighed the probability that a farmer is much more likely to maintain a planting scheme until it is established (five years) with the use of sprays than if he has to use hand labour.

Fortunately, the majority of landscape conservation measures are conducive to a richer wildlife. Hedges and ditches have already been mentioned, and one can also cite the management of natural streams (e.g. removing a minimum of bankside vegetation when drainage schemes are implemented), the clearance of neglected ponds to create a variety of depths with open water and fringing vegetation, and above all increasing the area of woodland cover in what is already the least wooded county in England.

What has the project achieved so far? In numerical terms, over 10,000 trees have been planted in two seasons, on 40 farms and sites such as bridleways, droves and former gravel-pits. The most common species used are native — oak, ash, field maple, alder, willow and white poplar; the use of shrubs such as goat willow and the native *Viburnum* species is also considered important. New hedging totalling 3½ kilometres has been planted, and 2km have had gaps filled; blackthorn, field maple and hazel are added to hawthorn in these schemes. Management work on four ponds and two woodlands has been carried out, and these projects and the planting schemes receive a grant of cash or materials ranging from a quarter to a half of the cost.

True success, however, lies beyond these bare figures. Planting trees is only the beginning of a programme of care and maintenance necessary to ensure that they thrive. One day with a digger is just the start of producing and maintaining an ecologically varied pond. None of these are likely to be a long-term success unless the sympathy of the farmer has been won. Attitudes need to be changed to the extent that landowners are prepared to alter their normal farming management to serve landscape conservation. It is too early to judge whether attitudes are changing, but the project has already involved many farmers who would not otherwise have undertaken practical conservation work. As the project progresses, I hope to capture the interest and commitment of more farmers through the example of practical schemes and through discussing with them, on their own farms, the concepts and practicalities of landscape conservation.

TOWN MARGIN NATURE RESERVES

Keith McNaught

During September 1980 the Society for the Promotion of Nature Conservation organised a conference on opportunities for people living in towns, large and small, to enjoy their local wildlife and to become involved in its conservation. The conference was entitled "Nature conservation goes to town". It may be a surprise to some that a Trust with such a rural area as CAMBIENT's should be asked to supply a speaker on conservation projects around towns and cities. However, because most of the 53,000 acres of the old county of Cambridgeshire and the Isle of Ely is under arable cultivation and some of the richest areas for wildlife are now in or around its urban areas, it was my pleasure to describe CAMBIENT's involvement in nature reserves in town margins to the conference. Using the Trust's nature reserves I illustrated that, in spite of the highly arable nature of the countryside, there is still much of interest to the naturalist.

Within a hundred yards of March Railway Station, in the north of the county, lies a small area which appears to be the result of neglect of a number of gardens which were inclined to waterlog. In a region where agricultural fenland possesses very little in the way of nesting sites for small birds, these 6½ acres of hawthorn scrub, marsh and open water are a valuable habitat and were established in 1963 as a bird sanctuary by the Trust. The success of the venture is reflected in the number of nests built in the reserve: after 1965, when 152 nests were recorded, the number increased to a maximum in 1972, when 345 nests were built. The number of species breeding has been as many as 24.

The local Management Committee endeavours to ensure the continued survival of the conditions which are so favourable to birds, especially areas of dense hawthorn, and the nature trail and guide its members are preparing will also describe the botanical interest, which includes two species uncommon in the Fens — adder's-tongue fern *Ophioglossum vulgatum* and alder buckthorn *Frangula alnus,* and the invertebrate life, which has been well studied, with 174 species recorded. The purchase of most of the site by the Trust from British Rail included two cottages. Although once subject to a demolition order, they are now in the process of conversion into a museum with meeting room, teaching room and work room, and the old cottage garden is to be developed as a "wildlife garden" with the planting of suitable species. Most of the work on the conversion has been done by the Management Committee themselves, though they now have the assistance of a team employed under the Youth Opportunities Programme. There is no doubt that this reserve has served as a focal point for the Trust in the north of the county.

Only a few minutes' walk from the centre of Ely is an 80-acre nature reserve managed by the Trust. This is a complex and extensive group of meadows and flooded Kimmeridge Clay pits, and a deposit of clunch gives rise to one of the few chalk grassland habitats in the Isle of Ely. The range of habitats, from rough grassland with patches of scrub and woodland to reed and open water, provides conditions for a rich variety of insect and bird life.

The City of Cambridge and its surroundings must be one of the best botanically studied areas in the British Isles. Over the centuries botanists have made exhaustive records. In the City itself it is still possible to find wall-rue *Asplenium ruta-muraria* on the steps of the Senate House, as recorded by C. C. Babington in 1860, and tower

cress *Arabis turrita* on an old wall next to the potting-shed in St John's College grounds, near where it was first recorded by J. Andrews and S. Dale in 1722.

On the outskirts of Cambridge, three chalk-pits fall within the City boundary and are scheduled as a Site of Special Scientific Interest because of the rich chalk flora they support. The fame of the chalk-pits at Cherry Hinton extends far beyond the borders of the county, as they are important for botanists, zoologists and archaeologists and have been visited by naturalists for 300 years. One pit is still being worked, but the freeholders, Gonville and Caius College, and the tenants, British Portland Cement, are aware of the Trust's interest and desire to protect the flora. Cambridge City Council are freeholders of the other two. One, "The Spinney", is managed as a public open space and nature reserve by the City Council with management recommendations made by the Trust. The plant list for this site is long and includes a rare honeysuckle, *Lonicera caprifolium,* known here since 1763 and gathered before 1800 to illustrate Sowerby's *English Botany,* and the wild cherry *Prunus avium,* also known here since the 18th century or even earlier. The third pit is leased by the City Council to the Caravan Club of Great Britain, and an agreement with both these bodies allows the Trust to safeguard the natural history of the site, which is the home of one nationally rare plant, the moon carrot *Seseli libanotis* (see *N. in C.,* **23** (1980): 2). A nature trail guide has been printed.

In the 16th century Cambridge had all the aspects of an agricultural community. Between the arable land of the open fields and the houses were common pastures consisting of low-lying marshes. In the present day the City has ten areas of commons covering 226 acres (see *N. in C.,* **23** (1980): 44) and, although they no longer fulfil their original purpose of providing grazing for the poor, they are still grazed and form the characteristic "green open spaces" of the City today.

Roswell Pits Nature Reserve, Ely *William Palmer*

River Granta and Paradise, Cambridge *William Palmer*

In co-operation with the City Council the Trust has established a nature trail over Coe Fen (formerly Cow Fen), where grazing is let for "cows, geldings and mares, from Old May Day to Old Candlemas Day". The trail crosses the meadowland of Coe Fen, downstream beside the Granta, by ditches which are particularly rich in species, to a wooded island where purple toothwort (see p. 13) grows as a parasite on the willow roots and it is difficult to imagine one is only a half a mile from the city centre. Another nature trail extends over Paradise, where the Trust has a nature reserve agreement over wet meadowland and marshland with belts of willow and alder scrub. The total list of species for these areas is impressive and they make ideal demonstration areas for schools and university classes.

As well as establishing nature reserves, the Trust has a second tier of designation, that of a Natural History Interest (NHI) site. At present over 300 sites are listed. NHI status affords no statutory protection but the County and District Planning Authorities and other official bodies have these lists and have agreed to consult the Trust should any development be proposed for these sites. In the recent preparation of the District Plan for Newnham and West Cambridge, the area which includes Coe Fen and Paradise, ten further sites were identified as meriting NHI status (see p. 26) in addition to one site of Special Scientific Interest (SSSI) designated by the Nature Conservancy Council and three NHI sites already listed for the district. One of these sites is made up of individual but adjacent areas which form a continuous band alongside the Cam. The listing of these sites as a "zone" of natural history interest from the City boundary to the centre of Cambridge marks the beginning of a conservation idea the Trust would like to extend to other parts of Cambridge.

References

Further details of the old plant records are given in *A Flora of Cambridgeshire* by F. H. Perring, P. D. Sell, S. M. Walters and H. L. K.Whitehouse (Cambridge University Press, 1964) and of the Cambridge commons in *Survey Reports: The Common Lands of Cambridgeshire* (Cambridgeshire County Planning Department, 1956). The nature trail booklets may be purchased at the CAMBIENT office.

NATURE CONSERVATION IN THE CITY OF CAMBRIDGE

C. J. Cadbury and M. E. Smith

CAMBIENT members who have read their Newsletter for January 1981 will have had their attention drawn to the current interest in the nature conservation potential of urban areas. The Newsletter mentions the Council for Europe's Urban Renaissance Campaign, the SPNC's 1980 conference "Nature conservation goes to town", and the Watch urban project "Nature in towns". Other signs of a growing interest in this neglected area are the foundation of the Ecological Parks Trust, television programmes on urban foxes, and books like Michael Chinery's *The natural history of the garden* and Richard Mabey's *The unofficial countryside.* In the summers of 1979 and 1980 CAMBIENT organised short "urban excursions" within the City of Cambridge (see p. 13). These were well attended, and participants were surprised at the variety of wildlife to be found in this urban environment. It is hoped to visit other parts of the City this year and subsequently.

In this paper we try to explain some of the opportunities and problems for nature conservation in urban areas and to apply these to the special case of Cambridge. We then describe the most interesting sites indentified in the Newnham and West Cambridge District, some of which were visited on our "urban excursions".

Even the most unpromising areas of brick, concrete and tarmac may harbour wildlife: kestrels nesting on office blocks in London and kittiwakes on warehouses in Gateshead are striking examples, and at the more humble end of the scale there is a common but pretty moss, the silvery *Bryum argenteum,* which in Britain typically grows on tarmac verges, paving-stones and similar artificial habitats. Any old wall will probably have several mosses, lichens and flowering plants, and, if it is damp, perhaps ferns as well (see, for example, Rishbeth, 1948; Walters, 1969). Apparently unlikely spots like the asbestos roof of the bicycle shed outside the CAMBIENT office quickly acquire a thick carpet of moss, which may contain animals too: Richardson and Corbet (1978) announced the discovery of two species of tardigrade (tiny invertebrates for which no published Cambridgeshire records existed) in "a tuft of moss . . . on the roof of the Department of Zoology in Cambridge".

Waste land — spare or infrequently used land around factories, derelict industrial areas, abandoned railway lines, building sites — can be very productive. While the habitat is "open", with a reasonable amount of bare ground, a wide variety of plants can establish themselves. These are mostly the common species of the area, but odd things often turn up. There may be a spectacular display of a single species, perhaps once frequent in the locality but now uncommon, whose seeds have been dormant in the soil for years (such as the opium poppy *Papaver somniferum* which appeared in quantity during building operations in Grange Road, Cambridge: it may once have been cultivated there when the area was open fields). There may be plants that are not native to Britain, or to the site in question, a few seeds of which arrive by some means and germinate. These usually disappear after one season (like the cultivated flax *Linum usitatissimum* which appeared along a pavement in Queens' Road, Cambridge, the seeds having perhaps fallen off the back of a lorry). Some, however, may spread to become apparently permanent members of the flora, like Oxford ragwort *Senecio squalidus,* which escaped from the Oxford Botanic

Garden at the end of the eighteenth century and is now common on waste ground throughout most of lowland Britain (including Cambridge). The number and variety of these alien plants are much greater if nearby industries import foreign grain, timber or wool, which nearly always bring exciting alien seeds with them. Rubbish tips are especially good, since they bring together large areas of open habitat and abundant seed from all kinds of sources — as Graham Easy has enthusiastically pointed out (Easy, 1976).

If waste land is left undisturbed, the character of the plant community will change; some species will be eliminated, through competition and the gradual disappearance of open ground, but they will be succeeded by others. For the first year or two such an area will probably be dominated by strong-growing seeds such as thistles, goosefoots and docks. This stage of the succession is important because these plants provide food for seed-eating birds such as finches and buntings. Later, depending on local coniditions, there will be a progression to more "closed" communities — grassland, scrub or woodland. Sometimes there will be wet areas, and, particularly if there is infertile or toxic industrial waste, gravel or cinders, some areas may remain open.

The plants and animals that thrive best in urban habitats are the "opportunists". Mosses and flowering plants like Oxford ragwort have very efficient means of dispersal and can take advantage of small or temporary areas where the conditions are right, however inhospitable such places may look. Birds like gulls can pick up food at rubbish dumps and move elsewhere when the tip closes.

Towns and cities also include large areas of a very different kind of habitat — parks and gardens. These, by contrast, provide a relatively stable and protected environment — "sheltered housing" almost — for less adaptable species. Old-established lawns and shrubberies may be quite rich in native plants, and the planted trees, shrubs and flowers provide food and shelter for a wide variety of birds and insects. The importance of gardens for birds in well known, but they may be even more valuable to insects. Owen and Owen (1975) recorded about a quarter of the British species of butterfly, hoverfly and ichneumonid wasp in their suburban garden in Leicester, and the number of butterfly individuals was remarkably high. Moreover, some insects are apparently almost entirely dependent on garden plants for their survival here, like two moths found in Cambridge, the varied coronet *Hadena compta* and golden plusia *Polychrisia moneta,* whose larvae feed on sweet Williams and delphiniums respectively.

The importance of urban areas for wildlife conservation is not just a matter of available habitats: it has to do with the management of the land and the pressures on it, particularly in comparison with rural land. Simply in terms of cover and nesting sites, the outer fringes of a city may be more hospitable to birds than the surrounding arable farmland. For insects, the diversity of plant species in gardens may not be matched in a countryside dominated by monocultures, heavily sprayed and deprived of its hedgerows. Rough grassland, scrub and marshy areas may be more readily tolerated on industrial sites than on farmland, simply because there is no obvious or immediate alternative use. Rubbish tips, building sites and "neglected" gardens are often better habitats for arable weeds than farmland, just because they are less often sprayed with herbicides. Grassland in parks and large gardens does not have to be productive and the management pattern is often continuous over long periods, so rich communities have a chance to develop and survive. Both privately

and publicly owned gardens and parks are, after all, managed for "amenity", and wildlife interest may be seen as part of this. Public enthusiasm may be stimulated for publicly owned areas, particularly if local people can have a hand in management, and there is great educational potential here. Private owners may be proud to have goldcrests nesting in their conifers or frogs breeding in their ponds.

On the other hand, urban habitats have their own special conservation problems. "Temporary" habitats are by their nature difficult to conserve, and, since part of their interest is in the succession or "turnover" of plant species, the effort would often be misplaced. An industrial site, or part of one, may lie derelict for years; but once the decision is made to develop it, an industrialist may be even harder to convince than a farmer of the importance of wildlife. Whilst (say) a species-rich meadow on a mixed farm may have *some* economic value, rough grassland in the middle of a factory can have none. Such areas also look "untidy"; and that is generally a danger in urban areas. The municipal-flower-bed mentality is less universal than it was, but it is still prevalent, in both the private and the public domain.

"Public" and "private" pose their own problems. If a public authority pursues an enlightened management policy over an area in its control, it may expect its ratepayers to have free access and the habitat may then suffer. Conversely, a private site may provide a haven from disturbance but its owner may resent both access for recording and advice on management. Urban owners are likely to be even less sympathetic than many farmers to people wandering over their land!

Vandalism or litter may damage a habitat and increase the urge to "tidy it up" permanently. Then there is the question of size. Very small areas of a particular habitat are extremely vulnerable to change and to external interference, the more so if the site is isolated. Urban sites can easily become fragmented and separated even more decisively than rural ones from other wildlife "reservoirs".

Cambridge shares many features of other urban areas, but in some ways it is rather unusual. Partly because of the lack of manufacturing industry, partly because new building and redevelopment have been strictly controlled, there is relatively little waste land or temporary open habitat (though this hardly applies now to the "Kite"!). On the other hand, there are many old walls (Rishbeth, 1948), paved and cobbled areas and other permently open sites, few of which are "over-managed". Because of the low intensity of land-use, particularly in West Cambridge, old pits and other relics of former human activity have mostly been left alone (see below). Most importantly the City, and West Cambridge especially, has an exceptional amount of the other major type of urban habitat. The large gardens and especially the college grounds along the Backs provide semi-natural grassland and woodland, with some large and practically unbroken stretches that are particularly valuable. In many of these places the wildlife is protected not only from direct interference but also from change. The management regime has in many instances been continuous for a very long time. The River Cam, with its adjacent ditches, is another bonus: its course through the City is remarkably "rural", and in the southern part where the banks have not been much "improved" interesting marginal communities have developed. It is also relatively unpolluted. There are no large "wild" parks of the Hampstead Heath variety but the City Council controls large areas by the river and at Coldham's Common which are informally maintained and of considerable interest. Likewise the County Council controls the Castle Mound. Finally, West

Cambridge has, within the City boundary, an area of farmland on which a number of arable weeds, now scarce in Britain, still occur. It is hoped that, with sympathetic management, some at least of these may be saved, but it is virtually certain that without special treatment they will disappear, as they have from so many other places. Although this is not an urban habitat, it comes within the area of the West Cambridge Plan, and the site is of sufficient botanical importance to warrant special attention.

Cambridge is unusual in another respect: largely but by no means entirely because of the University, its natural history has been enthusiastically studied for over 300 years and is much better known than that of most urban areas. (Indeed, the large number of alien plant species recorded must be largely due to "observer bias", since the amount of suitable habitat must always have been relatively small.) Early records make fascinating reading, especially if they are precise enough to allow comparison with the present day. The ornithological diary kept in 1899 by V. S. Vernon Jones (1979) shows that the bird life of south Cambridgeshire was richer 80 years ago, but several species such as the nuthatch and sedge warbler still breed where the diarist recorded them in the Newnham district. C. C. Babington's *Flora of Cambridgeshire* (1860) shows well how certain plants have persisted on sites protected from development within the City. The Castle Mound still has wild clary *Salvia horminoides,* fiddle dock *Rumex pulcher* and field mouse-ear *Cerastium arvense,* all noted here by Babington. The "Wilderness" of St John's College has tower cress *Arabis turrita* (see p. 21) and meadow saxifrage *Saxifraga granulata,* seen here by Babington (though he thought it was "probably brought in with turf formerly"). Another particularly satisfying example is bur chervil *Anthriscus caucalis.* This is a weed of light soils which is now seen regularly in the county only at Gamlingay (Leslie, 1979) and in the Breckland. Babington, however, recorded it in a number of localities, including "Between Burrell's Walk and the Barton road, Cambridge". Although this area is now largely built-up, the plant persists around the bases of planted trees in the pavement of Sidgwick Avenue and on cobblestones nearby. Like many other weeds it is less common than formerly in the countryside, but it survives here in an equivalent urban habitat.

Sites of natural history interest in the Newnham and West Cambridge District

West Cambridge is fortunate in having few of the problems normally associated with suburban nature conservation. It was nevertheless important that the City Council's Plan for the Newnham and West Cambridge District took the needs of wildlife into consideration (see p. 22). Consequently in 1980 an effort was made to catalogue sites of natural history interest in the area.

Disused pits and pools

The Travellers' Rest Gravel-pit situated at the edge of the University Farm off the Huntingdon Road is the only Site of Special Scientific Interest in the West Cambridge district. It is scheduled as a geological site because of Pleistocene gravels in which have been found Scandinavian erratics, rare vertebrate and non-marine mollusc fossils and human artifacts. The pit face is overgrown at present.

Prominent in the woodland that has developed over the clay workings of **Conduit Head Road Pit** are large grey poplars *Populus canescens* which support the largest rookery in the district (39 nests in 1980). Tall white willows and dead elms are favoured by lesser spotted woodpeckers, at least six pairs of which were present in the district in 1980. Three shallow pools attract breeding mallard and moorhens but

tend to dry out in summer. Foxes and even the odd grass snake and muntjac deer move in from the surrounding countryside.

Since gravel extraction from **Millington Road Pit** ceased in 1932, mature woodland with a dense and varied understorey of shrubs has developed on its banks and damp, uneven floor. A high proportion of the plant species have been introduced (notably by the late Dr W. Balfour-Gourlay) and many have become naturalised. Some enormous hybrid black poplars overshadow such shrubs as bird cherry and guelder-rose. Spring-flowering herbs including wood anemone, dog's mercury, primrose and snowdrop are well represented. Dusky crane's-bill *Geranium phaeum* and a striking southern European leek, *Nectaroscordum siculum,* with an umbel of nodding pinkish-green flowers on a metre-high stem add distinction to the naturalised component of the flora. There are also patches of another leek, *Allium paradoxum,* which is naturalised elsewhere in the neighbourhood. Since planning permission has been granted for four houses on the site, much habitat destruction is envisaged, even though a number of trees are subject to preservation orders.

Bolton's Pit lies surrounded on three sides by houses and their gardens between Barton and Fulbrooke Roads. The one-hectare pit was last worked for clay in about 1898 and is now flooded to a depth of four or five metres. The steeply shelving margins are fringed with such plants as yellow iris, greater pond-sedge *Carex riparia* and common reed, but the water is too deep for aquatics except for yellow and white water-lilies (including a pink variety). A luxuriant stand of reed on a submerged island provides a roost for up to 4,500 swallows in September and 400 pied wagtails in winter. It also harbours two pairs of breeding coots, reed warblers and sporadically a pair of mute swans. Abundant roach attract feeding kingfishers, and in 1979 a pair of great crested grebes bred. In winter up to 150 mallard use the water as a refuge, flighting out to feed on surrounding farmland; 6-10 pairs remain to nest in adjacent gardens. Swifts (which breed in the roof of 59 and 61 Barton Road) feed over the lake. In May and June they are joined by noctule bats and in August by other bats which are suspected of being serotines.

The reed is the larval food plant of several wainscot moths, including obscure wainscot *Mythimna obsoleta* and silky wainscot *Chilodes maritima,* and in both 1979 and 1980 the reed stems emerging from the water were heavily infested with the larvae of twin-spotted wainscot *Nonagria geminipuncta.* In certain summers plum-reed aphids *Hyalopterus pruni* cluster by the hundred on the upper leaves of the reeds. The presence of water stick insect *Ranatra linearis,* a large dragonfly, *Aeshna mixta,* a peacock-green musk beetle, *Aromia moschata,* and hornet *Vespa crabro* indicate a rich insect fauna.

The shallow 0.8-hectare pond in **Adams Road Sanctuary** was originally made for skating by damming a stream. It is now much silted up and has been invaded by reeds and bulrushes (or great reedmace). Breeding water birds include little grebe, tufted duck, coot and reed warbler. Many reed buntings roost in the reeds. Yews are a feature of the surrounding woodland and serve as a large blackbird and thrush roost. The Sanctuary is frequented by such woodland birds as tawny owl, jay, blackcap and garden warbler and is one of the few breeding sites of the magpie in the area. Tutsan *Hypericum androsaemum* is naturalised there.

The recently created pond at the **Cavendish Laboratory** has been planted with a number of non-indigenous species such as an arrowhead, *Sagittaria rigida,* sea club-rush *Scirpus maritimus* and galingale *Cyperus longus.* Several pondweeds

including *Elodea nuttallii* are well established, and marsh foxtail *Alopecurus geniculatus* is abundant on the gently shelving margins. The pond has considerable potential as a habitat for dragonflies and amphibians.

Banks of the River Cam

Coe Fen and the adjacent **Sheep's Green** have long been the haunt of local naturalists and retain much of their interest. Mature crack and white willows are a feature of the area. There is a good assemblage of marsh plants including water dock *Rumex hydrolapathum* on the east bank of the river, and the local whorl-grass *Catabrosa aquatica* is abundant in a ditch. Kingfishers fish in the ditch that meanders across the fen. The damp, wooded **Robinson Crusoe Island** adjacent to Fen Causeway is notable for butterbur and the naturalised purple toothworth *Lathraea clandestina* (see pp. 13 and 22), which both flower in the early spring. Another local speciality in the area is a teasel, *Dipsacus strigosus,* which is naturalised in two hedgerows. This plant from the Middle East was first recorded on Coe Fen in 1913 (Crompton, 1979; Leslie, 1980).

The **Owlstone Croft** march is wet enough in winter and spring to have good stands of reed sweet-grass *Glyceria maxima* and two sedges, *Carex acuta* and *C. riparia.* Common comfrey and brown sedge *Carex disticha* are among the marsh plants in drier areas. Sedge warblers and reed buntings breed in the marsh, which is surrounded by a variety of willows, including *Salix purpurea* and the hybrid *S.* x *calodendron.* Traveller's-joy scrambling over trees and bushes is a feature of adjoining woodland, where butterbur and a single bush of buckthorn occur.

Upstream one of the damp fields which form part of **Granchester Meadows** exhibits a fine display of marsh-marigolds in spring, and tubular water-dropwort *Oenanthe fistulosa* flourishes in a silted-up ditch where snipe feed in winter.

Dry grasslands and gardens

Dry grassland is at a premium as a habitat in this intensively farmed county. Two small areas protected within private college gardens are therefore to be cherished. In **Leckhampton Gardens** (Corpus Christi) cowslips, red clover, oxeye daisies and field wood-rush *Luzula campestris* are abundant along with a wide variety of grasses in a meadow mown once a year. Many of the cowslips have red or orange flowers, indicating hybridisation with garden primulas. There is a rather similar species-rich meadow in **Trinity Fellows' Garden.** Though cowslips are less frequent, there are salad burnet, rough hawkbit and quaking-grass which are apparently absent from Leckhampton. In **St John's Fellows' Garden** martagon lily *Lilium martagon* is naturalised in rather open planted woodland where goldilocks *Ranunculus auricomus* is frequent. The introduced hawkweed, *Hieracium oblongum,* has recently been discovered in grassland in **Newnham College Garden,** one of its few known sites in Britain.

Mistletoe is a scarce plant in Cambridgeshire. In 1980 34 trees (29 apples, two hawthorns, two willows and a balsam poplar) were located with this parasite in Newnham, all but one in gardens at the west end of Barton Road. Breeding colonies of common frogs and smooth newts may stand a better chance of surviving in garden ponds than in the country areas. The two species were reported breeding in three West Cambridge gardens in 1980. The nuthatch also has a very restricted distribution in Cambridgeshire; the college gardens along the Backs, with their large trees, are one of the few breeding sites for the species around Cambridge. There is a

small rookery (eight nests in sycamores in 1980) in Herschel Road, but several other colonies (such as the one in West Road) have ceased to exist.

Farmland

An extensive area of essentially arable farmland lies within the City boundary on the west side of Cambridge. Several now nationally scarce arable weeds have persisted in the verges of the boulder clay fields on Grange and Merton Hall Farms. They include corn buttercup *Ranunculus arvensis,* slender tare *Vicia tenuissima,* yellow vetchling *Lathyrus aphaca,* shepherd's-needle *Scandix pecten-veneris,* spreading hedge-parsley *Torilis arvensis* and broad-leaved spurge *Euphorbia platyphyllos.* All were present in 1980, though they were restricted to a few field corners that avoided herbicides applied to the cereal crops in the spring. Though the fields were sprayed in the autumn, many seedlings of these uncommon plants were visible in February 1981, but spraying is likely ultimately to threaten their survival.* Moreover, there are plans to sow most of the fields with grass to provide pasture for the University School of Veterinary Medicine's herd of cattle. The future of these plants, which depend on ground being disturbed, is therefore imperilled at this site. There are 14 bushes of the local woodland shrub, spurge-laurel *Daphne laureola,* in a thick hedge on the City boundary near the M11 and another two bushes in nearby boundary hedges. Stone parsley *Sison amomum* is plentiful in some of the hedges.

The skeletons of elms killed by Dutch elm disease are a sad and now all too familiar feature of the Cambridgeshire landscape. West Cambridge is particularly well endowed with a rich variety of elm clones. Most of the mature English elms *Ulmus procera* are dead and have been felled. Though sizeable small-leaved or smooth elms *U. minor* (= *carpinifolia*) survive in several places such as on Lammas Land off Barton Close and a variety (perhaps *plotii*) on the Madingley Road near Churchill College, their future is doubtful. The Huntingdon elm, a form of *U.* x *hollandica,* appears to have more resistance to the disease. If these clones are to be perpetuated, it is important that the suckers are allowed to persist in hedges such as the ones bordering the Coton footpath and old rifle range site on Grange Farm. It is good that the University have enlightened plans to plant hedgerow trees and even hedges of indigenous species on Grange Farm. It is hoped that some large timber (ashes and even the main trunks of elms) will be left in the hedges to provide nest sites for hole-nesting birds such as kestrels, owls and stock doves.

A Common Bird Census has been carried out since 1967 by the Cambridge Bird Club on 107 hectares of the farmland. About 30 species breed on the study plot, with skylark and yellowhammer the most abundant. In 1979 there were 5-6 pairs of red-legged and one pair of grey partridges. Hedge and scrub removal has probably resulted in the loss of three breeding species and a population decline of another two. Reed buntings have tended to replace corn buntings.

The future

It is important to maintain a variety of habitats and a rich wildlife community close to the City for educational and academic reasons, with University departments and schools requiring material for field studies and laboratory work. There is also an unusually high proportion of local residents who take an enlightened interest in natural history, as indicated by the membership of local voluntary organisations:

*The farm manager has kindly agreed not to treat three particular strips in the spring of 1981.

CAMBIENT has about 2,400 members, the Cambridge Bird Club about 400 (300 of whom are local residents), there are some 1,500 RSPB members in Cambridge, and the Cambridge Natural History Society has a membership of about 500.

In other districts of the City specific sites of wildlife interest certainly exist, but even though some may be well known they may not be identified on the City Planning Department's maps. Moreover, there are probably others to be discovered. Plans will be prepared for other districts where conservation problems may be more severe than in West Cambridge. Naturalists are therefore encouraged to acquaint themselves with their local scene. We shall be making investigations ourselves and the Trust will welcome information from any source.

Acknowledgements

The authors are much indebted to a number of local naturalists who have supplied information; particular thanks are due to Dr R. Nedderman, Dr O. Rackham, Dr R. H. Richens, Mr P. D. Sell and Dr H. L. K. Whitehouse. Landowners generously allowed access to their land. We are particularly grateful to Mr D. Urwin and his colleagues in the City Planning Department, who encouraged the exercise and discussion at the Community Forum and showed willingness to consider wildlife conservation in the District Plan.

Note

A number of the sites mentioned in this paper are privately owned and it is hoped that naturalists will respect this and seek permission for access.

References

Babington, C. C. (1860). *Flora of Cambridgeshire.* Voorst, London.

Chinery, M. (1977). *The natural history of the garden.* Collins, London.

Crompton, G. (1979). Vascular plant records. *Nature in Cambridgeshire,* **22:** 50-54.

Easy, G. M. (1976). The flora and fauna of rubbish tips and waste places in Cambridgeshire. *Nature in Cambridgeshire,* **19:** 23-31.

Leslie, A. C. (1979). Gamlingay revisited. A botanical account of a neglected area. *Nature in Cambridgeshire,* **22:** 42-47.

Leslie, A. C. (1980). Further records of *Dipsacus strigosus* Willd. in Cambridgeshire. *Watsonia,* **13:** 126-128.

Mabey, R. (1973). *The unofficial countryside.* Collins, London.

Owen, J., and Owen, D. F. (1975). Surburban gardens. England's most important nature reserve? *Environmental Conservation,* **2:** 53-59.

Richardson, J. D., and Corbet, S. A. (1978). Tardigrades: a phylum new to Cambridgeshire. *Nature in Cambridgeshire,* **21:** 36-37.

Rishbeth, J. (1948). The Flora of Cambridge walls. *Journal of Ecology,* **36:** 136-148.

Vernon Jones, V. S. (1979). An ornithological diary of eighty years ago. *Nature in Cambridgeshire,* **22:** 21-33.

Walters, S. M. (1969). Cambridgeshire ferns — ecclesiastic and ferroviatic. *Nature in Cambridgeshire,* **12:** 22-25.

THE FLORA OF CAMBRIDGESHIRE RAILWAYS

Graham Easy

The railway systems of Cambridgeshire (vice-county 29) contribute in no small measure to its fauna and flora. Only seven of the 40 10km squares used as the basis of recent distribution mapping are without railway lines or traces of abandoned systems. The "railway flora" is usually more varied than that of the surrounding countryside through which the railway has carved its path. While attempting to investigate this diverse flora during the last decade, the author has explored the majority of the county's railways. The following summary is an account of the findings of these casual visits, with a few comments on the possible origins of some of the less usual species encountered. There are two strongly contrasting habitats involved — the track and the verge — and their plant life is conspicuously distinct.

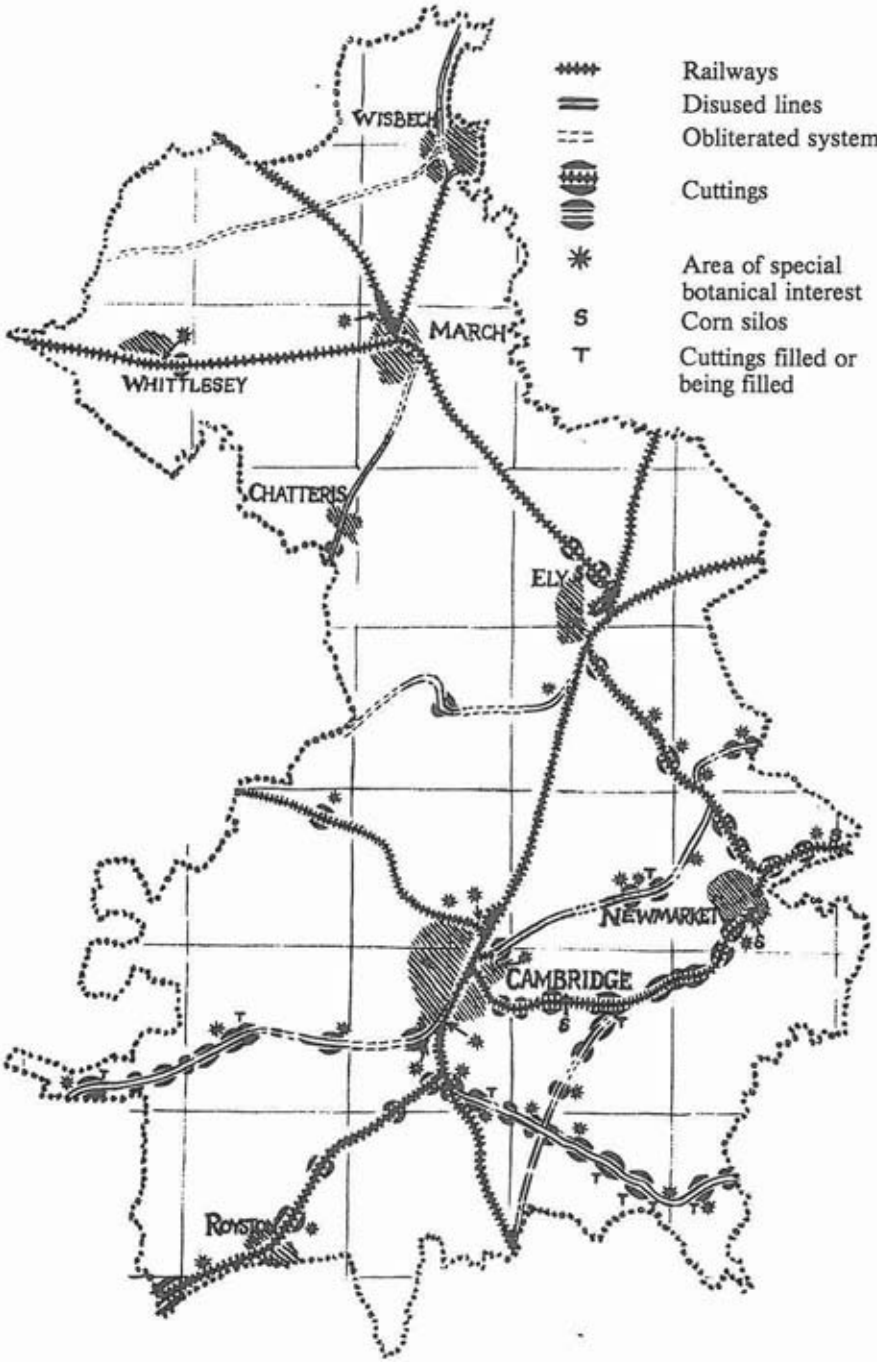
The clinkered, ballasted or granite-chipped "plateau" of the track

There are marked differences also between the floras of the lines regularly operated, those poorly used and those that have been abandoned. Even when much of the clinker and ballast has been removed from abandoned lines, the plant life of this track area is still significantly different from that of the verges.

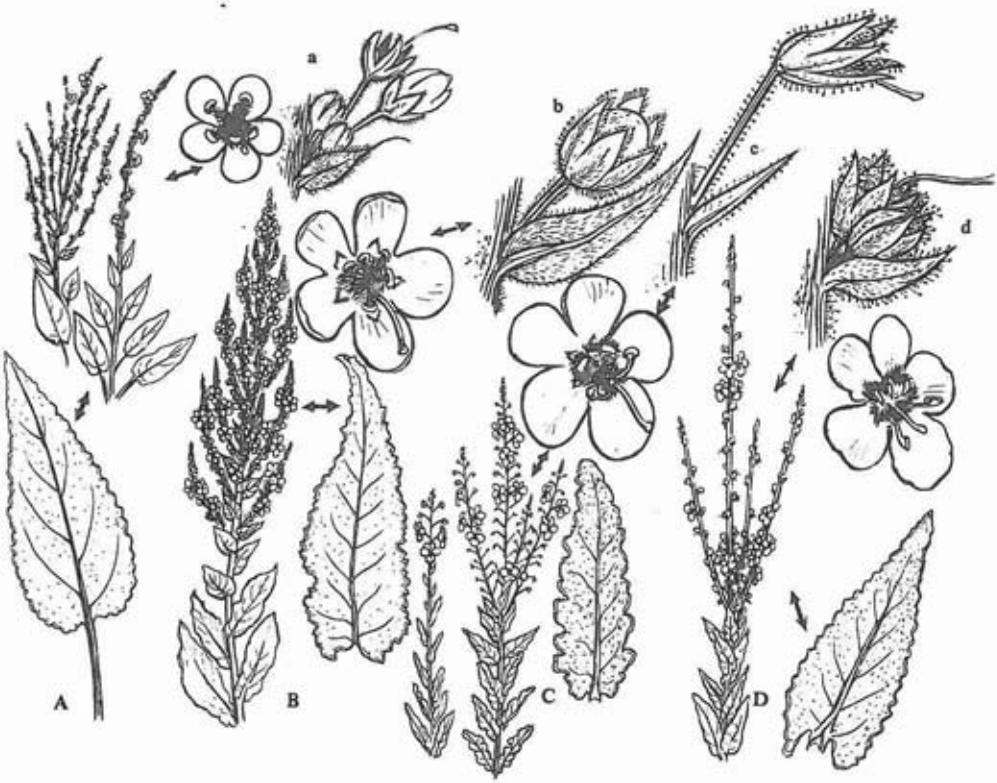
The lines still in use and sidings and storage yards that are regularly sprayed support a very sparse and depauperate plant population. Lack of competition enables such species as small toadflax *Chaenorhinum minus,* thyme-leaved sandwort *Arenaria serpyllifolia* and procumbent pearlwort *Sagina procumbens* to produce extensive but usually short-lived colonies. Less frequently sprayed areas are often colonised by sticky groundsel *Senecio viscosus* and Oxford ragwort *S. squalidus* and their hybrids and occasionally by rue-leaved saxifrage *Saxifraga tridactylites,* biting stonecrop or wall-pepper *Sedum acre* and hairy sedge *Carex hirta.*

Disused sidings, abandoned stations and goods yards where spraying has been abandoned usually support a varied and very interesting flora. The ubiquitous grasses, weed species and normally dominant plants of ruderal situations are not especially conspicuous. This encourages the establishment of such species as wild pansy or heartsease *Viola tricolor,* fine-leaved sandwort *Minuartia hybrida,* common whitlowgrass *Erophila verna,* thale cress *Arabidopsis thaliana,* hairy bitter-cress *Cardamine hirsuta,* annual wall-rocket or stinkweed *Diplotaxis muralis,* perforate St John's-wort *Hypericum perforatum,* Canadian fleabane *Conyza canadensis,* great mullein or Aaron's rod *Verbascum thapsus,* common bird's-foot-trefoil *Lotus corniculatus,* common toadflax *Linaria vulgaris,* sheep's sorrel *Rumex acetosella,* fern-grass *Catapodium rigidum* and rat's-tail fescue *Vulpia myuros,* along with the previously mentioned species and more rarely *Aira caryophyllea, Cotoneaster* species, *Geranium columbinum, G. rotundifolium, Hieracium* species and *Lepidium latifolium.*

Railway systems that have been abandoned are of special interest. After the rails and clinkered or granite-chipped surfaces have been removed, the disturbed soils remaining often accommodate scarce species. The rare grass *Apera interrupta* grows in quantity between Pampisford and Shudy Camps; Spanish catchfly *Silene otites* is at Burwell; a mullein, *Verbascum pyramidatum,* has been recorded, along



The railways of the old county of Cambridgeshire and Isle of Ely



A, a *Verbascum nigrum*
B, b *Verbascum pyramidatum*
C, c *Verbascum blattaria*
D, d *Verbascum virginatum*

The mulleins are an imposing group of species, both *Verbascum pyramidatum* and *V. virgatum* attaining a height of 5 to 6 feet. These mulleins with their purple-centred, yellow flowers are frequently confused. Helpful distinguishing points to look for are the degree of darkness of the purple coloration of the hairs on the stamens, whether the hairs covering the flowering parts are stellate, glandular or a mixture of both, and if flowers are single or grouped in the axils of the bracts (see **a—d**).

Further pitfalls await the unwary since *Verbascum* species hybridise freely. *V. pyramidatum* x *thapsus* and *V. nigrum* x *thapsus* have been fairly regularly recorded, whilst one plant at Fordham closely resembled garden-raised *V. pyramidatum* x *nigrum.*

V. blattaria is rare in Cambridgeshire, but the other three species are present in quantity along at least one railway system — *V. virgatum* between Toft and Trumpington, *V. pyramidatum* between Fordham and Swaffham Prior, and *V. nigrum* between Sawston and Bartlow.

with hybrids between it and *V. thapsus,* between Fordham and Swaffham Prior, *Verbascum virgatum* between Cambridge and Toft, perennial flax *Linum anglicum* at Trumpington (see cover drawing) and dwarf mouse-ear *Cerastium pumilum* at Milton and Cambridge. Unfortunately a significant proportion of these closed lines have been grubbed up, often to be returned to agriculture or used for building-sites or roadways. Those remaining often become progressively overgrown and in association with a similarly undisturbed verge flora look most suitable sites for nature reserves.

The railway verges — including dykes, embankments and cuttings

These verges are the most conspicuous features of our railway network, crossing for most of their length almost featureless agricultural "prairies". They provide some of the major roosting sites for birds, refuges for our sparse mammal population and shelter for some interesting plant communities with their attendant populations of insect and other invertebrates.

In the Fens these verges lack a varied flora, and the commoner grasses are dominant. Shrubs and trees do occur, but are not usually very noticeable as they are along the tracks of the south of the county. Hawthorns and willows are the most frequent, but a more varied selection of species is usually apparent in the vicinity of railway stations, no doubt remnants of the formerly well-kept flower-beds and shrubberies. We can only hazard a guess at the origin of an impressive clump of mock orange or syringa *Philadelphus* sp. at a remote spot north of Chatteris. Ditches dug to lessen the fire risk to adjacent crops in the days of steam formerly supported some interesting species. Sadly, with the change to diesel power and the unlikelihood of red-hot coals and sparks being ejected from passing locomotives to ignite the verges, these mainly unpolluted waterways have been allowed to choke up with reeds and grasses. Some interesting stretches remain, as can be seen between Milton and Waterbeach, where a range of wetland plants survive, including extensive colonies of marsh-marigold *Caltha palustris.*

In the remainder of the county the verges, embankments and cuttings provide remarkable stretches of habitat, which are for the most part little disturbed, owing mainly to their inaccessibility to the public. This is in marked contrast to the much more extensive network of roadside verges, which are regularly trimmed and forever being influenced by the Council's and the general public's activities, especially by the introduction of garden plants and weeds which are still frequently (albeit illegally) dumped as garden waste. The plant populations of these railway verges are very mixed, including as they do species introduced with soils (where embankments have been thrown up), further introductions carried cross-country on the rolling stock (e.g. various hawkweeds *Hieracium strumosum, H. chieriense, H. salticola, H. umbellatum, H. maculatum* and *H. vagum,* great lettuce *Lactuca virosa,* hawkweed oxtongue *Picris hieracioides,* blue fleabane *Erigeron acer,* ploughman's-spikenard *Inula conyza,* willowherbs *Epilobium* spp. and willows *Salix* spp.) along with plants that have spread from areas where pockets of a more varied flora have been intersected.

The cuttings provide important areas. Possibly many of the species that survive in such sites were growing in this vicinity when the railway was originally constructed. In many instances the original colonies have failed to survive the considerable environmental changes that have occurred in those very remarkable 150 years; the stable conditions on the railway cuttings have provided a haven where not only the commoner but some restricted species are often abundant. The flora here includes cowslip *Primula veris,* violets *Viola odorata* and *V. hirta,* forget-me-nots *Myosotis* spp., common restharrow *Ononis repens,* sulphur clover *Trifolium ochroleucon,* hairy tare *Vicia hirsuta,* kidney vetch *Anthyllis vulneraria,* harebell *Campanula rotundifolia,* crosswort *Cruciata laevipes* (= *chersonensis*), wild mignonette *Reseda lutea,* burnet-saxifraga *Pimpinella saxifraga,* wild carrot *Daucus carota,* wild clary *Salvia horminoides,* wild basil *Clinopodium vulgare,* basil thyme *Acinos arvensis,* cat-mint or catnip *Nepeta cataria,* lesser calamint

Calamintha nepeta, small scabious *Scabiosa columbaria,* dwarf thistle *Cirsium acaule,* oxeye daisy *Leucanthemum vulgare (= Chrysanthemum leucanthemum),* hoary ragwort *Senecio erucifolius,* mouse-ear hawkweed *Pilosella officinarum (= Hieracium pilosella),* rough hawkbit *Leontodon hispidus,* hawkweed oxtongue *Picris hieracioides,* common spotted-orchid *Dactylorhiza fuchsii,* glaucous sedge *Carex flacca,* quaking-grass *Briza media* and upright brome *Bromus erectus.* Some species comparatively rare in Cambridgeshire also occur — *Bunium bulbocastanum* at Melbourn, *Iberis amara* at Melbourn and Littlington, *Torilis arvensis* at Trumpington and Kennett, *Campanula glomerata* at Shudy Camps and *Valerianella dentata* at Melbourn and Shudy Camps.

Alien species

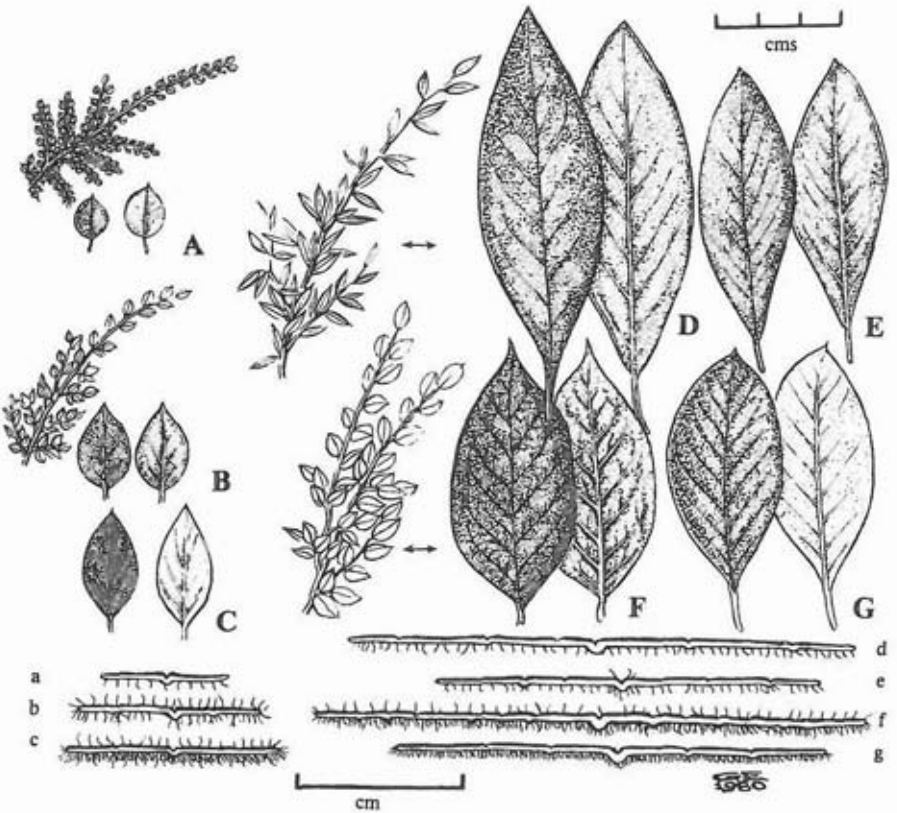
Several alien species occur and some of them thrive. Especially interesting are the rail-heads at corn silos as at Newmarket, Fulbourn and Kennett. *Digitaria ischaemum, D. sanguinalis, Echinochloa crus-galli, Setaria faberi, S. verticillata, Sorghum halepense, Bromus secalinus, Apera spica-venti, Rapistrum rugosum, Lepidium densiflorum* and *Camelina sativa* have occurred at these sites, along with larger quantities of common alien species. The rail system which formerly covered an army camp at Milton was the dumping ground for many thousands of military vehicles abandoned after service abroad during the Second World War. *Hieracium diaphanum H. umbellatum, H. vagum* and *H. salticola, Coronopus didymus* and *Bromus inermis* are among the wide range of alien plants still surviving there; many were probably introduced with the mud that was adhering to the tracks of some of the personnel carriers or tanks.

Abandoned lines have occasionally been used as rubbish and soil tips, usually where cuttings were available for this disposal. Some plants have persisted on these sites, e.g. *Chenopodium murale* and *Artemisia verlotorum* at Burwell; however most of the more interesting aliens in these situations have been casuals (e.g. *Sisymbrium loeselii* at Linton).

Garden outcasts are not as conspicuous along railway lines as on roadsides; nevertheless white stonecrop *Sedum album,* golden-rod *Solidago* sp., purple toadflax *Linaria purpurea,* large-flowered evening-primrose *Oenothera erythrosepala* and broad-leaved everlasting-pea *Lathyrus latifolius* have become established and are spreading along several stretches. No doubt these have encroached from adjacent gardens or railway station flower-beds. Others have obviously been planted (e.g. the persistent colony of *Lychnis coronaria* near the Devil's Dyke at Reach) or dumped (e.g. *Sedum telephium* at Linton and Trumpington). It is difficult to suggest the origins of star-of-Bethlehem *Ornithogalum umbellatum* along some more remote stretches of line.

A more detailed investigation into the origins of some railway plants

There are colonies of unexpected plant species that flourish along Cambridgeshire's railway systems. The frequency of sites for rhubarb *Rheum rhaponticum,* especially in Fenland, is a feature that has no parallel along the roadsides of the county. Possibly line-workers actually planted such edible species to enliven their daily tasks (while line-tapping?). Apple *Malus sylvestris* subsp. *mitis,* plum *Prunus domestica,* pear *Pyrus communis* and cherry *Prunus avium* are frequent. Some of these trees may have been planted, for the same purpose as the rhubarb, and others were presumably brought to the railway system by roosting birds, but the discarded fruit jettisoned from passing trains must be the major factor in this distribution.



A *Cotoneaster horizontalis* is a widely grown, low shrub with rigid herringbone-like branches. It occurs frequently as a garden escape on old buildings, walls and pavements in Cambridge and Ely, and there are a few reports from Cambridgeshire railways.

B *Cotoneaster simonsii* is more erect and less uniform in habit, with clusters of berries. It occurs frequently on waste ground around Cambridge and on a few railway embankments. Formerly used as a hedging plant, it is now rarely grown.

C *Cotoneater franchetii* is a much grown, rather low shrub with elegant spreading branches and white-felted leaves. It is frequently self-sown in gardens and has occurred on the railway at Fen Ditton. A colony near Long Road, Cambridge, differing only in having whiter leaves with more rounded bases and conically-topped berries, appears to be *C. amoenus.*

D *Cotoneaster frigidus* is a frequently grown, erectly branched tree. It has occurred as a garden escape along the Long Road line in Cambridge.

E *Cotoneater* x *watereri* is a narrow-leaved, tall, spreading shrub (commonly grown in gardens) which occurs as a rare outcast on waste ground and is present along the Newmarket line.

F *Cotoneaster bullatus* and **G** *Cotoneaster lacteus* are similar to *C.* x *watereri* in habit. *C. bullatus* is grown for its fine autumn display of berries and has been found along several stretches of line in Cambridgshire. The later-flowering *C. lacteus* is often used as a hedging plant. It grows near Newmarket station, where it may have been planted.

a—g show cross-sections of the leaves of **A—G.**

Cotoneaster species occur occasionally; along some lines near Cambridge and Newmarket significant colonies abound. *Cotoneaster simonsii, C. horizontalis, C. franchetii, C.* x *watereri, C. bullatus* and *C. lacteus* have all been recorded. These and the occasional groups of *Sorbus* species seem to have been introduced by thrushes returning to roost after devouring fruits and berries in distant gardens during the winter months. Walnuts *Juglans regia* must be the result of dispersal by rooks. Strawberries in a wide variety of forms between *Fragaria* x *ananassa* and *F. vesca* form extensive mats along many stretches. Raspberries *Rubus idaeus* and black currants *Ribes nigrum* are infrequent. While some of the previously described modes of introduction are probably also involved here, it would seem that the "first class" human passengers of a bygone era are mainly responsible. It is significant that the greatest densities of these species occur some distance from any railway stations!

The interesting plants that occur on disturbed and abandoned lines (see p. 00) grow in the restricted region of the plateau of the track. There are species of Breckland origin such as *Silene otites, Apera interrupta, Malva moschata* (Isleham — Swaffham Prior) and *Aira caryophyllea* (Chittering — Haddenham and Histon — Swavesey); chalkland species such as *Linum anglicum* and *Consolida ambigua* (Trumpington); a coastal species *Cochlearia danica* (Hayley Wood and Wimblington); and aliens such as *Verbascum pyramidatum* and *V. virgatum.*

The distribution of the *Verbascum* species and *Apera interrupta* have provided some clues to the method of introduction. These plants have produced often dense and extensive colonies, yet have an interrupted distribution along the systems they occupy. Rarely spreading onto the verges, the only sites that they have colonised away from the originally ballasted lines are where clinker and ballast have been moved to make roadways elsewhere, for example *V. pyramidatum* at Fordham and *V. virgatum* at Comberton. Seeds of these species are unsuitable for dispersal in such quantity by any other method than by being introduced with the soil. Thus it seems evident that these seeds were brought with the original ballast during the construction of the lines. Not until the majority of the surface clinker has been removed or disturbed and regular spraying operations terminated are these seeds able to germinate and the colonies flourish. Since extensive populations have been thus revealed, it does suggest that these have lain dormant since they were introduced 150 years ago!

Conclusion

It is sad to see the existing cuttings and embankments of the old systems, with the yellow carpets of cowslips and the blues of early, changing and field (or common) forget-me-nots *Myosotis ramosissima, M. discolor* and *M. arvensis,* giving way to yet more agricultural "deserts". It certainly would be pleasant to retain a few of these picturesque sites; however, while the present spate of destruction continues, we must look to the future and aim to conserve the more interesting of those areas still occupied by British Rail. Save for a few benefactors who have safeguarded a few sites, the natural history element of the dwindling abandoned rail network seems doomed.

THE BIOLOGY AND CONSERVATION OF MILK-PARSLEY *PEUCEDANUM PALUSTRE* AT WICKEN FEN

H. John Harvey and T. C. Meredith

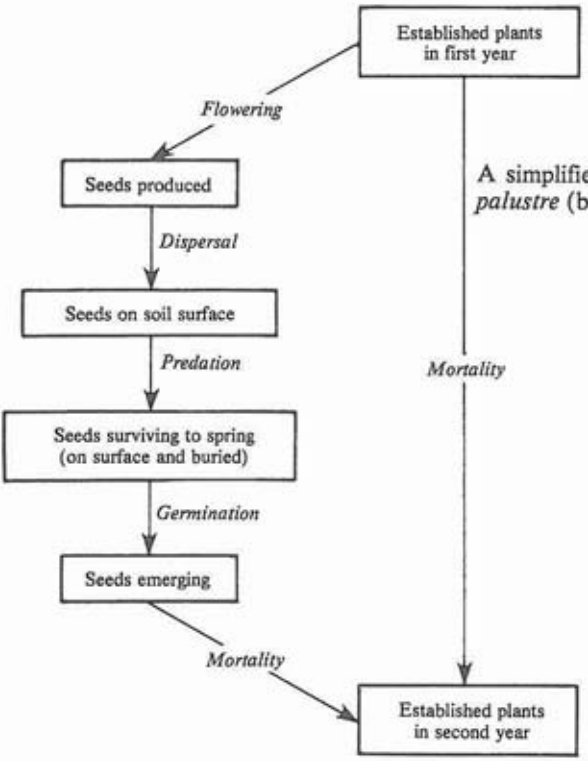
In a recent issue of this journal Dr J. P. Dempster (1976) reported on his research into the reasons for the disappearance of the swallowtail butterfly *Papilio machaon* from Wicken Fen and on his attempts, unfortunately not successful (Dempster and Hall, 1980), to reintroduce it. Dr Dempster's studies suggested that the decline of the swallowtail was linked to the number and performance of plants of milk-parsley *Peucedanum palustre,* which in Britain is the only food-plant of the larvae of the butterfly. The number of plants of milk-parsley at Wicken almost certainly declined after the reduction in crop-taking from the late 19th century and the consequent development of scrub over most of the reserve. Plant numbers may possibly have been reduced, and plant growth almost certainly was reduced, by the lowering of the water-table on the Fen by improved drainage in the surrounding agricultural areas. If the swallowtail is to be successfully reintroduced, then the abundance of milk-parsley must be increased. Management to achieve such an increase should be based on a knowledge of the biology of the species and an understanding of why numbers are currently low. Between 1975 and 1978 research was carried out to produce such information (Meredith, 1976; Meredith, 1978).

The number of individuals of a plant species in an area is determined by many factors. In those species, such as *Peucedanum palustre,* which recruit new individuals mainly from seed, these factors may be presented in a model of the life cycle of the species (Sagar and Mortimer, 1976; Harper, 1977); such a model is shown on p. 40. All the stages of the life cycle must be successfully completed for the species to maintain itself in an area. If numbers in the population are declining or if numbers are not recovering from some low level to which they have fallen, as with *Peucedanum* at Wicken, an investigation of the number of individuals in each of the compartments of this model should reveal the factor that is limiting population size. Once that factor has been identified, then the area can be managed to remove the limitation.

Milk-parsley occurs at Wicken only in a restricted range of conditions, being almost confined to areas dominated by *Cladium mariscus* ("sedge"), most of which are cut on a three-year cycle. The species is not found in areas of "litter", dominated by grasses, and is absent from areas of scrub or areas recently cleared of scrub. *Cladium* is normally found in the wetter parts of the Fen, and milk-parsley may share this need for a high water-table in the soil. Plants transplanted into the field survived best when their water supply was enhanced and water loss reduced, but in a glasshouse experiment the growth of plants in pots was reduced when those pots were flooded.

Milk-parsley is normally described as a biennial, but at Wicken it generally acts as a herbaceous perennial, with the overwintering root producing new leaves and stems each spring. Leaf growth begins as early as March, but the aerial stems do not start to develop until June or July, and only in July or August do the carrot-like flowers appear about four feet above ground. Each plant normally has one flowering stem which, if not grazed by the caterpillars of the swallowtail, can produce up to

Facing page
Milk-parsley Peucedanum palustre *at Wicken Fen (see pp. 38-42 and 43)*
Nicholas Warner



A simplified life cycle for *Peucedanum palustre* (based on Sagar and Mortimer, 1976)

4,500 seeds. A single flowering stem can easily support one caterpillar but, because much of the feeding is in the flower-head, such grazing markedly reduces seed production. In the Wicken study areas the average density of plants of *Peucedanum* was just over one per square metre, which suggests an annual seed input of about 5,000 seeds per square metre. The fate of these seeds may determine the fate of the population.

The structure of the seed of *Peucedanum* suggest that it may be dispersed by both wind and water. Extrapolation from wind tunnel tests suggests that at moderate wind speeds most of the seeds shed from a seed-head might land within five yards of the parent plant. The distance over which seeds might be carried by water in the sedge and litter fields is even less. Less than 40% of the seeds dropped on to the surface of flood water in a sedge community moved more than one metre, while in a litter community less than 5% moved this distance. The short distances over which seed seems to be dispersed must limit the ability of the species to invade areas from which it is absent.

Between dispersal in the autumn and germination in the spring, seed may suffer a variety of fates — being buried, attacked by fungi or eaten by predators. This last may be important, for up to 80% of the seed introduced into field sites in October had disappeared by December. The highest loss was in uncut sedge and the lowest in

recently cut areas. Protection of the seed by mesh netting with small holes reduced losses, but netting with large holes had little effect. Small mammals, which could penetrate the large mesh netting, are numerous in uncut sedge in the autumn but are sparse in cut areas (Flowerdew *et al.*, 1977). This difference, combined with feeding trials which showed that the bank vole *Clethrionomys glareolus* and harvest mouse *Micromys minutus* readily ate the seed, suggests that small mammals are important predators and may remove a high proportion of the seed produced. Seed that is buried is much less liable to predation and may survive for long periods, almost three-quarters of some samples being viable after 18 months' burial. The natural population of buried seed is however low, only between 21 and 146 seeds being found in each square metre.

Seeds of *Peucedanum palustre* will not germinate immediately after being shed from the seed-head and seem to require low temperatures to break this dormancy. Germination is best in the light and under fluctuating temperatures. In the six months between mid-April and mid-October only 2% of the seed sown in shade under uncut sedge germinated, in contrast to almost one third of the seed sown in an open area. This response could confine germination in the field to the first one or two years after the cutting of a sedge crop. Once seedlings emerge, they face many hazards and the majority die in their first summer, maximum recorded survival being 5% and an average of only one seedling out of every hundred going into the first winter. Protecting seedlings from small animals, of the size of slugs and snails, markedly increased survival, suggesting that grazing is an important cause of seedling mortality.

Once seedlings have survived their first year and become established, then their chance of surviving for a further year is about 70%, as compared to 90% on the Norfolk Broads (Dempster *et al.*, 1976). In cut areas many of the deaths may follow cutting in the late summer and autumn, an activity which also prevents seed production. Monitoring of populations at different stages of the sedge-cutting cycle suggests that plant numbers fell from about 1.7 per square metre before cutting to 1.2 in the year following cutting, falling further to 0.6 in the next year. Seedlings establishing themselves in the first and second years of the cycle appeared to be recruited into the population of established plants in the third year, raising the population to close to its original level.

With this information on the biology and demography of the species we are now able to speculate on which factor is limiting the number of plants of *Peucedanum*. Seed production is good and seed can survive well in the soil, but conditions suitable for germination probably only occur in one year in three. Losses of seed to mammalian predators may be high, but this is probably less significant than the high mortality of seedlings in determining the number of plants which become established. The survival of established plants is low and the dispersal range of seed is limited. In areas where *Peucedanum* is already present, management efforts should probably be concentrated on attempting to increase the survival of seedlings and established plants. In areas where the species is absent, artificial introduction, either as seed or as transplants, is probably necessary to overcome the poor natural dispersal of seed.

It is possible to suggest various management changes which might affect the survival of individuals. Cutting in late summer or early autumn — the current practice which seems to cause considerable mortality of established plants —could be replaced by cutting in the late autumn, the pattern early this century (Godwin and

Tansley, 1929), or by cutting in the late spring, the pattern in the seventeenth century (T. A. Rowell, *pers. comm.)*. Both would probably reduce the mortality of adult plants, but the effect on the mortality of seedlings is difficult to predict. Extending the sedge-cutting cycle from three years to four — the pattern until the recent past — might also increase the survival of established plants, although recruitment might not be affected. Seedling survival might be increased if the number of grazing herbivores was reduced, perhaps by making the Fen wetter. This could possibly be done by irrigation or by removing a layer of peat to bring the water-table closer to the soil surface. Wetter conditions might also improve the growth of individual plants, making them more suitable hosts for the caterpillars of the swallowtail, although there are indications that summer flooding is undesirable. Some of these suggestions are more practicable than others and all probably have implications for the fate of species other than *Peucedanum palustre.* It seems certain, however, that management along one or more of these lines will be necessary before milk-parsley is sufficiently abundant at Wicken to support a viable swallowtail population once more.

References

Dempster, J. P. (1976). The swallowtail butterfly at Wicken Fen. *Nature in Cambridgeshire,* **19:** 11-14.

Dempster, J. P., and Hall, M. L. (1980). An attempt at re-establishing the swallowtail butterfly at Wicken Fen. *Ecological Entomology,* **5:** 327-334.

Dempster, J. P., King, M. L., and Lakhani, K. H. (1976). The status of the swallowtail butterfly in Britain. *Ecological Entomology,* **1:** 71-84.

Flowerdew, J. R., Hall, S. J. G., and Brown, J. C. (1977). Small rodents, their habitats, and the effects of flooding at Wicken Fen, Cambridgeshire. *Journal of Zoology, London,* **182:** 323-342.

Godwin, H., and Tansley, A. G. (1929). The vegetation of Wicken Fen. In: *The Natural History of Wicken Fen* (ed. J. S. Gardiner), pp. 385-446. Bowes and Bowes, Cambridge.

Harper, J. L. (1977). *Population biology of plants.* Academic Press, London.

Meredith, T. C. (1976). The food plant of the swallowtail butterfly: experiments at Wicken Fen. *Discussion Papers in Conservation,* **12:** 1-49. University College, London.

Meredith, T. C. (1978). *The ecology and conservation of* Peucedanum palustre *at Wicken Fen.* Ph.D. thesis, University of Cambridge.

Sagar, G. R., and Mortimer, A. M. (1976). The population dynamics of plants. *Applied Biology,* **1:** 1-47.

SELINUM CARVIFOLIA IN CAMBRIDGESHIRE

Nicholas Warner

There are two British plants which, so far as is known, occur only in Cambridgeshire. One is the "great fen ragwort" *Senecio paludosus,* which was pronounced extinct in Britain over a century ago but whose rediscovery in Cambridgeshire in 1972 provided something of a botanical sensation (Sell, 1973). The second is *Selinum carvifolia,* which Clapham, Tutin and Warburg (C.T.W., 1962) give as found in Cambs, North Lincs and Notts but which is believed to have been destroyed by drainage in the latter two counties.

Selinum carvifolia (for which no popular English name is known) is a white-flowered umbellifer and therefore one of the large group of species which can be confusing, so that its presence or absence calls for careful observation. At its main, fully protected station it is abundant enough for large parts of the site to be mown for a late hay crop. One or two other smaller populations have been known for some time, but its recent discovery in another previously unrecorded location suggests that wider search would be justified, though its favoured habitat of damp meadows is all too scarce in this county.

Recent observation suggests that the reference to *Selinum* in *A Flora of Cambridgeshire* (Perring *et al.*, 1964) may not provide a complete guide to its identification. The Flora states: "Resembles *Peucedanum palustre* and *Silaum silaus* in its foliage but is easily distinguished by its very late flowering (late August-September) and the deeply ridged stem below the white umbel." But in 1980, for instance, *Selinum* and *Silaus* were in flower together and adjacent to each other at the former's main site; *Peucedanum*, now known in this county only at Wicken Fen (see pp. 38-42) but also possibly under-recorded, is quoted by C. T. W. as flowering "7-9", *Silaum* as "6-8" and *Selinum* as "7-10", so that all three can be regarded as "late-flowering". The "deeply ridged stem" of *Selinum* is indeed characteristic, but *Silaum* and *Peucedanum* are described in C. T. W. as having "striate" (that is "marked with long narrow depressions or ridges") and "strongly ridged" stems respectively.

As indicated in the County Flora, all three species have very similar stem leaves. The object of this note and its accompanying illustrations is therefore to offer some guidance to anyone who may investigate possible sites at times when identification by the flowers is not possible. Note the small *aristate* (pointed) or *mucronate* (hooked) tips to the leaflets of *Selinum*, which *Silaum* lacks; the tips are usually brownish and membranous rather than green. Identification is, however, complicated because *Peucedanum* also has papery tips to its leaflets, but these are even smaller than those of *Selinum* and difficult to show in an ordinary photograph. But as soon as *Peucedanum* makes a flower-stem the distinction becomes easy because this species has the conspicuous "inflated sheathing petioles" which can be seen on p. 39. This character is so described in C. T. W. in respect of *Angelica sylvestris*, where it is even more marked, but perhaps strangely these authors do not mention it in connection with *Peucedanum*. *Peucedanum* also has in its young state the milky sap which gives it its popular name of milk-parsley; *Silaum* is known as pepper-saxifrage because of its peppery taste. In full flower *Selinum* and *Silaum* are unlikely to be confused because *Selinum* is much less branched and its individual umbels are broader, more compact and (usually) a clearer white. Lastly, the fruiting heads of *Selinum* are characterised by deeply ridged and furrowed fruits with a more spreading "top-knot" than in *Silaum*.

References

Clapham, A. R., Tutin, T. G., and Warburg, E. F. (1962). *Flora of the British Isles.* 2nd ed. Cambridge University Press.

Perring, F. H., Sell, P.D., Walters, S. M., and Whitehouse, H. L. K. (1964). *A Flora of Cambridgeshire.* Cambridge University Press.

Sell, P. D. (1973). The rediscovery of the Fen Ragwort in Cambridgeshire. *Nature in Cambridgeshire*, **16**: 37.

Leaves of Selinum carvifolia *(left) and* Silaum silaus *(right)* *(see p. 43)*
Nicholas Warner

THE CUCKOO AS MUSICIAN

Nicholas Warner

The song of the cuckoo can probably be defined in orthodox musical terms more accurately than that of any other British bird. This has long been recognised, as in the old rhyme "In June he sings an altered tune", the implication being that the musical interval between the "cuck" and the "oo" becomes narrower as the season advances — though in the cuckoo's case this certainly cannot be because he has become wearied with family duties!

Gilbert White wrote in 1771 that friends of his had tried, equipped with "an ordinary half-crown pitch-pipe" (no tape-recorders then), to determine the keys of bird-song. Two adjacent cuckoos were reported as singing in D sharp and D respectively, which he describes as a "disagreeable concert"; others "sang in C". He makes no reference to musical intervals. Beethoven's cuckoo in his Pastoral Symphony sang in B flat — a very low key!

In a recent year a cuckoo was recorded locally, shortly after the bird's normal arrival time, as singing with the interval of a major third (four semitones) between the "cuck" and the "oo", the pitch being from F at the top of the treble stave to D flat below. On the same date, however, another bird a few miles away was singing a minor third (three semitones) from F sharp to D sharp. In the case of these two birds therefore the time of the year was not an effective factor. The time interval from the "cuck" to the "oo" seems to be consistently almost exactly half a second. In a typical sustained series of "cuck-oos" the time between each seems also fairly regular, at about 1½ seconds.

Musically minded naturalists might find it amusing to add to — and perhaps refute — these observations.

SOME OBSERVATIONS OF BIRDS FEEDING IN HAYLEY WOOD

Peter Conder

I describe here some observations of birds feeding on plant food and on one species of insect in Hayley Wood. They are by no means comprehensive and hardly mention one kind of berry very popular with birds — the haws of *Crataegus monogyna* and *C. laevigata.*

The marsh tit is not very common in Hayley Wood and over the last ten years its annual breeding population has not exceeded five pairs. Generally regarded as an insectivorous species, it has been recorded as taking some plant food, and I was therefore rather intrigued several autumns ago to discover the extent to which some marsh tits in Hayley Wood were taking the seeds of enchanter's-nightshade and other plants. The abundance of enchanter's-nightshade varies from year to year, and 1975, 1977 and 1980 were years in which I recorded particularly good displays of this plant. On 8 August 1975 enchanter's-nightshade was still in flower but masses of seed were also evident. Two marsh tits were taking the seeds between posts C and D on the nature trail, where there was quite a large patch of this plant. The main stem of the plant was too weak to support their weight and bent over until the tits were able to get a firm foothold. But quite often the tits perched on the lower branches of the neighbouring hazels and hawthorns and then flew down, sometimes alighting on a plant, which subsided towards the ground and allowed the birds to reach the seed, or else hovering for a second or two while they plucked a seed off the plant. They then returned to the branches and, grasping the seed between their claws, pecked at the casing and ate the seed.

Since 1975 I have seen marsh tits eating these seeds every autumn that they have been produced in abundance. Oddly enough, although tits are well-known for their habit of collecting in feeding flocks in autumn, I have never seen more than two marsh tits together at this source of food, and I have seen no other species taking these seeds.

I have also recorded marsh tits and bullfinches eating the seeds of meadowsweet, though the rather tubby bullfinches again had some difficulty in reaching the seed-heads and wasted some time fluttering ineffectively on the stem. However, the seed would not seem to be very palatable since several acres of seeding meadowsweet are left almost untouched each autumn in Hayley. Incidentally, at about the same date,

The bullfinch is well-known for its predilection for fruit-tree buds, but in and around Hayley it also eats the seeds of the ash tree and the unopened buds of hawthorn. The birds usually start eating ash keys in the autumn and continue as long as the keys last, which may be only until the end of December but is occasionally until the following autumn. Chiefly they eat the keys on the tree, and whether they are tearing off keys or leaf or fruit buds they do it with a very sharp twist of the head, so that one is tempted to think that the bullfinch's thick neck houses some very strong muscles. In mid-winter, gales will sometimes remove all the keys from the tree, particularly if they are rather exposed, and then one can see flocks of between ten and twenty bullfinches hunting for the keys on the ground. They may continue to hunt through the grass after the keys for three of four weeks after they have been blown off the tree. A hard-ration food for the bullfinch, at least in Hayley, must

surely be leaf buds from the hawthorn, which are available in large numbers and which I have seen them eat as early as mid-December, but I have never seen them eating these buds in the numbers that one can see them on ash keys.

In a way marsh tits provide the continuity in this story, because they are also one of the species that eat up, within a month or two of their ripening, the hips of the field rose *Rosa arvensis*. This species can be found with the dog rose *R. canina* in many places in Hayley Wood, but most of my observations on rose hips have been made along the main ride. It is odd that whilst the field rose is eaten voraciously the dog rose is almost entirely untouched.

The hips of the field rose begin to ripen in mid-September. On 5 September 1976 the hips were beginning to attract birds, but in 1977 they were still green on 14 September and even a month later, on 10 October, some were still green. Whether ripening was early in 1976 or late in 1975 and 1977 I cannot say, but it will be remembered that 1976 was the year of the drought, which affected plants in Hayley in a number of different ways. The earliest record that I have of marsh tits actually pecking at hips was on 26 September 1976, and on that date about ten greenfinches and one blackcap were also eating the hips. Whilst marsh tits are fairly regular feeders on hips, in some years the greatest pressure on these berries would seem to come from small flocks of greenfinches. These birds are not common or even regular residents in Hayley Wood, but occasionally one does find small flocks deep in the wood and I find it difficult to explain what they are doing or what they are feeding on. On 24 October 1976 I was rather surprised to see a greenfinch pecking at a reddish berry in the treetops at about 50 feet. Through binoculars I saw the bird was eating a rose hip and, on tracing the plant back down the trunk to which it hung like a liana, I found that it was a field rose.

Most of the fruits are pecked at and part of the fruit is eaten at each peck and there is little sign of any of the birds actually swallowing the fruit whole, but one of the few hips of the dog rose I have seen eaten was swallowed whole by a blackbird at Comberton. It did not attempt to eat a second and I wondered in this case if it had mistaken a hip for a haw.

By the end of December the hips of the field rose have mostly been eaten, and I have usually recorded at the same time that the hips of the dog rose were, as far as I could see, untouched, as were the berries of the guelder-rose that can also be seen along the main ride.

The big drought of 1976 affected much of the south of the country. It was also one of the years when the elm bark beetle was spreading the fungus disease which has killed so many of the elms. Between 22 August and 19 September, holes in the bark of the trunk, in which presumably the beetle grubs had been, were spilling out sap, which attracted birds and insects. I first noticed wasps, which I identified as tree wasps *Vespula sylvestris,* clustered round the holes from which the sap was flowing, chiefly on the sunny side of the tree, their abdomens concertinaing as they drank. A week later the wasps were still at it in very large numbers, and I recorded that, although I could hear the occasional calls of young tits, the main sound was the hum from the wasps all through the elm groves. Trees were leaking from high up; through my binoculars I could see wasps at least 30 feet up the trunks and as low down as two or three feet. A number of other insects had joined the wasps — small flies and bluebottles — and also two species of bird — a marsh tit and a blackcap. The blackcap had been moving up an elm, chiefly by hopping from hawthorns and hazels close by on to the trunk. At first I thought it was hunting the wasps and flies, but as it

moved higher up I could see that it was gently pecking at the sap where it was flowing from the bark.

By 12 September the drought had broken, so that the moisture was dripping off the leaves and twigs, but, even so, wasps were still drinking sap and I saw one or two falling off the tree, either overfull or intoxicated. By 19 September wasps had stopped drinking the sap.

My final observation of birds and unusual foods relates again to the marsh tit. On 8 August 1980, fairly early on a cool morning, I saw two marsh tits flying from the hazels along the main ride up to the top of a marsh thistle *Cirsium palustre* and then back to the hazels each with a large black object in its beak which it transferred to its claws and then pecked at and ate. Once these objects were eaten, the tits flew back to the flowers to pick up another. Even with my binoculars I could not make out what these objects were. So finally I walked up to the thistle and found that several flowers still had torpid bumble bees *Bombus terrestris* on them and that it was these rather large insects that the marsh tits were taking — a prey which under normal circumstances they would never have been able to catch and would probably have had difficulty in handling if they had been successful.

EUCOSMA METZNERIANA TREITSCHE: A MOTH NEW TO BRITAIN

R. J. Revell and J. D. Scoble

On the evening of 22 July 1977 the authors were using a mercury vapour lamp and sheet to investigate the night-flying insects at the Gog Magog chalk-pit. The warm, cloudy conditions proved ideal for this activity, and a great variety of insects were being attracted to the light. At about 11.30 p.m. an unfamiliar-looking moth of the family Tortricidae was observed sitting quietly on the sheet and was duly captured for examination later.

Eucosma metzneriana *Treitsche* *David Carter*

The specimen was a female in very good condition and with boldly marked forewings, yet, despite exhaustive examination of the collections and books at the University Department of Zoology, its species could not be determined. Eventually the moth reached the British Museum (Nat. Hist.), where Dr Bradley identified it as *Eucosma metzneriana* Treitsche, a species not previously recorded in Britain.

The species is widespread, occurring from Europe through Asia to Japan, and continental authors quote wormwood *Artemisia absinthium* as its principal food-plant, the caterpillars feeding inside the terminal shoots from autumn to spring and pupation probably occurring during late May or early June. The authors have found no wormwood in the immediate vicinity, but mugwort *A. vulgaris,* which is mentioned as an alternative food-plant, is plentiful. Damaged or stunted shoots of mugwort have been collected in May over the last few years, but efforts to breed out the moth from these have been unsuccessful so far. Some Trust members might like to try their hand at this activity.

The possibility that the insect was a chance migrant cannot be entirely discounted, but seems very unlikely in view of its fine condition and the lack of previous reports of any migratory tendency in this species. Few other possible explanations of the insect's occurrence on the outskirts of Cambridge spring to mind. The lack of permanence of the food-plants and the diligence of the Victorian and Edwardian entomologists would seem to rule out a long-established colony, so one is left with the chance introduction of larvae or pupae in soil or among plant material from the continent. This may have resulted in the establishment of a short-lived colony or even just the single specimen caught by the authors of this paper.

GALLS OF *ANDRICUS QUERCUSRAMULI* (L.) (HYMENOPTERA, CYNIPIDAE) AT RAMPTON, CAMBRIDGESHIRE

R. Colin Welch
Institute of Terrestrial Ecology, Monks Wood Experimental Station

On 25 May 1980, whilst walking along a track south from Rampton to Histon (TL 420671), I noticed what I first thought to be pieces of sheep's wool caught up in a branch of an oak *Quercus robur* some six feet above the ground. On closer examination these turned out to be associated with the male catkins and were presumed to be some form of gall which I had not previously encountered during many years of sampling insects from oaks throughout Britain. A quick check confirmed that no gall of this type was figured or mentioned by Darlington (1968 and 1974), but an illustration in Zlatanov (1971) (fig. 94, pp. 144-5) suggested that they were the galls of *Andricus quercusramuli* (L.) (Hymenoptera, Cynipidae), a species which he records from Bulgaria on *Quercus pedunculata* (=*robur*), *Q. stranjensis, Q. sessiliflora* (=*petraea*), *Q. conferta* and *Q. pubescens.* Reference to Eady and Quinlan (1963) confirmed this species as British, and in their key to galls they key out nine species of *Andricus* and three of *Neuroterus* known to cause galls on the male catkins of *Quercus* in Britain. They figure the gall of *A. quercusramuli* (fig. 317, p. 71) and describe it as a conglomerate cluster of groups of coalesced plurilocular cells which may be up to 20mm across. Only one other species, *A. callidoma* (Hartig), can form a conglomerate mass, but in this species this seldom

exceeds 5mm across and is unilocular. Buhr (1965) provides an excellent figure of the "Baumwollgalle" (cotton gall) of *A. quercusramuli* (pl. 17, figs. 276-7) and includes *Q. frainetto* and *Q. cerris* (?) as additional hosts.

John Quinlan informs me that *Andricus quercusramuli* is represented in the collections of the British Museum (Natural History) by very few specimens from the New Forest and Romsey (Hants), Horley and Fletcham (Surrey), Hemel Hempstead (Herts), Sudbury (Suffolk) and Woodhall Spa (Lincs). The galls and the numerous adults which emerged during June have been deposited at the B.M. (Nat. Hist.) for incorporation into their collection.

References

Buhr, H. (1965). *Bestimmungstabellen der Gallen (Zoo- und Phytocecidien) an Pflanzen Mittel- und Nordeuropas.* Vol. 2, Planzengattungen N-Z, Jena, pp. 763-1572, 25 pls.

Eady, R. D., and Quinlan, J. (1963). *Handbk. Ident. Br. Insects,* 8(1) Hymenoptera: Cynipoidea, 81 pp. Royal Ent. Soc. London.

Darlington, A. (1968). *A pocket encylopaedia of plant galls in colour.* London, 191 pp.

Darlington, A. (1974). The galls on oak. Pp. 298-311 in: Morris, M. G., and Perring, F. H. (Editors), *The British oak: its history and natural history.* Classey for BSBI.

Zlatanov, S. (1971). *Insect pests of oak in Bulgaria.* Sophia, 247 pp., 162 figs. (in Bulgarian).

Galls of Andricus quercusramuli (L.) *on pedunculate oak* Quercus robur

R. Colin Welch

DARK-LEAVED WILLOW *SALIX NIGRICANS* IN CAMBRIDGESHIRE

Duncan Donald

In August 1979 I attended a week-long course on "Lowland Willows" held at Kindrogan Field Centre in Perthshire. Willows have long held the reputation of being "difficult" plants, and so people tend to avoid them unnecessarily. The taxonomic difficulties can be exaggerated: I hope that anyone who cares to look closely at the reference collection of native willows being built up in the University Botanic Garden will see that the species themselves are at least reasonably distinct — though it is true that some, and notably *Salix cinerea* (grey willow or common sallow), are indeed variable and this can lead to problems. However, undoubtedly the greatest cause of the "difficulty" is the ease with which the species hybridise. Hybrids are not uncommon in suitable habitats — usually in places that suffer occasional disturbance — though even this can be overstated. What this mean in Cambridgeshire terms is that it is relatively easy to "get your eye in" for the common species and so be able to identify with some certainty the majority of local willows; but the odd individual or group of plants is bound to turn up that cannot be so readily named.

My main reason for attending the Kindrogan course, apart from mixing business with pleasure, was precisely because it set out to tackle these toxonomically difficult areas — and in particular the hybrid complex that occurs in the Scottish lowlands between two supposedly northern species, *S. nigricans* (dark-leaved willow) and *S. phylicifolia* (the delightfully-named tea-leaved willow). Added to this, the course was to be led by two expert botanists — Desmond Meikle from Kew, a BSBI referee for *Salix*, and Richard Pankhurst, Vice-county Recorder for Cambridgeshire before he left to head the British Section of the Botany Department at the Natural History Museum.

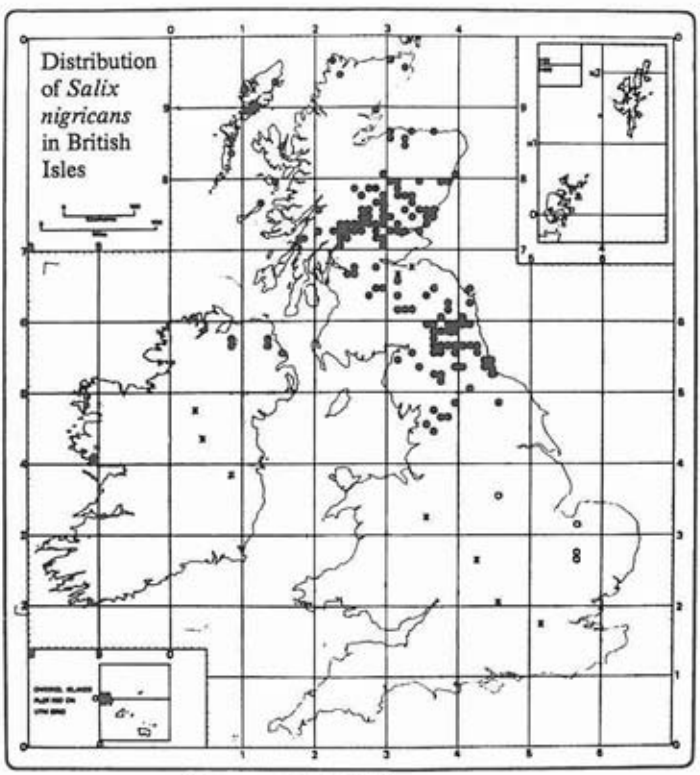
So much for the advertisement, which is really intended to show why I should only get small credit for having found a fairly large population of one of these "northern" species, *S. nigricans,* in Cambridgeshire this year — in the Trust's reserve at Fordham Woods. Having spent a week being shown it in Scotland, I ought not to have failed to recognise it when I found it on my own doorstep! Nevertheless, I think it is an interesting discovery for several reasons — not least because it opens up the intriguing possibility that this *may* be a relict population and the plant an overlooked native in Eastern England — perhaps, even, yet another casualty of the drainage of the Fens. And it could still be undetected somewhere else in the area . . .

The map shows the present known distribution of the plant in Britain, with a sharp cut-off south of Lancashire and Yorkshire. There have been records south of this line, but several of these have clearly been introductions. The plant was found until about 1948 "on the Thames bank outside Kew Gardens" (Lousley, 1976) and was also recorded, with other planted willows, on the banks of the Cherwell, in Christ Church Meadow, Oxford (Baxter, quoted in Purton, 1821). The plant has been known since 1873 at Shrewley Pool in Warwickshire, and Mr Meikle tells me that he has recently discovered that a farmer who owned the ground at one stage had a relative who was a keen amateur botanist; so it is extremely likely that it was planted there also. In addition, the plant has previously been suspected to occur in Cambridgeshire — and in the Chippenham area at that. *A Flora of Cambridgeshire*

(Perring *et al.*, 1964) states: "According to Professor K. H. Rechinger two sterile specimens in **CGE** from Chippenham are probably referable to *S. nigricans* Sm. Catkin-bearing specimens are needed, however, before this northern species can be recorded with certainty for the county."

The species was first described by Sir James Edward Smith (1759-1828), who is perhaps best remembered as the man who bought Linnaeus' books and specimens for one thousand guineas and founded the Linnean Society of London. In *Transactions of the Linnean Society,* **6:** 120-121, Smith wrote: "No writer except Linnaeus appear (*sic*) to have known this Willow, but he surely has erred in making it a variety of his *phylicifolia* . . . "; and he described the material sent to him by his friend Mr Crowe, a Norfolk landowner, apparently found "At Wrongay Fen, Norfolk, and in osier grounds in other places not uncommon". He wrote: "This species I have named *nigricans* from the dark colour of its branches, as well as its black hue when dried, which last indeed is not absolutely peculiar to it."

Smith apparently misread Crowe's writing and wrote "Wrongay" for



Key: • probably native
× almost certainly introduced
○ status uncertain

"Wormegay", which is near King's Lynn. Elsewhere in the same article on willows, he wrote of Crowe as "my accurate and indefatigable friend Mr Crowe, who for many years has with unwearied diligence collected willows, both indigenous and exotic, from all quarters". Perhaps it is not very surprising therefore that most modern botanists (e.g. Swann, 1957) have assumed that Crowe collected (or was sent) from the north material that he later forwarded to Smith and that he perhaps planted it in Wormegay. However, this could be to take a prejudiced view of the matter in view of the plant's modern distribution: surely the "accurate"Crowe would have been more specific than "in other places not uncommon" if he had meant to convey to Smith that he had found the plant in other places several hundred miles from the Norfolk area that they were scouring thoroughly for willows! I think it is also significant that Smith records that Mr Crowe also discovered *S. phylicifolia* "at Cranberry Fen, in the parish of East Winch, and in other parts of Norfolk". Cranberry Fen was on Crowe's estate and within two miles of Wormegay Fen. (Sad to relate, virtually nothing remains of these two fens now.)

As well as being at Fordham Woods, *S. nigricans* also occurs amongst a great variety of other willows at Red Lodge, Freckenham, just across the border into West Suffolk and on the opposite side of Chippenham Fen from Fordham. It was first recorded here by Eric Clement in 1966, and I have confirmed the record again this year. Neither of these areas is wholly free from disturbance or the possibility that trees have been planted at some stage. Traditionally, and perhaps above all in East Anglia, willows have often been planted for their uses in the rural economy — for example for basket-weaving and for tying bundles before string was invented; but *S. nigricans* is one of the few native willows that never seems to have been used like this; indeed it seems to be entirely useless! There are a lot of bushes of it in Fordham Woods: I have not had the chance to count them all yet or map them exactly, but there must be 50-100 individuals, and there are also hybrids there (certainly *S. caprea* x *nigricans*) presumably formed with the other willows present in the area. If the species was planted there originally, it is certainly well naturalised now and so has presumably been there for some time.

However strong the circumstantial evidence becomes, we shall never be entirely sure that the plant was not introduced long ago at these two close sites; but, for what it is worth, my guess is that the plant is native here and that it once had a much more widespread distribution in the Fens. It would help my case if similar populations could be found elsewhere in East Anglia — and some *S. phylicifolia!*

Acknowledgments

I am grateful to the Director of the University Botanic Garden, Cambridge, for having let me attend the Kindrogan course and to the Garden's Cory Fund Managers for the financial assistance they gave me. I also wish to thank Dr C. D. Preston of the Biological Records Centre at Monks Wood Experimental Station for having supplied me with the distribution map.

References

Lousley, J. E. (1976). *Flora of Surrey.* David and Charles, Newton Abbot.

Perring, F. H., Sell, P. D., Walters, S. M., and Whitehouse, H. L. K. (1964). *A Flora of Cambridgeshire.* Cambridge University Press.

Purton, T. (1821) *An Appendix to the Midland Flora.* Longman, London.

Swann, E. L. (1957). West Norfolk Willows. *Proceedings of the Botanical Society of the British Isles,* **2**: 337-345.

TETRAD PLANT RECORDING SCHEME

Duncan Donald

This article is written on behalf of Dr Charles Turner and myself to express sincere appreciation to those who have helped us to record plants in Cambridgeshire (v.c. 29) during 1980 and to encourage more of you to join us during 1981.

It is now 17 years since our last Flora of Cambridgeshire was published, and of course many changes have occurred in the county since then. There is a need to update old records and especially to identify urgently sites that still retain a diverse flora and so may well merit some greater degree of protection. Since 1974 a small but growing band of volunteers has been collecting a fresh set of plant records for the county on a "tetrad" (2 x 2 kilometre square) basis. The advantage of recording by tetrad are that it encourages you to search an area reasonably thoroughly — to go into odd corners that you might otherwise overlook — and to get to know a wide range of plants, including some you might otherwise prefer to avoid! At the same time it brings you into contact with other people whose "blind spots" may not be the same as yours and who can help you to learn.

During 1980 a complete set of master cards has been made out — duplicating the set already maintained by Dr Turner — to be kept in the CAMBIENT office, where they can be consulted and have records added to them by anyone at any time (provided that this is done in pencil and the recorder's name is given so that the records can be followed up if need be!). As the records accumulate, we hope soon to begin to compile maps from them of the distribution of individual species. Ideally, people will volunteer to record a particular tetrad in detail — and indeed many of our helpers are doing just this, often for the tetrad in which they live. However there are still many tetrads for which we have as yet no records at all. No matter what your ability, there is something for you to do; the commonest as well as the rarest species are being recorded.

One answer is to hold recording meetings in under-recorded areas, and indeed seven such excursions have taken place during 1980. Dr Turner and I have been delighted with the response to these and hope that others who have taken part have enjoyed them as much as we have: our fellow tetrad-recorders have proved to be very enthusiastic and good-natured, keen-sighted, and remarkably civilised — if the bottles of wine that have appeared regularly at our picnic lunches are anything to go by. (I don't *think* the standard of the after-lunch recording has been affected!) So far, our object in choosing which sites to visit has been to go both to under-recorded areas and to areas that are likely to have a wide diversity of species — to give all of us a chance to "get our eye in" for the characteristic species we were likely to find in other areas. In the process, a number of very interesting finds have been made.

Our first excursion was to Hayley Wood on 3 May (see p. 11) — an area well-botanised previously, but not so far for the tetrad scheme. It produced 129 species, which included herb-Paris *Paris quadrifolia,* orpine *Sedum telephium,* adder's-tongue *Ophioglossum vulgatum* (which Philip Oswald found actually inside the woodland area and not in its more typical site on the rides), nettle-leaved bellflower *Campanula trachelium* in several new sites in the wood, and of course the Hayley pear, *Pyrus communis,* represented by a single old tree.

For the second, albeit unofficial, excursion several of us joined the Trust's A.G.M. trip to Chettisham Meadow on 17 May (see p. 12). The following day a

group of us recorded at least 136 species in Ditton Park Wood — a wood in parts sadly ruined by dense conifer plantation, but still retaining in others a good diversity of species, including ramsons *Allium ursinum,* wood spurge *Euphorbia amygdaloides* and water avens *Geum rivale.* A muntjac was heard calling at lunch-time — nothing to do with the wine!

A visit to Wicken Fen is of course a "must" for those wanting to get to know the species likely to be met with elsewhere in the Fens; but we hope that those that attended the meeting there on 22 June will also recognise plants like marsh pea *Lathyrus palustris,* marsh fern *Thelypteris palustris* (?=*T. thelypteroides* subsp. *glabra*) and few-flowered spike-rush *Eleocharis quinqueflora* if they are ever lucky enough to find them anywhere else!

Like Ditton Park Wood, Gamlingay Wood retains an interesting diversity of species despite having had areas spoiled by conifer plantation. We are very grateful to the present owners, Mr and Mrs Crossman, for their permission to visit the wood on 27 July, and we were very pleased that they were able to join us for part of the time. A total of 169 species was recorded, the highlight being the discovery of the very local saw-wort *Serratula tinctoria* by Mr and Mrs Jackson. Other species included wild service-tree *Sorbus torminalis* in its only known site in the vice-county, everlasting pea *Lathyrus sylvestris* and pale sedge *Carex pallescens.* Unfortunately we were unable to refind crested cow-wheat *Melampyrum cristatum,* which has not been seen here now for several years.

On 9 August we visited Bassenhally Pits, another surviving fragment of fenland wetland vegetation and another "gem" for any visiting botanist. Undoubtedly the highlight of this trip was Dr Alan Leslie's discovery of small water-pepper *Polygonum minus* in the outflow from the reserve — which also contained the best stand of lesser water-parsnip *Berula erecta* I have ever seen. Other species of note were slender spike-rush *Eleocharis uniglumis,* marsh speedwell *Veronica scutellata* and saltmarsh rush *Juncus gerardii* in one of its few inland localities. By comparison, the vegetation in the Mepal area of the Ouse Washes, visited on 9 September, was poorer than one might have hoped, though even this trip was not without its surprises — reflexed saltmarsh-grass *Puccinellia distans* turnèd up on a roadside spoil-heap (Alan Leslie again).

Further excursions will be arranged for 1981. Details of these — and of the Tetrad Plant Recording Scheme generally — can be obtained either from Dr Charles Turner (c/o the Botany School, Cambridge) or from the CAMBIENT office.

VASCULAR PLANT RECORDS

G. Crompton

Renewed interest in the projected "Tetrad" Flora of the county (see above) has resulted in the welcome addition of many more new records for the longer-established 10km squares. Now that this project is once again well under way, the need for a second edition of the Flora published in 1964 is no longer so great. As an interim measure an annotated check list giving the 10km squares in which each species occurs should be available in 1981. It is still necessary for me as County

Recorder to send new records for 10km squares (with detailed information on locality and habitat) and modern records of locally rare species and of species that may be declining to the Biological Records Centre at Monks Wood, so that they can keep their records on a national basis as up-to-date as possible. The check list should help in this task as well as providing guidelines for Tetrad Recorders, for it will mark the locally rare and other species for which all records are needed regardless of the date they were last recorded in a 10km square. It is a pleasure to report that our old friend Chris Preston from Cambridge has been appointed botanist at the BRC.

Over one third of the interesting records that follow have been made by visitors to our county, including Dr Landolt from Zürich, who had to venture no further than a few steps from his hotel in Cambridge to find a species new to Britain! But perhaps the most welcome records this year are for those species which we had feared might have become extinct. Diverse reasons for these reappearances may include the gradual return to more "normal" conditions after a series of drought years in which the annual rainfall was three to five inches below the average.

Azolla filiculoides Lam. Locally frequent in ditch outside flood-bank near Earith, 52/385744, C. J. Cadbury, 3.6.1980. First record in Ouse Washes area.

Erucastrum gallicum (Willd.) O. E. Schulz Disturbed ground near Devil's Ditch, 52/619615, Enid M. Hyde, 14.9.1980. One plant only near its former station; a welcome reappearance.

Rapistrum perenne (L). All. Roadside verge, Milton, 52/471615, G. M. S. Easy (in herb. G.M.S.E.), 17.7.1980, 3rd CR.

Berteroa incana (L.) DC. Railway sidings by Newmarket corn silo (v.c. 29), 52/646628, G. M. S. Easy, 6.7.1980, 3rd CR. A native in parts of Europe and in W. Asia, it is well naturalised in a few sandy sites in Breckland, but in Cambridgeshire it has been recorded only from waste land. This grey-leaved Crucifer is unusually characterised by having stellate hairs on stem, leaves and fruits.

Herniaria glabra L. Kennett, 21 flowering plants within 300 yards of a former site which had been reclaimed for arable in 1974, G. M. S. Easy, 26.7.1980. A splendid re-appearance of this nationally rare species which is also still flourishing at its only other site in the county.

Rubus anglohirtus E. S. Edees (*R. hirtus* sensu W. C. R. Watson ex parte, non Waldst. & Kit.) In some quantity on Warren Hill, near Newmarket, 52/660637, A. L. Bull (in herb. A.L.B.), 6.1979, conf. A. Newton, NCR. No records for *R. hirtus* sensu Watson have been found for v.c. 29. Edees (1976) stated that *R. anglohirtus* "is a constant and easily recognised taxon with a wide distribution in Eastern England, occurring in woods from S. Lincs, v.c. 53 to E. Kent, v.c. 15" (*Watsonia,* **11**: 51), but he has confirmed that he had no record from v.c. 29.

Parnassia palustris L. Chippenham Fen NNR, one flowering plant, M. T. Musgrave, 9.1980. Thought to have become extinct at both its sites in the county in 1974!

Lythrum hyssopifolia L. Wet hollows in arable fields: Newton, 52/445485, 445486, 446488, 445487; Thriplow, 52/445484; C. D. Preston & H. L. K. Whitehouse, 19-

31.8.1980. Although this was a poor year for grass-poly, their continuing systematic survey of thermo-karst depressions has resulted in these five new sites. Little, Shelford, in a large overgrown hollow, 52/462498, S. R. Paynes, 16.9.1980.

Thesium humifusum DC. Warren Hill, near Newmarket, 52/656637, Mark Hyde, 14.9.1980. This rare species of chalk grassland was thought to be surviving only in the Fleam and Devil's Ditch areas.

Apium inundatum (L.) Reichenb. fil. Chear Fen, 52/493708,, G. M. S. Easy (in herb. G.M.S.E.), 20.9.1980. The first record outside Wicken Fen since 1930.

Apium nodiflorum (L.) Lag. x *A. repens* (Jacq.) Lag. Ditch in Chippenham Fen NNR, S. M. Walters, 6.7.1979, NCR. Growing near typical *A. nodiflorum*, the putative *A. repens* was in a floating mass, the plants producing poor pollen and no ripe fruits; the chromosome number 2n=19 supports its possible hybrid status. (The only confirmed record of *A. repens* in Britain is from Oxford.)

Petroselinum segetum (L.) Koch Wash flood-bank near Earith, 52/388746, locally frequent with *Torilis nodosa*, C. J. Cadbury, 15.5.1980. It was last recorded near Earith by T. G. Tutin (**CGE**) in 1945 and by S. M. Walters in 1948.

Polygonum minus Huds. Bassenhally, 52/288988, A. C. Leslie in **CGE** 9.8.1980, conf. D. A. Webb. This rare (and difficult to determine) fenland species has been recorded since 1930 only on washes near Welney (1959), Pymore (1973) and Over (1975).

Populus nigra L. Bank of Nene Wash, Wisbech St Mary, 52/421057, S. R. Payne, 9.1980. Pollarded at approximately 15 feet, the massive old trunk is completely covered with the characteristic bosses; perhaps it is the same tree that was recorded at "Wisbech" bv James Balding before 1860. Near Dane Hill, Kennett, 52/685676, D. R. Donald, 11.12.1980; 7 large trees, thus increasing the number known in our county to 19. The trees are in full view from the A11 and are (now) very obvious in winter!

Salix nigricans Sm. Fordham Woods, 52/63-70- & 52/63-69-, D. R. Donald, in **CGE**, 12.9.1980, conf. R. D. Meikle. First confirmed record in the county. There are many large bushes, both at the south end (where they are along the edge of the wood) and in the northern part, where they occur scattered through the interior of the wood and in a dense stand beside the river. There are two sterile specimens from Chippenham in **CGE** which are probably referable to this species. (see pp. 50-52.)

Salix triandra L. x *S. viminalis* L. (*S.* x *mollissima* Ehrh.) Abundant in a willow holt, Ouse Washes, 52/445823; one large bush by bridge over Washes, 52/438814; A. C. Leslie in **CGE**, 8.9.1980, conf. R. D. Meikle, NCR.

Salix aurita L. x *S. cinerea* subsp. *oleifolia* Macreight (*S. atrocinerea* Brot.) (*S.* x *multinervis* Doell) Hayley Wood, 52/290528, D. R. Donald, 3.5.1980, conf. R. D. Meikle. The only site in the county, last recorded when it was discovered by E. F. Warburg in 1941.

Solanum nitidibaccatum Bitter Bartlow (Cambs, v.c. 19), 52/579451, A. C. Leslie (in herb. A.C.L.), 11.8.1980. Plentiful in corner of beet field. All previous records for this

green-fruited alien species were published under *S. sarrachoides* Sendtner, which Alan Leslie believes to be a much rarer alien, perferring warmer soils such as ash-tips or sites of bonfires **BSBI News,** No. 12, p.13).

Pinguicula vulgaris L. Chippenham Fen NNR, one plant in fruit, A. Byfield, 19.7.1980. The only site in the country, where it had not been found for several years.

Centaurea cyanus L. Field edge at Conington, 52/337670, M. E. Smith, 7.1980. Now a very rare cornfield weed in Britain, it was last seen in the county in this field in 1974. Road works have cut through the edge of the field and over 40 plants flowered in the corn and on the new field ditch and road verge. Bulldozers perhaps dragged seed, for 2 large plants were also in flower on the verge at Lolworth, 52/364652, G. Crompton, 21.7.1980.

Potamogeton trichoides Cham. & Schlecht. Main drain, Chear Fen, 52/493708, G. M. S. Easy (in herb. G.M.S.E.), 20.9.1980. A very rare species found only in the Fens; this is the third modern record.

Dactylorhiza traunsteineri (Sauter) Soó Wet meadow at Snailwell, 52/638680, A. C. Leslie, 20.6.1980, 3rd CR. Now only known at Chippenham Fen, it was also once recorded at Dernford Fen in 1913.

Lemna minuscula Herter (*L. minima* Phil.) (*L. valdiviana* Phil. Sensu F.E. 5:273) Sheeps Green, 52/447577, E. Landolt, 1977, new to Britain. In cult. Botanic Gardens, S. M. Walters, 2.9.1980. This American species has perhaps been overlooked, resembling a small *L. minor.* In both species the veins are indistinct even under a lens, but *L. minor* has 3 veins and *L. minuscula* only 1 vein.

Carex arenaria L. Edge of pine plantation, Chippenham Park, 52/668684, A. C. Leslie, 10.5.1980, 3rdCR. Although so common in the Suffolk Breckland, it is surprisingly rare in the Breckland corner of our county.

Vulpia ciliata subsp. *ambigua* (Le Gall) Stace & Auquier (*V. ambigua* (Le Gall) More) Just inside the vice-county boundary, beside a track, 52/708684, and on the edge of a gravel-pit nearby, 52/706684, 23.6.1979; still where C. D. Pigott first recorded it in the county in 1951, and also still at Chippenham (since 1966; 2.9.1979; near Kennett were also the commoner *V. bromoides* and *V. myuros;* Enid M. Hyde.

WEATHER NOTES FOR CAMBRIDGESHIRE 1980

J. W. Clarke

Although the summer of 1980 was rather poor, with no heatwaves and several very wet periods, on the whole it was not a bad year; rainfall was about average, the winter was mild, the spring the warmest for many years, and the late spring and early summer were also very dry — the eight weeks from 2nd April to 27th May being the driest such period for 30 years.

January was mainly mild and open, with only one or two days of sharp frost and no days with snow lying; snow fell on only one day. February began with a week of mild, wet weather, and the rest of the month was dry, mild and springlike; the month as a whole was the mildest since 1961. The dry, mild weather continued till 5th March, when it gave way to unsettled wet weather which persisted until 1st April. A dry and warm period then set in and lasted almost to the end of May. In April four days (13th-16th) had maximum temperatures above 70°F, giving the warmest April since 1961. June began with a few days of hot weather (86°F on 4th), but after 16th changeable cool weather predominated until 21st July. Despite warmer weather at the end of the month, July was the coolest since 1965. The warmest month of the year was August. The month began with changeable warm weather and became cooler and drier towards the end of the month. This drier weather continued in September, which was also fairly sunny and warm. A cold wet spell set in early in October and continued for much of the month. November also was cool and wet. At the end of the month wintry conditions resulted in three days with snow lying. December began with severe frost and snow, with the temperature sinking to 12°F on 1st and frost continuing all day. After the first week the weather turned mild and continued thus until the end of the year.

Weather records at Swaffham Prior 1980

Temperature °F

Month	*Mean max.*	*Mean min.*	*Highest*	*Lowest*	*Rainfall (ins)*
January	39.2	30.7	50 on 30th	20 on 13th	1.46
February	47.9	37.8	57 on 17th	27 on 1st	1.80
March	47.3	35.5	58 on 28th	26 on 22nd	2.44
April	55.9	38.7	73 on 16th	29 on 9th	0.55
May	61.8	41.7	76 on 19th	29 on 9th	0.56
June	68.8	50.6	86 on 4th	44 on 2nd	1.74
July	67.9	51.5	80 on 28th	43 on 15th	3.36
August	70.0	55.1	81 on 3rd	41 on 24th	2.72
September	67.9	55.6	76 on 3rd	47 on 9th	1.16
October	55.5	40.9	64 on 1st	31 on 31st	2.34
November	47.4	39.5	60 on 16th	29 on 30th	2.07
December	45.5	35.6	56 on 23rd	12 on 1st	1.22
Annual means	52.1°	42.9°		Total	21.42

Number of days over 80°F	*4*
Number of days over 70°F	*60*
Number of days with a maximum under 32°F	*6*
Number of days with a minimum under 32°F	*55*
Last air frost of the spring	*9th May*
First air frost of the autumn	*31st October*
Days with snow lying	*3*

CAMBRIDGESHIRE WILDLIFE APPEAL

Our 1980 Cambridgeshire Wildlife Appeal was launched in November 1979 with an inaugural meeting for Patrons and the Appeal Committee held in the old library of Emmanuel College, by courtesy of the Master, Dr Derek Brewer. Its beginnings go much further back than this though, to the spring of the same year when the Trust was presented with the opportunity to acquire 28½ acres of Ouse washland and 43 acres of oxlip wood at Knapwell and the need to conserve ten or more acres of orchid meadow in Soham and to renovate its railway cottage at Hayley Wood. These were all very exciting prospects which made one message very clear: a major fund-raising effort would be necessary if they were to become reality. But how should this be undertaken? Should the Trust take on running its third largest appeal on top of its ever growing commitments in Cambridgeshire or should a professional fund-raising firm be employed at considerable cost but with the hope of raising far more money than we had ever aimed for before? This was an extremely difficult decision to make and one which taxed the Executive Committee and Council of the Trust for a considerable time. Finally, after taking advice from many people including local fund-raisers and the Trust's former Secretary, Mr Robert Payne, it was agreed to employ Craigmyle Ltd for an initial four months' consultative period in order to gain advice on how such an ambitious appeal should be run and to ascertain whether the company felt the venture was feasible and was prepared to take on the project.

A steering committee chaired by Mr Ben Johnson and consisting of CAMBIENT's Executive Committee Chairman Dr Mike Smith, Executive Committee members Dr Roger Connan and Mr Peter Conder, Council member Mrs Janet Thain, the Treasurer designate Mr Ken Hudson, and me was formed in May 1979 and met regularly with a consultant from Craigmyle to formulate plans for the inauguration of the appeal, the recruitment of Patrons, the supportive Appeal Committee and the all-important Appeal Chairman, and the design of the promotional brochure. Photographs for the brochure, which with hindsight has been an unqualified success, were provided by Dr Franklyn Perring and Mr Nicholas Warner, and the drawings were commissioned from Hilary Welch, who prepared the beautiful displays in our Ouse Washes visitor centre. The script was devised jointly by the steering committee and our President Dr Max Walters, and the very attractive layout was produced by Mrs Gwen Marr of Craigmyle; our aim was to produce an attractive but not too extravagant brochure which would stand well amongst the year's Christmas cards. Expenditure had to be limited, but the brochure would carry the main message of the appeal and needed to make an immediate impact with all sections of the public.

Thirty patrons were approached to give their names and support to the appeal, and a committee of 65 was recruited from a potential of 132 representatives of academic, professional and local life, which it was hoped would be able to attract financial support from all sections of society. These initial stages involved considerable paperwork, not least in typing record cards for the whole membership (in triplicate!) and double-checking titles and honours of Appeal Committee members before the brochures went to print. Fortunately the deadline was just met, and proof copies of the brochure were despatched from Lincolnshire to arrive just in time for the inaugural meeting of patrons and committee members. Here our President outlined the essential need for the appeal, and Mr Desmond January, who had been "volunteered" into the position of Chairman, explained how it was hoped everyone present could help. The success of the appeal would depend on the strong conviction that its aims were worthwhile and on the individual fund-raising efforts of each and every member of the committee. Our Appeal Director from Craigmyle, Lt. Col. Carey Fullbrook, joined us for this inaugural meeting and worked full-time with us until Christmas, ably supported by Mrs Kay Regan as his Secretary. Many members may have known Kay before, through her long service as an office volunteer and as our noble minute-taker at Council meetings.

After this initial meeting had taken place, the main effort was put into promoting the appeal among CAMBIENT's most faithful supporters, its members. A series of 11 members' meetings was arranged around the county between December and April, and personally signed invitations were issued to all 2,500 members. The first meeting was held in Cambridge, with an

attendance of over 70, and the response to meetings, even on very inhospitable nights in the Fens, was extremely encouraging. The splendid RSPB film *The Lonely Level* was shown at these meetings, and we were extremely grateful to the Society for allowing us to use such excellent promotional material, especially as the film was produced by one of our Council Members, Mr Anthony Clay. Slides of potential purchase sites, many taken by our Field Officer Mr Keith McNaught, were used to illustrate the need for the appeal, with delightful colour prints kindly loaned by Mr Nick Warner and displayed by our two recorders Pete Seccombe and Sarah Douglas. A small but faithful band of volunteers helped with carrying displays to meetings and handing out brochures and response cards to members, and Executive Committee members spoke to promote the appeal. A gratifying number of donations was received at meetings after Col. Fullbrook's explanation of the finances involved, and many members undertook to deliver brochures to others in their town or village.

While these meetings were going on, individual approaches to professional people were made by the Appeal Chairman and Committee, the President canvassed the University and colleges, and regular progress bulletins were circulated to the "workers"so that they were in touch with developments. The brunt of the paperwork was borne by Kay Regan, who continued to work at least three days a week in the New Year, helped by Elsa Morrow and other volunteers, while "the Colonel" put in one day a week with us until June. Key completed a valiant 13 months' work in total before departing for a well-earned holiday in Kenya, and I am pleased to say that she will soon be returning to us as a volunteer, when I shall hope to be relieved of the Council minutes again.

From April onwards, a series of garden openings took place, thanks to the generosity of ten owners and the support of many willing helpers, and a variety of other fund-raising efforts such as coffee mornings, tea parties, sherry evenings and stalls were arranged by members. The launch of the appeal to the public was intended to coincide with this series of events and with the "blossoming" of our Trust reserves, but the colour feature in *Cambridge Evening News* featuring oxlips in Overhall Grove (and our Field Officer) was delayed until the end of May by the newspaper strike. However, an excellent photograph was included in the Bank Holiday Leisure Supplement, and soon afterwards articles were printed in the SPNC's *Conservation Review* and in *Cambridgeshire Life* and the Appeal was featured on Hereward Radio and briefly on Anglia TV, the last showing a very wet "yours truly" attempting to amble nonchalantly down Hayley Lane as if on a beautiful summer's day!

By July the appeal total had reached £79,754, with some £32,000 donated by members, but in August there was the not unexpected lull in both donations and activities. However, interest was re-awakened by our September Newsletter, and a mammoth mailing of letters signed by our Appeal Chairman was despatched to local industry, doctors, dentists, solicitors etc.; further approaches to charitable trusts were made, and a letter asking for support from farmers and landowners was published in the National Farmers' Union journal, signed by the local Chairman, Mr J. Childs. A final letter was despatched to nearly 300 members just before Christmas when £98,000 had been reached, and we were extremely gratified by the responses that came in in the New Year, when we were coping without our Appeal Director or Secretary. The task of producing "thank you" letters fell on Dr Walters and our Assistant Secretary, Joyce Morley, and covenant forms are still being efficiently processed by Ken Hudson, a task that will continue for the next seven years! *Cambridge Evening News* helped us with further promotion announcing that our target was in sight, and the Christmas raffle and carol-singing boosted the fund by over £550 — a very welcome Christmas bonus. The results of earlier approaches continued to come in slowly in 1981 and the fund was increased by donations to the Winifred Parsons Memorial Appeal, which stood at £701 at the end of February 1981.

February saw a gathering of the original Appeal Committee, Patrons, helpers and staff, again at Emmanuel College, to celebrate the success of the Appeal and to hear that the total had reached a fantastic £106,525, including £42,272 from members and £619 from schools, the latter thanks to Keith McNaught's and Stephen Tomkins' efforts at arranging imaginative sponsored colouring and sunflower-growing competitions. Progress had been excellent not only on the money-raising front but also with reserve purchases: 28½ acres of Ouse Washes

had been added to the Trust's holdings, Overhall Grove and Soham Meadow were expected to be owned by Easter, and the date for completion of the Hayley cottage renovation was set for March. All the Appeal projects should thus be well in hand in time for members to enjoy them with the coming of spring, and a fitting "thank you" for the wonderful generosity of all concerned is to take the form of a special "wildlife" Evensong at the end of March. All very splendid timing in advance of the celebration of the Trust's 25th birthday in the month of June!

It only remains to say "thank you" to each and every one of you who has helped in whatever way and of course to stress that we shall still need your support in the years to come. We now have more reserves to manage and more species to protect, and as always our strength is in our membership. Keep up the good work and thank you very much!

Joy Greenall
Secretary/Conservation Officer

LIST OF DONORS TO THE CAMBRIDGESHIRE WILDLIFE APPEAL UP TO THE END OF FEBRUARY 1981

Dr & Mrs S J Aarseth. Acremont House School. Mr B Acres. Mrs P R P Acres. Dr A K Adams. Mrs P M Adamson. Ms D M Agar. Mr J S M Albrecht. Mr & Mrs Albutt. Mr & Mrs C R C Alford. Mr J W Allen. Mr & Mrs M J Allen. Mr S H Allison. The Alper Charitable Trust. Mrs M D Anderson. Mr R W Anderson. Mrs M L S Ansell. Dr & Mrs R Archer. Dr & Mrs T E Armstrong. Miss B M Askwith. The Hon Sir John Astor, MBE, DL, JP. Mr David Attenborough. Prof & Mrs C R Austin.

Mrs B M Bacon. Mr R B Bamford. Barclays Bank, Bene't St. Mr G Barlow. Mr R W Barlow. Mr R N Barlow-Poole. Mr A Barnard. Barrington Church of England School. Mr D F Barton. Miss C J Bates. Ms M E Bawden. Miss S Bearham. Miss C M Bedson. Mrs R W Bell. Mrs J Benfield. Miss J Benians. Mr G G Benton. Mr & Mrs R M Benton. Mr W D Berry. The Bevan Charitable Sett. Mr & Mrs H L S Bevington. Mrs A R B Binnerts. Mrs E. Binney. Mr P A Bilton. Dr H J B Birks. Mr & Mrs J S Bissett. Miss D M Black. Miss E M Black. Black Horse Drove School, Littleport. Mr & Mrs A P Blair. Dr & Mrs W C Block. Mr J C C Blofeld. Mrs P Borley. Mrs M E Boston. Mrs E M Bown. Mr R E Boyce. Ms D Boyes. Rev Dr J S Boys-Smith. B Paks (Hunts) Ltd. Mr M N Bradford. Mrs A M Brashaw, Mrs J A Brearley. Dr D S Brewer, FSA. Mrs M A Brian. Dr D Briggs. British & Foreign School Society. Miss R I Brookes. Mr L J Brooks. Mr & Mrs A J Brown. Miss L F Brown. Mrs G R B Browne. Brown Boveri Kent Ltd. Miss P F R Bruce-Clark. The Countess of Buchan. Mrs F E Bull. Mr & Mrs E F Bunyan. Burall Bros Ltd (Wisbech). Miss K M Burall. Mr J F Burnett. S H Burns Charitable Trust. Mrs M I Burrows. Miss A J Butcher. Miss E L Butcher. Miss W H Butcher. Prof Sir John Butterfield, OBE. Mr T V Buttrey & Mrs A E M Buttrey. Mr D R Buxton. Mrs A Bythway.

Mr Christopher Cadbury, CBE, with Mr James and Mr Roger Cadbury. J & L A Cadbury Charitable Trust. Cambridge Bird Club. Cambridge Evening News. Cambridge Preservation Society. Cambridge and District Women Citizen Association. Cambridge High School Old Girls Association. Cambridge Mental Welfare Association. Cambs County Council. Cambs and Isle of Ely Schools Holiday Orchestra, Parents Committee. Mr J E Cameron. Miss M H I Care.Rev & Mrs A S Carlton-Smith. Miss A S Carne. Mr E R Carter. Mrs M J Carter. Carter Jonas & Sons Service Co (Godmanchester). Dame Mary L Cartwright. Mrs C M M Cassels. Sir Fred Catherwood, CBE. Catling, Brady & Bliss. Dr P H Cave. Mrs M E Chaloner. Mrs M Chamberlain. Mr & Mrs B L Chapman. Mrs Irene Chapman. Miss J L Chapman. Mr & Mrs W J Chapman. Mr A O Chater. Mr & Mrs D M Cheason. Mr Christopher G L Child. Mr J M Childs. Mr J M Chinery. Dr G A Chinner. Mrs V W Chivers. Miss E M Christmas. Mr J H Christmas. Christ's College. Ciba-Geigy (UK) Ltd. Clare College.Clark & Butcher. Mr F W

Clark. Mr T N Clark. Mr W A Clark. Miss M Clarke. Mrs Z E Y Clarke. Mr A E Clark-Kennedy. Miss Alison Clay. Mr A C Clay. Prof J F Coales, CBE, FRS. Rev A J Coates. Mr & Mrs R H L Cohen. Miss M A Cole. Mrs J F Coleby. Mr R G G Coleman. Mrs M Coles. Mr D M Collins. Miss G P Collins. Colville School, Cherryhinton. Mr G I Comerford, Mr P J Conder, OBE. Dr N K Coni. Mr G Coningsby. Miss P M Cook. Dr D E Coombe. Mr & Mrs A G Cooper. Mr & Mrs L J Coppock. Prof E J H Corner. Corpus Christi College. Cottenham Area Group. Cottenham Village College. Mrs A Coulson. Mrs A E Coulson. Mr K Cowley. Miss D M Cra'ster. Mr & Mrs E R Cro. Mrs G Crompton. Mr P E Cross. Miss E M Cruickshank. Cunard Hotels Ltd.

Mr & Mrs J Dalgleish. Dr & Mrs A R Danse. Mr W H Darling. Darwin College. Mr G G Datson. Mrs A Daughton. David Ball Company Ltd. Miss S E Davidson. Miss A C Davies. Miss J G Davis. Dawbarns. The Hon George Dawnay. Mr & Mrs J K N Dawson. Dr J C D Day. Miss S A Day, JP. Mrs J Deas. The Right Honourable Sir Geoffrey de Freitas, KCMG. Mr & Mrs D A Dennis. Mr M H Dennis-Jones. Mr B O Denson. Dr & Mrs A P Dick. Miss I Eleanor Dickinson. Mr R E Dimsdale. Dinosaur Publications Ltd. Mrs B M W Dobbie. Mrs M I Dobson. Miss I M Dockerill. Mr D R Donald. Mr Robert Dougall, MBE. Dove House Trust. Mrs E P N Dove. Downing College. Mr W B Drayton. Dry Drayton Estates. Miss M G Duff. Mrs Patricia Y Duffy. Dullingham County Primary School. Dr P Duncomb. Mr G L N Dunn. Miss M A J Dyball.

Mrs P M Eardley-Simpson. East Cambs District Council. Sir Sam Edwards. Mr C S Elliott. Mrs E V Elliott. Miss G M Ellis. The Rt Rev The Lord Bishop of Ely. Ely and Sutton Members Group. Emmanuel College. Col J R Ennion. Miss E M Erskine. Mr & Mrs A B Evans. Mr P J Evans. Dr R C Evans. Mr & Mrs K A Eyers.

Mr T J Fairbank. Mr & Mrs R H Fairclough. The Lord Fairhaven, JP. Fairview Estates (Housing) Ltd. Mr B H Farmer. Mr J C Faulkner. Miss J L Fellows. Mr W E H Fiddian. Miss L Fidler. Mrs F Fielden. Miss S Fieldhouse. Mr & Mrs R A Finch. Mr A C Fisher. Mrs V M Fisher. Fisons Ltd. Mrs M J Fitch. Mr & Mrs R J Flood. Lt Col J P Foley. Mr & Mrs D Forbes. Miss Jane Foster. Dr W A Foster. Ms E M Fowler. The Hon Lady Fox. Foxton Gardens and Allotments Association. Mr A T M Freeman. Mr & Mrs S French. Mr & Mrs J M Fuller. Mrs M K Fuller. Lady Furness.

Mr B O C Gardiner. Miss E A Gardiner. Mr J C Gardiner. Mrs M L Gardiner. Mr & Mrs C W Garfit. Prof S D Garrett. Mr E A George. Mr P Gill. Mr J S L Gilmour. Miss K B Gingell. Girton College. Glebe School, Girton. Miss E R Glover. Prof Sir Harry Godwin, KB, FRS. Mrs K Goldsworthy. Gonville & Caius College. Rev J B Goodchild. Dr C B Goodhart. Mrs C M Goodman. Miss B M Gorse. Miss M J Graham-Campbell. Mrs H F Grant. Mrs H G Grant. Mr C J Gravatt. Mr & Mrs W Gray. Dr E A W Gray. Dr R D Gray. The Gredley Group. Mr & Mrs B G Green. Miss J Greenall. Greens of Soham. Mr & Mrs A T Gregory. Mr W E Grey. Prof P Grierson. Miss M E Grimshaw. The Worshipful Company of Grocers. Grounds & Co (Wisbech). Miss S G Grundy. Dr J B Gurdon.

Haddenham Members Group. Miss E S Haines. Mr & Mrs Hall. Mr J C Hall. Mr J J Hall. Mr P G Hall. Mr & Mrs P J Halnan. Mr & Mrs F G Halsey. Mrs A V Handscombe. Mr & Mrs J Hardiment. Dr & Mrs A J Harding. Mr J C Harding. Dr & Mrs A Hargreaves. Mrs E M E Harland. Mr P J Harris. Mr & Mrs D G Harrison. Mr P R Harrold. Mr & Mrs B Harrup. Dr H J Harvey. Mrs B J Harvey. Haslingfield W I. Miss R A Hatch. Mr A K Hawley. Miss E F Haywood. Ms J R Heap. Mr J C Heath. Mr D R Heath-Brown. Ms S G Hedge. Mr J N M Heffer. W Heffer & Sons Ltd. Mr & Mrs P J F Henderson. Mr & Mrs P R Hennell. Mr R B Hewitson. Mr & Mrs J A Hewitt. Mr R Hewitt. Mr & Mrs J G Hichisson. Mrs P Hill. Dr & Mrs R Hill. Hill Top Club, Cambridge. Prof R H Hinde. Miss F Hitch. Miss E J Hobbs. Miss R C Hobbs. Prof Sir Alan Hodgkin, OM, KBE, FRS, and Lady Hodgkin. Miss S Hodgkin. Rev T R Holland. Miss E L Holmes. Mr B W Holtam. Homerton College. Mr K A and Mrs J R Hooton. Prof G Horn. Mr J G Horn. Miss S M Hornsby. Mrs C P Hooton. Dr Helen Houghton. Mrs D G House. Dr H W Howard. Mrs J M Howe. Mr F E Howlett. Mrs C Hubble. Mrs L F Hudson. Mrs O L Hudson. Dr C P Hughes. Miss V M Hughes. Dr K W Humphreys. Miss D A Humphries. Mrs E Hunt. Huntingdon Research Centre. Mr H C

Hurrell. Mr & Mrs K Hustwitt. Mr & Mrs D Hutchin. Miss D M Hutchinson. Prof Sir Joseph and Lady Hutchinson. Mrs J M Hutton. Mrs E M Hyde.
Mr Robert Inglesfield. Intervet Labs Ltd.
Mrs M A Jackson. Major P H Jacques. Mr & Mrs D W January. Mr & Mrs M R Jarman. Sir Harold and Lady Bertha Jeffreys. Miss R E Jellis. Mr & Mrs J G Jenkins. Dr A R Jennings. Miss R M Jerram. Jesus College. Mrs C John. Miss A Cowper-Johnson. Mr B H Johnson. Johnson & Bailey Ltd. Mr K D Johnston. Mr B D Jones. Samuel Jones & Co Ltd (St Neots). Dr & Mrs W J Jordan. Joshua Taylor & Co Ltd.
Prof The Lord Kahn, CBE, FBA. Rev G Keable. Mr D C Kearney. Mr C Kell. Mr R M Kelsall. Miss V C Kemp. Mrs A Kempton. Mr & Mrs H Kenrick. Mr C F Kidman. Dr S J Kimber. King's College. Mrs M J Kinnear. Dr Keith Kirby. Mr C A E Kirtland. Miss E M Kitchener. Mr W R Knowles.
Lady Adrian School, Cambridge. Mr & Mrs E A Lainson. Mr & Mrs P I Lake. Miss A V Lamb. Mr R Lane. Dr & Mrs D R Langslow. Mr P H Langton. Mr P A Lawrence. Mr & Mrs E Lawson. Mr T P R Layng. Miss R N Leach. Miss V M Leather, MBE. Mrs H E Lee. Mrs P D Lee. Miss U N Leggatt. Mr & Mrs D J Leonard. Miss M P Leonard. Miss C D Lewis. Miss C M Lewis. Mr L Lewis, FBS, MBIM. Miss M Lidgett. Dr E J Lindgren. Mr J M Line. Dr John Lines. Mrs J J Linfoot. Miss R A Lingley. Linton Village School. Mrs A I Linzell. Lloyds Bank Ltd, Eastern Counties Regional Office. Dr & Mrs J M Lock. Miss Margaret Lockwood. Long Road Sixth Form College. The Lucas Countryside Association. Dr F G H Lupton.
Mrs A F E McBurney. Mr M H McFarlane. Mr D R H Mackay. Mr & Mrs I M Mackecknie-Jarvis. R & B Mackenzie. Mrs M McKergow. Mrs K S MacMaster. Dr & Mrs P A McNaughton. Miss K J L McNeice. Mrs A M H MacPherson. Dr W J Macpherson. Magdalene College. Mr M C Malster. Sir Henry Marking, KCVO, CB, MC. Marshalls of Cambridge Ltd. Mr & Mrs C F Marshall. Mr H C Marshall. Mr J G Marshall. Mr J S Martin, CBE. Prof Sir Leslie Martin, FRIBA, and Lady Martin. Mrs E G Martineau. Mr H J Mason. Dr J E O Mayne. Mrs E M Meade. Dr H D Megaw. Meldreth County Primary School. Mr H Meyer. Miss L D Meyer. Mrs D M Middleton. Midland Bank Employees, 62 Hills Road Branch. Mrs P Miles. Mr H R F Mills. The Peter Minet Trust. Mr Kees Minnaar, C Minaar Ltd (Earith). Mitchell Charity Trust. Dr J K M Moody. Mr & Mrs C M Moore. Mr E T and the late Mrs C O Moore. Dr N W Moore. Mr D O Morbey. Mrs V C Morley. Miss P Morris. Mr K V F Morton. Dr C W R D Moseley. Mr P J Moule. Mrs J E Moullin. Mr & Mrs R Munns. Dame Rosemary Murray.
National Council of Women. Mr O C Neal. Dr K I B S Needham. Mr & Mrs R M Needham. New Hall. Miss F M Newling. Newmarket Field Club. Newnham College. Newnham 9/11th Cub Pack. Mr & Mrs D V J Newson. Mr & Mrs J M Newton. Deaconess K M Newton. Mr T C Nicholas. Dr J M Nicholson. Mrs G H Nightingale. Mr J E Norman. Mr R D Norman. Mr H F Northeast. Mrs E M Nunn.
Miss M Olliver. Mr P H Oswald. Dr & Mrs T M Owen.
Mr & Mrs M C O Page. Mr R Page. Miss R J Page. Paine & Co Ltd (St Neots). Mrs D M Palmer. Mr W H Palmer. Mr R J Pankhurst. Mrs A E Pape. Mr L H Pape. Mr M R Pape. Mr C Parish, FRCS. Miss E M Parker. Dr & Mrs A F Parker-Rhodes. Parkside Community College. Miss M A Parsley. Ms J F Paul. Mr S R Payne. Miss F Pearce. Mr & Mrs B R Pearl. Mrs H B Pease. Miss N J Pease. Dr I Peck (Dry Drayton Estates). Mr F and Mrs M Pepper. Dr R M S Perrin. Dr & Mrs V L Perrin. Dr F H Perring. Mr I Perry. Perse Junior Girls School. Perse School for Girls. The Perse School. Peterhouse. Mr P J Pettinger. Mr R B Pickles. Miss C Pike. Mrs S Pinney. Mrs B C Platt. Mr & Mrs K Polack. Mrs J A Poole. Mrs J G Potter. Premier Travel Ltd. Miss P M Price. Gift from patients at Fen Ditton in memory of the late Dr John Pritchard. Mrs S M Pumphrey. Mrs P M Purcell. Pye Group of Companies, Cambridge. Mrs R M Quadling. Ms C E Quartley.
Dr O Rackham. The Radley Charitable Trust. Dr R E Randall. Mr P Randall Arthur. Rattee & Kett Limited. Mrs J E Raven. Miss M E Rayner. Dr M G P Reed. Mrs K L Regan. Mrs M Regensburger. Sir Alexander Reid, Bt, JP, DL. Mr M Reiss. Mr & Mrs J D Reynolds. Dr & Mrs J J Reynolds. Miss J M Reynolds. Mrs S K Ribbands. Mr K Richards. Dr M P M

Richards. Prof & Mrs P W Richards. Mrs S E Richardson. Mr C Riley. Mr & Mrs P B Riley. Mrs Betty Ringham. Miss C Rivett. Robb of St Ives (Water Services) Ltd. Miss P A Rogers. Mr L Rose. Mr B Rosenfeld. Capt S W Roskill, CBE, DSC, RN. Dr A Roughton. Royal Insurance (Cambridge). Mr & Mrs R J Rule. Mrs A J Rumsey. Mr G Rylands, CBE. Prof B E Ryman.
Dr D W B Sainsbury. St Albans Roman Catholic Primary School. St Andrews Church of England Junior School. St Faith's School. St John's College. St Regis International Ltd (Cambridge). Mrs J H Salingar. Miss M Salton. Mr G Sandford. Mr & Mrs V P Sargeant. Saunders Boston. Miss M Schroeder. Mr S W Scoffin.G J M Scott.Scurfields, Cambridge. Sealmaster Limited. Mr A J Searle. Miss I Seccombe. Sedley Infants' School, Cambridge, parents' collection. Mr P D Sell. Mr & Mrs R P Sell. Miss A E F Shearcroft. Shell Chemicals UK Ltd. Mrs P S Shipton. Sidney Sussex College. Mr & Mrs C Silk. Mr & Mrs J Simpson. Mrs R Simpson. Sinclair Research Ltd (Science of Cambridge). Miss M Sinker. Mr R Skelly. Miss J E Skinner. Miss J M Sloan. Mr & Mrs B A W Smale-Adams. Dr & Mrs J Smart. Miss D E Smith. Miss M A Smith. Dr M E Smith. Miss M Raeburn Smith. Mr N R Smith. Dr J K Snell. Soham Members. Mr R E Somekh. Soroptimist International of Cambridge. South Cambs District Council. Mr M A Stammers. Mr E Standen. Mr & Mrs E R Stanford. Dr M. W Stanier. Mr R C Steele. Mrs J E Stirland. Mr T M Stockdale. Col P Storie-Pugh. Miss E Strietman. Mr Derek Stubbings. Edward Suckling Charitable Trust. The late Sir Gordon Sutherland and Lady Sutherland. Mrs R M Suttle. Sutton Primary School. Swavesey County Primary School. Prof Sir Peter Swinnerton-Dyer, FRS. Miss A W Syme.
Mr C Talbot. Mr J R Tanfield. Miss A F Taylor. Miss A I Taylor. Mr Clifford Tebbit. Miss R C Tebbutt. Techne (Cambridge) Ltd. Technicolour Resin Bonders Ltd (Huntingdon). Miss H Thacker. Mr P W Thacker. Mrs J M Thain. Mr J A Thickitt. Mr G Thoday. Mr & Mrs J R Thompson. Mrs Diana Thornhill. Prof W H Thorpe. Mr G Thynne. The Lord Todd of Trumpington, OM, FRS. Miss D Tomlinson. Mrs H P Tomlinson. Miss M H Tonkin. Topper Cases Ltd, Huntingdon. Trinity College. Mr P J O Trist, OBE. T S & H Marking Devices (Cambridge). Miss Jessica M Turner. Mr R F Turner. Mr C C Turpin. Mr & Mrs K C Twist. Twist & Whitley. Mr P Tyssen-Gee.
University of Cambridge.
Mr E Vestey. Mr R Vigor.
Prof & Mrs H W R Wade. Mrs J Wakelin. Mr & Mrs F W Walbank. Mrs H M Walford. Mr D B Wallace. Ms M V Wallace. Miss J M Walley. The Lord Walston, CVO. Mr M Walters. Dr S M Walters. Miss E Watchorn. Mrs D M Watson. Mrs S B Watson. Mrs U C Watson. Dr A S Watt. Mrs K M Watt. Dr & Mrs J M Way. Mrs Angela Webb. Mr & Mrs H J B Webb. Mr & Mrs G. Wedd. Mr D A Wells. Dr M J Wells. Mr S W F Welsh. Wesley Coe (Cambridge) Ltd. Prof & Mrs R G West. Mr G F Weston. Wests Garage (Cambridge) Ltd. The late Edward Wheeler. Mrs A B White. Mrs A T S White. Dr & Mrs H L K Whitehouse. Mr & Mrs J C Whitehouse. Wicken County Primary School. Mrs E Widgery. Miss G G E Widgery. Prof Sir Vincent Wigglesworth. Mrs R E Wilkerson. Mrs S A Wilkinson. Miss F J L Willey. Mrs E M Williams. Dr P G L Williams. Prof E Willmer. Miss N K Willson. Mrs H Wilson. Mr J F Wilson. Mr & Mrs R M Wilson. Mr E J Wiseman. Mr & Mrs H H Wiseman. Mr F E J Witchalls. Wolfson College. Mr G L Woolland. Mr T N M Woosnam. Mr & Mrs A M Wooster. World Wildlife Fund. Miss C M Worman. Mr & Mrs J W B Worth. Mr T Worthington. Mr & Mrs G R W Wright. Mr P C Wright. Mrs S M Wright.
Xmas Draw.
Mr L R H Young. Young's Motors Ltd (Wisbech).
Mr W J N Warner (for loan of projector and photographs for displays).
Anonymous donors.
Events.